



# governmentattic.org

*"Rummaging in the government's attic"*

Description of document: National Nuclear Security Administration (NNSA) Post  
1980 Broken Arrow Nuclear Weapons Accident Issues

Requested date: 24-November-2020

Release date: 31-March-2021

Posted date: 31-May-2021

Source of document: FOIA/PA Officer  
NNSA/Office of the General Counsel  
P.O. Box 5400  
Albuquerque, NM 87185-5400  
Fax: (505) 284-7512  
Email: [FOIOfficer@nnsa.doe.gov](mailto:FOIOfficer@nnsa.doe.gov)

The governmentattic.org web site ("the site") is a First Amendment free speech web site and is noncommercial and free to the public. The site and materials made available on the site, such as this file, are for reference only. The governmentattic.org web site and its principals have made every effort to make this information as complete and as accurate as possible, however, there may be mistakes and omissions, both typographical and in content. The governmentattic.org web site and its principals shall have neither liability nor responsibility to any person or entity with respect to any loss or damage caused, or alleged to have been caused, directly or indirectly, by the information provided on the governmentattic.org web site or in this file. The public records published on the site were obtained from government agencies using proper legal channels. Each document is identified as to the source. Any concerns about the contents of the site should be directed to the agency originating the document in question. GovernmentAttic.org is not responsible for the contents of documents published on the website.



Department of Energy  
National Nuclear Security Administration  
Office of the General Counsel  
P.O. Box 5400  
Albuquerque, NM 87185-5400



March 31, 2021

**SENT VIA EMAIL**

This letter is the final response to your November 24, 2020 Freedom of Information Act (FOIA) request. You requested the following:

“A copy of the records released in NNSA FOIA Case 14-00091-R, including the release letter and the request letter. The subject was post 1980 broken arrow incidents.”

Your request was received in this office on November 25, 2020. A copy of the released documents in FOIA 14-00091-R, are enclosed, listed below, and contained deletions pursuant to 5 USC § 552 (b)1 and (b)3 (Exemptions 1 and 3 of the FOIA).

D00033903 – Broken Arrow Examination  
D00033904 – Development Report  
D00033905 – Analysis of the SA of MK39 Mod 2 Bombs in B-52G Crash NC  
D00033906 – Table of Component Behavior, Fusing and Firing Systems  
D00033907 – Flash Message  
D00033908 – Broken Arrow Thule  
D00033909 – Development Report  
D00033910 – Broken Arrow Examination  
D00033911 – Summary of Nuclear Weapon/Material Accidents and Related EOD Activities  
D00033912 – Accident Report of the B-52G Near Seymour Johnson AFB, SC  
D00033914 – Sandia Corporation  
D00033915 – Aerial View of Recovery Operations  
D00033916 – United States Nuclear Weapon Accidents

The release letter and request letter (identified below) are fully releasable and provided in their entirety.

- FOIA 14-00091-R Final Response Letter 10-30-2014
- FOIA 19-00091-R

You may contact me, NNSA's FOIA Public Liaison, at 1-866-747-5994, or by mail at Department of Energy, National Nuclear Security Administration, Office of the General Counsel, PO Box 5400, Albuquerque, NM 87185, for further assistance and to discuss any aspect of your request.

Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows: Office of Government Information Services, National Archives and Records Administration, 8601 Adelphi Road-OGIS, College Park, Maryland 20740-6001, e-mail at [ogis@nara.gov](mailto:ogis@nara.gov); telephone at (202) 741-5770; toll free at 1-877-684-6448; or facsimile at (202) 741-5769.

There are no fees chargeable to you for processing this request. If you have questions, please contact Ms. Delilah Perez by e mail at [Delilah.Perez@nnsa.doe.gov](mailto:Delilah.Perez@nnsa.doe.gov), or write to the address above. Please reference Control Number FOIA 21-00039-M in your communication.

Sincerely,

Christina H. Hamblen  
Digitally signed by  
Christina H. Hamblen  
Date: 2021.03.31  
07:13:09 -06'00'

Christina H. Hamblen  
FOIA Officer

Enclosures

January 13, 2014

USSTRATCOM FOIA Requester Service Center  
USSTRATCOM/J006 (FOIA)  
901 SAC BLVD STE 2E27  
Offutt AFB, NE 68113

OSD/JS FOIA Requester Service Center  
Office of Freedom of Information  
1155 Defense Pentagon  
Washington, DC 20301-1155

FOIA Requester Service Center  
1000 Independence Avenue, SW  
Mail Stop MA-90  
Washington, DC 20585

FOIA/PA Officer  
NNSA/Office of the General Counsel  
P. O. Box 5400  
Albuquerque, NM 87185-5400

**Re: REQUEST UNDER FREEDOM OF INFORMATION ACT/  
Expedited Processing Requested**

To Whom It May Concern:

This letter constitutes a request ("Request") pursuant to the Freedom Of Information Act ("FOIA"), 5 U.S.C. §552 *et seq.*, The Department of Defense implementing regulations, 32 C.F.R. § 286.1 *et seq.*, The Department of Justice implementing regulations, 28 C.F.R. § 16.1 *et seq.*, the President's Memorandum of January 21, 2009, 74 Fed. Reg. 4683 (Jan. 26, 2009) and the Attorney General's Memorandum of March 19, 2009, 74 Fed. Reg. 49,892 (Sep. 29, 2009). The Request is submitted by Speaking Truth to Power.

This request seeks records pertaining to events which have been labeled "Broken Arrow incidents" by the United States Department of Defense ("Department of Defense"). In this

request a "Broken Arrow incident" will refer to an accidental event that involves nuclear weapons, warheads, or components, but which does not create the risk of nuclear war.

In particular, we seek records pertaining to any Broken Arrow incident which has occurred later than September 19, 1980. In addition, we request any documents which relate to Broken Arrow incidents occurring earlier than September 19, 1980 but have not yet been publicly acknowledged by the Department of Defense. We also seek any documents which relate to events which involved nuclear armaments, were first identified as something other than a Broken Arrow incident, and were subsequently identified as a Broken Arrow incident.

According to interviews and publications relating to Broken Arrow incidents, the Department of Defense has publicly acknowledged thirty-two (32) such incidents, with the last acknowledged incident occurring in 1980.  
<http://nsarchive.wordpress.com/2013/10/09/document-friday-narrative-summaries-of-accidents-involving-nuclear-weapons/>; <http://www.globalsecurity.org/wmd/ops/broken-arrow.htm>. The document released by the Department of Defense which contained the list of all thirty-two Broken Arrow incidents, titled "Narrative Summaries of Accidents Involving U.S. Nuclear Weapons," was limited only to those incidents occurring between 1950-1980 and was conspicuously identified as being restricted to that period.  
[http://www.dod.mil/pubs/foi/operation\\_and\\_plans/NuclearChemicalBiologicalMatters/965.pdf](http://www.dod.mil/pubs/foi/operation_and_plans/NuclearChemicalBiologicalMatters/965.pdf).

### **I. Requested Records**

1. Any records pertaining to Broken Arrow incidents occurring after September 19, 1980, including but not limited to:
  - a. Causes and immediate responses to the Broken Arrow incidents, who made the immediate decisions, and who acted out the immediate actions;
  - b. What the launch status of the nuclear armaments was when each Broken Arrow incident occurred;
  - c. Any degradation of the safeguards against accidental launch during the Broken Arrow incident, if applicable;
  - d. Any post-incident inspections of armament systems which were aimed at preventing similar occurrences;
  - e. Any physical measures taken to prevent similar occurrences;
  - f. Any relevant protocols and rules which were in place at the time of the incident and which were violated.
2. Any records pertaining to Broken Arrow incidents which had occurred earlier than September 19, 1980 **and** had been omitted or are otherwise missing from the Department

of Defense document titled "Narrative Summaries of Accidents Involving U.S. Nuclear Weapons," including but not limited to:

- a. Causes and immediate responses to the Broken Arrow incidents, who made the immediate decisions, and who acted out the immediate actions;
  - b. What the launch status of the nuclear armaments was when each Broken Arrow incident occurred;
  - c. Any degradation of the safeguards against accidental launch during the Broken Arrow incident, if applicable;
  - d. Any post-incident inspections of armament systems which were aimed at preventing similar occurrences;
  - e. Any physical measures taken to prevent similar occurrences;
  - f. Any relevant protocols and rules which were in place at the time of the incident and which were violated.
3. Any records pertaining to events which involved nuclear armaments, were first identified as something other than a Broken Arrow incident, and were then subsequently identified as a Broken Arrow incident, including but not limited to:
- a. Causes and immediate responses to the Broken Arrow incidents, who made the immediate decisions, and who acted out the immediate actions;
  - b. What the launch status of the nuclear armaments was when each Broken Arrow incident occurred;
  - c. Any degradation of the safeguards against accidental launch during the Broken Arrow incident, if applicable;
  - d. Any post-incident inspections of armament systems which were aimed at preventing similar occurrences;
  - e. Any physical measures taken to prevent similar occurrences;
  - f. Any relevant protocols and rules which were in place at the time of the incident and which were violated.

## **II. Application for Expedited Processing**

We request expedited processing pursuant to 5 U.S.C. 522(a)(6)(e); 22 C.F.R. §171.12(b); 28 C.F.R. § 16.5(d); 32 C.F.R. §286.4 (d)(3); and 32 C.F.R. § 1900.34(c). There is a "compelling need" for these records because the information requested is urgently needed by an

organization primarily engaged in disseminating information in order to inform the public about actual or alleged Federal Government activity. 5 U.S.C. § 552 (a)(6)(E)(v); see also 22 C.F.R. §171.12(b)(2); 28 C.F.R. § 16.5(d)(1)(ii); 32 C.F.R. §286.4(d)(3)(ii); 32 C.F.R. § 1900.34 (c)(2). Nothing is more important to the safety of the U.S. public than the security of the American nuclear arsenal. Knowing that it is safe and secure and cannot be launched or detonated accidentally is critically important to every man, woman and child in this country, and is urgently needed to allay any fears that the American public may have. In addition, the records sought relate to a “matter of widespread and exceptional media interest in which there exist possible questions about the government’s integrity which affect public confidence”. 28 C.F.R. § 16.5(d)(1)(iv).

### **III. Application for Waiver or Limitation of Fees**

We request a waiver of search, review, and duplication fees on the grounds that disclosure of the requested records is in the public interest because it “is likely to contribute significantly to public understanding of the operations or activities of the government and is not primarily in the commercial interest of the requester.” 5 U.S.C. §552(a)(4)(A)(iii); 22 C.F.R. § 171.17(a); *see also* 28 C.F.R. §16.11(k)(1); 32 C.F.R. § 286.28(d); 32 C.F.R. § 1900.13(b)(2).

As discussed above, numerous news accounts reflect the considerable public interest in the records we seek. The records sought in the instant Request will contribute significantly to public understanding of the security and safety of the nation’s nuclear arsenal. Moreover, disclosure is not in Speaking Truth to Power’s commercial interest. Any information disclosed by Speaking Truth to Power as a result of this Request will be available to the public at no cost. Speaking Truth to Power will also provide any information obtained pursuant to this request to Global Zero and the Center for Arms Control and Non-Proliferation. Both of these organizations are engaged in analyzing and interpreting similar information for the public (see [www.centeforarmscontrolandnonproliferation.org](http://www.centeforarmscontrolandnonproliferation.org) and [www.globalzero.org](http://www.globalzero.org)) Thus a fee waiver would fulfill Congress’s legislative intent in amending FOIA. *See Judicial Watch v. Rosotti*, 326 F.3d 1209, 1312(D.C. Cir. 2003) (“Congress amended FOIA to ensure that it be “liberally construed in favor of waivers for noncommercial requesters.” (citation omitted)); OPEN Government Act of 2007, Pub. L. No. 110-175, 121 Stat. 2524, § 2 (Dec. 31, 2007) (finding that “disclosure, not secrecy, is the dominant objective of the Act,” but that “in practice, the Freedom of Information Act has not always lived up to the ideals of that Act”).

We also request a waiver of search and review fees on the grounds that Speaking Truth to Power qualifies as a “representative of the news media” and the records are not sought for commercial use. 5 U.S.C. § 552 (a)(4)(A)(ii); 28 C.F.R. § 16.11(d). Accordingly, we request a waiver of all fees associated with the processing of the Request. 5 U.S.C. § 552 (a)(4)(A)(iii); *see also* 32 C.F.R. §286.28(e)(&); 32 C.F.R. § 1900.13 (i)(2); 22 C.F.R. § 171.15(c); 28 C.F.R. § 16.11(d) (search and review fees shall not be charged to “representatives of the news media”).

Speaking Truth to Power meets the statutory and regulatory definitions of a “representative of the news media” because it is an “entity that gathers information of potential interest to a segment of the public, uses its editorial skills to turn raw materials into a distinct

work, and distributes that work to an audience.” 5 U.S.C. § 552 (a)(4)(A)(ii); *see also Nat'l Sec. Archive v. Dep't of Def.*, 880 F.2d 1381, 1387 (D.C. Cir. 1989); *cf. ACLU v. Dep't of Justice*, 321 F. Supp. 2d 24, 30 n.5 (D.D.C.2004) (finding non-profit public interest group to be “primarily engaged in disseminating information”). Speaking Truth to Power is a “representative of the news media” for the same reasons as it is “primarily engaged in disseminating information.” *See Elec. Privacy Info. Ctr. V. Dep't of Def.*, 241 F. Supp. 2d 5, 10-15 (D.D.C. 2003) (finding non-profit public interest group that disseminated an electronic newsletter and published books was a “representative of the news media” for purposes of FOIA); *see supra*, section II. The legislative history of the fee waiver standard established by the 1974 amendments “clearly indicate” that Congress intended to create a public interest/benefit test for granting FOIA fee waivers that was to be “liberally construed”. *Ettlinger v. FBI*, 596 F. Supp. 867, 872 (D. Mass. 1984) Also, as mentioned above, Speaking Truth to Power will also provide any information obtained pursuant to this request to Global Zero and the Center for Arms Control and Non-Proliferation. Both of these organizations are engaged in analyzing and interpreting similar information for the public (*see* [www.centeforarmscontrolandnonproliferation.org](http://www.centeforarmscontrolandnonproliferation.org) and [www.globalzero.org](http://www.globalzero.org))

Pursuant to applicable statute and regulations, we expect a determination regarding expedited processing within 10 calendar days, *See* 5 U.S.C. § 552 (a)(6)(E)(ii)(I); 22 C.F.R. § 171.12(b); 28 C.F.R. 16.5(d)(4); 32 C.F.R. § 286.4(d)(3); 32 C.F.R. § 1900.21(d).

If the Request is denied in whole or in part, we ask that you justify all deletions by reference to a specific FOIA exemption. We expect the release of all segregable portions of otherwise exempt material. We reserve the right to appeal a decision to withhold any information or to deny a waiver of fees.

Thank you for your prompt attention to this matter. Please furnish all applicable records to:

I affirm that the information provided supporting the request for expedited processing is true and correct to the best of my knowledge and belief.

Sincerely,



Department of Energy  
National Nuclear Security Administration  
Office of the General Counsel  
P. O. Box 5400  
Albuquerque, NM 87185



OCT 30 2014

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

This letter is a final response to your January 13, 2014 Freedom of Information Act (FOIA) request for:

- 1. Any records pertaining to Broken Arrow incidents occurring after September 19, 1980, including but not limited to:**
  - a. Causes and immediate responses to the Broken Arrow incidents, who made the immediate decisions, and who acted out the immediate actions;
  - b. What the launch status of the nuclear armaments was when each Broken Arrow incident occurred;
  - c. Any degradation of the safeguards against accidental launch during the Broken Arrow incident, if applicable;
  - d. Any post-incident inspections of armament systems which were aimed at preventing similar occurrences;
  - e. Any physical measures taken to prevent similar occurrences;
  - f. Any relevant protocols and rules which were in place at the time of the incident and which were violated.
  
- 2. Any records pertaining to Broken Arrow incidents which had occurred earlier than September 19, 1980 and had been omitted or are otherwise missing from the Department of Defense documents titled "Narrative Summaries of Accidents Involving U.S. Nuclear Weapons," including but not limited to:**
  - a. Causes and immediate responses to the Broken Arrow incidents, who made the immediate decisions, and who acted out the immediate actions;
  - b. What the launch status of the nuclear armaments was when each Broken Arrow incident occurred;
  - c. Any degradation of the safeguards against accidental launch during the Broken Arrow incident, if applicable;
  - d. Any post-incident inspections of armament systems which were aimed at preventing similar occurrences;
  - e. Any physical measures taken to prevent similar occurrences;
  - f. Any relevant protocols and rules which were in place at the time of the incident and which were violated.
  
- 3. Any records pertaining to events which involved nuclear armaments, were first identified as something other than Broken Arrow incident, and were then subsequently identified as a Broken Arrow incident, including but not limited to:**
  - a. Causes and immediate responses to the Broken Arrow incidents, who made the immediate decisions, and who acted out the immediate actions;
  - b. What launch status of the nuclear armaments was when each Broken Arrow incident occurred;
  - c. Any degradation of the safeguards against accidental launch during the Broken Arrow incident, if applicable;
  - d. Any post-incident inspections of armament systems which were aimed at preventing similar occurrences;
  - e. Any physical measures taken to prevent similar occurrences;
  - f. Any relevant protocols and rules which were in place at the time of the incident and which were violated.

We contacted the Sandia Field Office (SFO), oversight for Sandia National Laboratories (SNL) about your request. SFO searched but did not locate any responsive records. SFO asked SNL to search for responsive records. SNL searched and located (13) responsive records, which are provided on the enclosed CD.

The following (13) documents are provided with deletions pursuant to 5 USC § 552(b)(3) (Exemption 3) and 5 U.S.C. § 552(b)(1) (Exemption 1) of the Freedom of Information Act (FOIA). **See justifications below.**

**D00033903**-*Broken Arrow Examination*

**D00033904**-*Development Report*

**D00033905**-*Analysis of the Safety Aspects of the MK39 Mod 2 Bombs involved in the B-52G crash near Greensboro, NC*

**D00033906**-*Table of component behavior, fusing and firing systems*

**D00033907**-*Flash Message*

**D00033908**-*Broken Arrow Thule*

**D00033909**-*Development Report*

**D00033910**-*Broken Arrow Examination*

**D00033911**-*Summary of Nuclear Weapon/Material accidents and related EOD activities*

**D00033912**-*Accident Report of the B-52G near Seymour Johnson AFB, SC*

**D00033914**-*Sandia Corporation*

**D00033915**-*Aerial view of recovery operations*

**D00033916**-*United States Nuclear Weapon Accidents*

Exemption 3 exempts from disclosure information “specifically exempted from disclosure by statute (other than section 552(b) of this title), provided that such statute (A) requires that the matters be withheld from the public in such a manner as to leave no discretion on the issue, or (B) establishes particular criteria for withholding or refers to particular types of matters to be withheld....” The Atomic Energy Act (AEA) of 1954, as amended, 42 USC § 2011 et seq., is an Exemption 3 statute. Sections 141-146 of this Act (42 USC §§ 2161-2166) prohibit the disclosure of information concerning atomic energy defense programs that is classified as either Restricted Data (RD) or Formerly Restricted Data (FRD) pursuant to the AEA, as amended. The portions deleted from the subject document pursuant to Exemption 3 contain information about weapon design classified as FRD. Disclosure of the exempt data could jeopardize the common defense and the security of the nation.

Additional information deleted from the report includes items, information, and technical data outlined in 22 CFR § 120-130, the International Traffic in Arms Regulations (ITAR). Pursuant to 10 USC § 140(c) as administered through 32 CFR § 250, “Withholding of Unclassified Technical Data from Public Disclosure,” such information identified in the ITAR is exempt from the Freedom of Information Act (FOIA) (Exemption 3). Hence, the information identified as being subject to the ITAR has been redacted from the enclosed report.

To the extent permitted by law, the DOE pursuant to 10 CFR § 1004.1, will make available records it is authorized to withhold under the Freedom of Information Act (FOIA) whenever it determines that such disclosure is in the public interest. With respect to the information withheld from disclosure pursuant to Exemption 3, the DOE has no further discretion under the FOIA or DOE regulations to release information currently and properly classified and/or safeguarded pursuant to the AEA, as amended.

Title 5, United States Code, §552(b)(1) (5 U.S.C. 552(b)(1) (Exemption 1), provides that an agency may exempt from disclosure matters that are "(A) specifically authorized under criteria established by an Executive order to be kept secret in the interest of national defense or foreign policy and (B) are in fact properly classified pursuant to such Executive order. ... " The portions deleted from the subject document pursuant to Exemption 1 contain information about United States Government programs for safeguarding nuclear materials/facilities and are classified under § 1.4 (f) of Executive Order 13526 (E.O.13526). It has been determined that release of the information could reasonably be expected to cause damage to the national security.

Pursuant to 10 CFR § 1004.6(d), Dr. Andrew P. Weston-Dawkes, Director, Office of Classification, DOE Office of Health, Safety and Security, is the official responsible for the denial of the DOE classified information.

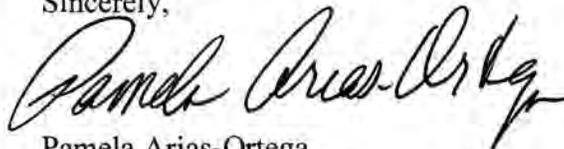
Pursuant to 10 CFR § 1004.7(b)(2), Mr. Alan G. Rittel, Empowered Official, NNSA Nuclear Explosive Safety Division, is responsible for the denial of the ITAR information.

The Department of Defense (DoD), Freedom of Information Division, James P. Hogan, Pentagon, Washington, DC, is the official responsible for the denial of the DoD classified information regarding Exemption 1 contained within the enclosed responsive documents.

You may appeal the withholding of Exemption 1 & 3 information pursuant to 10 CFR § 1004.8. Such an appeal must be made in writing within 30 calendar days after receipt of this letter, addressed to the Director, Office of Hearings and Appeals, HG-1, U.S. Department of Energy, 1000 Independence Avenue SW, L'Enfant Building, Washington, DC 20585. Your appeal must contain a concise statement of the grounds for the appeal and a description of the relief sought. Please submit a copy of this letter with the appeal. Please clearly mark both the envelope and the letter "Freedom of Information Appeal." Thereafter, judicial review will be available to you in the District of Columbia or in the district where (1) you reside; (2) you have your principal place of business; or (3) the Department's records are situated. There are no fees chargeable to you for processing this request.

If you have questions concerning the processing of this request, please email Roberto Marquez at [roberto.marquez@nnsa.doe.gov](mailto:roberto.marquez@nnsa.doe.gov), or write to the address above and reference Control Number FOIA 14-00091-R in your communication.

Sincerely,



Pamela Arias-Ortega  
Authorizing and Denying Official

Enclosure

bcc:  
Jennifer Bitsie, SFO

File No: FOIA 14-00091-R

Document Name

FILE NO.  
FOIA 14-00091-R

CONCURRENCE

1355 GC  
HERNANDEZ  
*WHS*  
10/24/14

GC  
ARIAS-ORTEGA  
*PAO* *w/ 1 revision on p. 2*  
10/30/14

~~SECRET~~

# BROKEN ARROW EXAMINATION

D00033195

D00033903

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

5 15033

D.C. Hix, AU-63 DATE 9/30/14

## MASON & HANGER - SILAS MASON CO., INC. CLARKSVILLE FACILITY FORT CAMPBELL, KENTUCKY

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW

1. Access Date: 07/14/2014

2. Determination:  UNCLASSIFIED

3. Authority:  1.05  1.06  1.07  1.08  1.09  1.10  1.11  1.12  1.13  1.14  1.15  1.16  1.17  1.18  1.19  1.20  1.21  1.22  1.23  1.24  1.25  1.26  1.27  1.28  1.29  1.30  1.31  1.32  1.33  1.34  1.35  1.36  1.37  1.38  1.39  1.40  1.41  1.42  1.43  1.44  1.45  1.46  1.47  1.48  1.49  1.50  1.51  1.52  1.53  1.54  1.55  1.56  1.57  1.58  1.59  1.60  1.61  1.62  1.63  1.64  1.65  1.66  1.67  1.68  1.69  1.70  1.71  1.72  1.73  1.74  1.75  1.76  1.77  1.78  1.79  1.80  1.81  1.82  1.83  1.84  1.85  1.86  1.87  1.88  1.89  1.90  1.91  1.92  1.93  1.94  1.95  1.96  1.97  1.98  1.99  2.00

Authority: David Hamrin DRLA AU-63

3rd Review Date: 7/16/14

Authority: DD

Signature: P.L. Shankle

~~OFFICIAL USE ONLY~~

May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and Category: Exemption 6, Personal Privacy

Department of Energy review required before public release.

Name/Org: Veronica Kornemann, Classification Technical Reviewer, SNL/NM

Rev: Org 4255, SNL/NM

Date: 6/12/2014 Guidance: N/A

UNCLASSIFIED  
FEB 15 2015  
3423

DOCUMENT ACCOUNTABILITY DATA			
RS or X No. (A)	Copy No. & Series (V)		
RS-3427-8181	236		
Short Title (C) *			
MHSMCFPPRBA-			
Class. (B)	Doc. Date (G)	Limit Code	Pages (H)
SRD	2/16/65	D	27

~~ATOMIC WEAPON DATA~~  
~~CATEGORY SIGMA 3~~

Control No. CB5-16,650  
This document consists of 27 pages  
No. 11 of 20 copies, series A

Classified by: Veronica Kornemann

Title/Org: Classification Technical Reviewer, SNL/NM

Date Classified: June 12, 2014

Derived From: CG-HR-4, 09/10/12, DOE OC and TCG-NAS-2, 03/07/1997, DOE OC

~~RESTRICTED DATA~~

THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.

**FEBRUARY 16, 1965**  
~~SECRET~~

CONTROL NO. 8165

Group I

Excluded from automatic  
downgrading and declassification  
20140007759.

27p.

RS 3427 8181  
c. 11A

On December 8, 1964, a B-58 Aircraft assigned to Bunker Hill Air Force Base, Indiana, while participating in an alert exercise at this base, was involved in an accident. [The aircraft was carrying a B-53 internally and four (4) B-43's externally.] The landing gear of the aircraft collapsed while attempting to maneuver the aircraft into take-off position. With the collapse of the landing gear, the aircraft was immediately engulfed in flames.

The examination and disposition of residues involving the B-53 are a subject of another report. This report concerns itself with the examination and disposition of residues of the four (4) B-43's involved in the accident.

Sandia Technical Library-NM



RS-3427/8181  
c. 11A

INVENTORIED  
2075

CONDITION OF WEAPONS

The general condition of the B-43's involved in the accident are enumerated below (information was obtained from AEC representatives at the site of the accident):

43 BA, S/N 92426 (See photographs - Pages 7, 8, 9, 10)

DOE  
b(3)

[Redacted]

plutonium contamination present.

Deleted

There was little

[Redacted] present. Considerable uranium contamination was

[Redacted] The Nose, S/N 92646 and the Shape Component, S/N 20921 were essentially consumed by the fire.

43 BA, S/N 86766 (See photographs - Pages 11, 12, 13)

DOE  
b(3)

[Redacted]

Deleted

There was little plutonium contamination present.

erable uranium contamination was present.

Consid-

DO NOT DESTROY

RETURN TO

LIBRARY VAULT

[Redacted] Deleted

DOE  
b(3)

The Nose, S/N 35515 and the Shape Component, S/N 26111 were essentially consumed by the fire.

B-43 BA, S/N 93315 (See photographs - Pages 14, 15, 16, 17, 18, 19, 20, 21)

The Basic Assembly, with its components, were left in good condition along with the Nose, S/N 12135 and the Shape Component, S/N 33364. This unit was disassembled at Bunker Hill. The Nose and Shape Component were removed.

[Redacted] Deleted

DOE  
b(3)

B-43 BA, S/N 96642 (See photographs - Pages 22, 23, 24, 25, 26)

[Redacted] Deleted

DOE  
b(3)

The Nose, S/N 17333 and the Shape Component, S/N 20633 associated with the Weapon were partially consumed by fire. The Nose and Shape Component were removed.

[Redacted] Deleted

DOE  
b(3)

PACKAGING OF RESIDUES AT ACCIDENT SITE

The residue (except for the H.E. which was burned at Bunker Hill) from the aforementioned weapons was shipped from Bunker Hill to Clarksville Facility in containers identified as indicated below:

1. B-43, S/N 92426 [Redacted]

a. Type 79 Pit in Type 2A Container (2/1)

[Redacted] Deleted

DOE  
b(3)

c. Fuzing and Firing components with part of case section in sealed AN Can (2/3)

[Redacted] Deleted

DOE  
b(3)

~~SECRET RD~~

2. B-43, S/N 86766

- a. Type 79 Pit in Type 2A Container (3/1)
- b. Case residue in sealed AN Can (3/2)
- c. Case residue in sealed AN Can (3/3)
- d. Remains of Nose and Shape Component in sealed AN Can (3/4)
- e. Case residue in sealed AN Can (3/5)
- f. Case residue in sealed AN Can (3/6)
- g. Remains of Fuzing and Firing components with part of case section in sealed AN Can (3/7)
- h. Case residue in sealed AN Can (3/8)

DOE  
b(3)

Deleted

3. B-43, S/N 93315

- a. Type 79 Pit in Type 2A Container (4/1)

DOE  
b(3)

Deleted

- c. Nose, Shape Component, and case section containing Fuzing and Firing components in a 4' x 4' x 4' wooden box (4/3)

Deleted

DOE  
b(3)

- e. Shape Component fins in pasteboard box (4/5)

~~SECRET RD~~

4. B-43, S/N 96642

Deleted

DOE  
b(3)

b. Type 79 Pit in Type 2A Container (5/2)

Deleted

DOE  
b(3)

d. Nose, Shape Component, and case section containing Fuzing and Firing components in 4' x 4' x 4' wooden box (5/4)

Deleted

DOE  
b(3)

POSTMORTEM

On February 16, 1965, postmortem of weapon residues was held at Clarksville Facility. The following individuals were present during the postmortem:

<u>Name</u>	<u>Organization</u>	<u>Name</u>	<u>Organization</u>
Lt. Adams, T. C. (observer)	Field Command DASA	Thne, Richard J.	M&H - Clarksville
Baker, E. L.	M&H - Clarksville	Kopansky, Ralph M.	AEC-CBO
Crain, John N.	M&H - Clarksville	Lampe, L. H.	M&H - Clarksville
Crismon, Wm. Jr. (observer)	M&H - Medina	Maj. Layne, William C. (observer)	Directorate of Nuclear Safety, USAF, Kirtland AFB, N. M.
Eager, Thomas A. F.	Sandia - Clarksville	Lewis, Clay	M&H - Clarksville
Elvebak, W. D.	AEC-CBO	Meacham, Jack R.	Sandia - Clarksville
Grewis, Eugene G. (observer)	NAVEODFAC - Indian Head, Md.	Mitten, Wayne B. Jr. (Mfg. Agency Rep)	ACF Industires Inc., Albuquerque, N. M.
Guier, L. M.	Sandia - Clarksville		
Hill, T. K. (Design Agency Representative)	Sandia, 1511, Albuquerque		

*orig  
all*

<u>Name</u>	<u>Organization</u>	<u>Name</u>	<u>Organization</u>
Pearson, James H.	M&H - Clarksville	Shipp, P. G. (Mfg. Agency Rep)	Union Carbide, Oak Ridge, Tenn.
CDR. Phillips, Edward G. (observer)	USN-QC Clarksville Base	Lt. Staples, Henry E. (observer)	USN-EOD Clarksville Base
Maj. Porter, Eugene R (observer)	SAC Hqs. (DM4E) Offutt AFB Omaha, Nebraska	Capt. Wadsworth, V. A. (observer)	USN-CO Clarksville Base
Rhoades, Earle D.	M&H - Clarksville	Lt. Watkins, James (observer)	NAVEODFAC, Indian Head, Md.
Schneider, Paul H. (AEC/ALO Rep)	AEC-ALO		

The following recommendations were made with respect to the disposition of the residue:

B43-O, S/N 86766

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Oak Ridge for burial: Containers 2 thru 8 (marked "BUNKER HILL RADIOACTIVE CONTAMINATED RESIDUE")
3. Ship to Oak Ridge, Y-12, for disposition: Special metal box (marked "BUNKER HILL SPECIAL RESIDUE")

B43-O, S/N 92426

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Oak Ridge, Y-12, for disposition: Deleted (marked "BUNKER HILL RESIDUE") DOD (b)(3)42 USC 2162
3. Ship to Oak Ridge for burial: Containers 3 and 4 (marked "BUNKER HILL RADIOACTIVE CONTAMINATED RESIDUE")

Deleted

DOE  
b(3)

Deleted

~~SECRET RD~~

Deleted

DOE  
b(3)

~~SECRET RD~~

Deleted

Deleted

~~SECRET RD~~

Deleted

~~SECRET RD~~

DOE  
b(3)

Deleted

~~SECRET~~

~~D00033196~~  
D00033904

~~CONFIDENTIAL COPY~~  
~~CONFIDENTIAL COPY~~

3428-1

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: 07/11/2014	DETERMINATION (CIRCLE NUMBER(S))
Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DD	<input type="checkbox"/> 1. CLASSIFICATION RETAINED
Name: David Hamrin DRL4 AU-63	<input type="checkbox"/> 2. CLASSIFICATION CHANGED TO:
2 <sup>nd</sup> Review Date: 7/15/2014	<input type="checkbox"/> 3. CONTAINS NO DOE CLASSIFIED INFO
Authority: DD	<input type="checkbox"/> 4. COORDINATE WITH: DOD
Name: R.L. Shankle	<input type="checkbox"/> 5. CLASSIFICATION CANCELED
	<input type="checkbox"/> 6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY):

REF ID: A66500  
FEB 1965  
Gen. Sec. 1.1.1.1

**DEVELOPMENT**

**REPORT**

CENTRAL TECHNICAL FILE  
SPL-AR-65-5  
AR 7356  
R-15

~~RESTRICTED DATA~~ This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited.  
~~SANDIA CORPORATION~~  
~~LIVERMORE CALIF.~~ ~~ALBUQUERQUE • N. MEX.~~

~~SPECIALLY HANDLED - NO DISSEMINATION~~

~~SECRET~~

2014007759

DC 1002.1 (7-01)  
DRA

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

DC Hix, AU-63 DATE 9/30/2014

~~SECRET~~  
~~RESTRICTED DATA~~

SCL-DR-65-5

REPORT OF MINUTEMAN ACCIDENT  
INVOLVING A MK 11 RE-ENTRY VEHICLE  
AT SITE LIMA II, DECEMBER 5, 1964 ~~(CFRD)~~

R. K. Petersen, 8141-2  
Sandia Corporation, Livermore Laboratory

~~AEC ATOMIC WEAPON DATA SIGMA 1~~

RS 8232-2/6599

January 1965

INVENTORIED

SEP 14 1965

3233

ABSTRACT ~~(CFRD)~~

At 3:00 PM (MST), December 5, 1964, a retrorocket fired on a MINUTEMAN missile at Site Lima II, Ellsworth AFB, South Dakota. This missile, under the command of the 44 Strategic Missile Wing, was on strategic alert and was fitted with a Mk 11 Re-entry Vehicle containing a Mk 56 Mod 1 warhead. The re-entry vehicle was dislodged and fell approximately 75 feet to the floor of the silo. This report covers the investigation conducted by AEC representatives at the accident site.

~~RESTRICTED DATA~~

~~This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited.~~

GROUP 1 - EXCLUDED FROM AUTOMATIC  
DOWNGRADING AND DECLASSIFICATION

This documents consists of 22 pages.  
No. 37 of 44 copies, Series A.

**SPECIFIED INFORMATION ONLY**

This report was prepared for distribution within Sandia Corporation and the external distribution shown. No further external distribution of this report or dissemination of the information contained in the report shall be made without the approval of the issuing organization.

TD  
RR4

T.P.O. R. 35

~~SECRET~~  
~~RESTRICTED DATA~~

CONTENTS

	<u>Page</u>
Introduction	3
Investigating Parties	3
Condition of Weapon	14
Recovery Operation	17
Security and Public Relations	21
Preliminary Post-Mortem Results	21
Summary and Conclusions	21

ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>
1	Re-entry Vehicle Attitude-Control Rockets	5
2	Abrasions on the First and Second-Stage Rocket Motors	6
3	Arming, Firing, and Attitude Control Assembly (Top View)	7
4	Arming, Firing, and Attitude Control Assembly (Bottom View)	8
5	Arming, Firing, and Attitude Control Assembly (Side View)	9
6	Re-entry Vehicle on Silo Floor	10
7	Evidence of Fired Retrorocket	12
8	Aft End of Re-entry Vehicle	13
9	Forward End of Re-entry Vehicle	15
10	Step Joint in Flare Section	16
11	Re-entry Vehicle Clearing Silo	18
12	Re-entry Vehicle During Transfer to Van	19
13	Re-entry Vehicle in Van	20

~~SECRET~~  
~~RESTRICTED DATA~~

REPORT OF MINUTEMAN ACCIDENT INVOLVING  
A MK 11 RE-ENTRY VEHICLE AT SITE LIMA II, DECEMBER 5, 1964

Introduction

At 3:00 PM (MST), December 5, 1964, a retrorocket fired on a MINUTEMAN missile at Site Lima II, Ellsworth AFB, South Dakota. This missile, under the command of the 44 Strategic Missile Wing, was on strategic alert and was fitted with a Mk 11 Re-entry Vehicle (RV) containing a Mk 56 Mod 1 warhead. The RV was dislodged and fell approximately 75 feet to the floor of the silo. The missile, warhead, and Arming, Firing, and Attitude Control components (AF/AC), were in the safe condition at the time of the accident.

Investigating Parties

Around 8:00 PM (MST), December 5, Mr. D. P. Dickason, ALO, was notified by the Director of Nuclear Safety at Kirtland AFB that some squibs had fired on a MINUTEMAN missile and that a potential Broken Arrow had been declared. Mr. Dickason subsequently notified Lawrence Radiation Laboratory (LRL) and Sandia Corporation (SC) of the situation.

By midnight it was still unclear if any action by the laboratories was needed. At 6:00 AM (PST), December 6, 1964, Mr. D. M. Olson, Sandia Corporation, Sandia Laboratory (SCSL), and Mr. Dickason called Mr. R. K. Petersen, Sandia Corporation, Livermore Laboratory (SCLL), and stated that the RV had fallen 75 feet to the silo floor. They informed him that the Director of Nuclear Safety at Kirtland AFB was sending a team of observers to Ellsworth AFB and that AEC/DMA wanted an ALO representative to accompany them. It was decided that an SCLL representative should meet the team in Denver and proceed to Ellsworth AFB.

It was also decided at this time that an LRL representative probably was not required. Mr. M. D. Martin, LRL, who had been previously informed of the situation, was contacted and concurred. He asked to be notified of the conditions at the silo and stated that he would then send someone if the situation warranted it.

The group of observers consisted of Mr. D. P. Dickason, AEC/ALO; Lt. Col. J. O. Mitchell, USAF/DNS; Maj. H. B. Lacy, USAF/DNS; Capt. D. J. Loosley, USAF/AFWL; and Mr. R. K. Petersen, SCLL. The group arrived at Ellsworth AFB, South Dakota, at 3:45 PM (MST), December 6, 1964, and went immediately to the office of Lt. Col. J. W. Eskridge, Director of Safety, 44 Strategic Missile Wing. There the group was briefed, as follows:

At 2:00 PM (MST) December 5, 1964, two airmen entered Lima II to investigate an IZ (inner zone) security alarm. They opened the personnel access door and descended to the equipment room to conduct a routine check of the IZ and

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

OZ (outer zone) security circuitry. The check consisted, in part, of removing a fuse and observing the operation of a relay to determine continuity. When the fuse had been removed and reinserted the third time there was a violent explosion. This explosion occurred at approximately 3:00 PM (MST). About one hour later the two airmen returned in the company of a third airman and after a cursory inspection through openings in the launch tube reported that the RV was missing.

The group of observers then reported to the Command Post and Col. V. M. Cloyd, Commander, 44 Strategic Missile Wing. Here they were able to monitor, via remote hookup, the progress of the explosive ordnance (EOD) team as it entered the silo at 5:00 PM (MST). The EOD team was to:

1. Safe the ignitors on the missile;
2. Disconnect the ignitor batteries at the J-Box;
3. Safe and remove the RV attitude-control rockets (which were still lying on top of the missile) (Figure 1); and
4. Inspect the RV at the bottom of the silo. (This was the first close look at the RV.)

After completion of items 1, 2, and 3 Capt. M. M. Costa, 2701 EOD, Ellsworth AFB, and Capt. E. S. Tschirhart, OOAMA, Hill AFB, descended to the bottom of the silo. They reported:

1. Some abrasions were present on the first and second stage rockets (Figure 2);
2. Debris from the exit nose cone was present at the missile support ring Number 1;
3. The "firing set" was lying on the floor 6 feet from the RV (this was later identified as the AF/AC) (Figures 3, 4, and 5);
4. No contamination was indicated by monitoring equipment; and
5. The RV was damaged and lying partially under one of the base legs of the missile support ring. (Figure 6)

After completion of this operation the silo was secured and the observers adjourned for the day.

At 8:00 AM December 7, the observers met with Col. J. V. Farley, 341 SMW, Malmstrom AFB, and offered their services. Col. Farley was President of the 15th Air Force Accident Investigation Board that had been formed to investigate this accident. He invited the group to attend the briefing the EOD was about to present.

The EOD team leader, Capt. Tschirhart, presented his group's observations with the aid of color slides taken during the inspection the previous night.

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~



~~SECRET~~  
~~RESTRICTED DATA~~

Figure 1. Re-entry Vehicle Attitude-Control Rockets

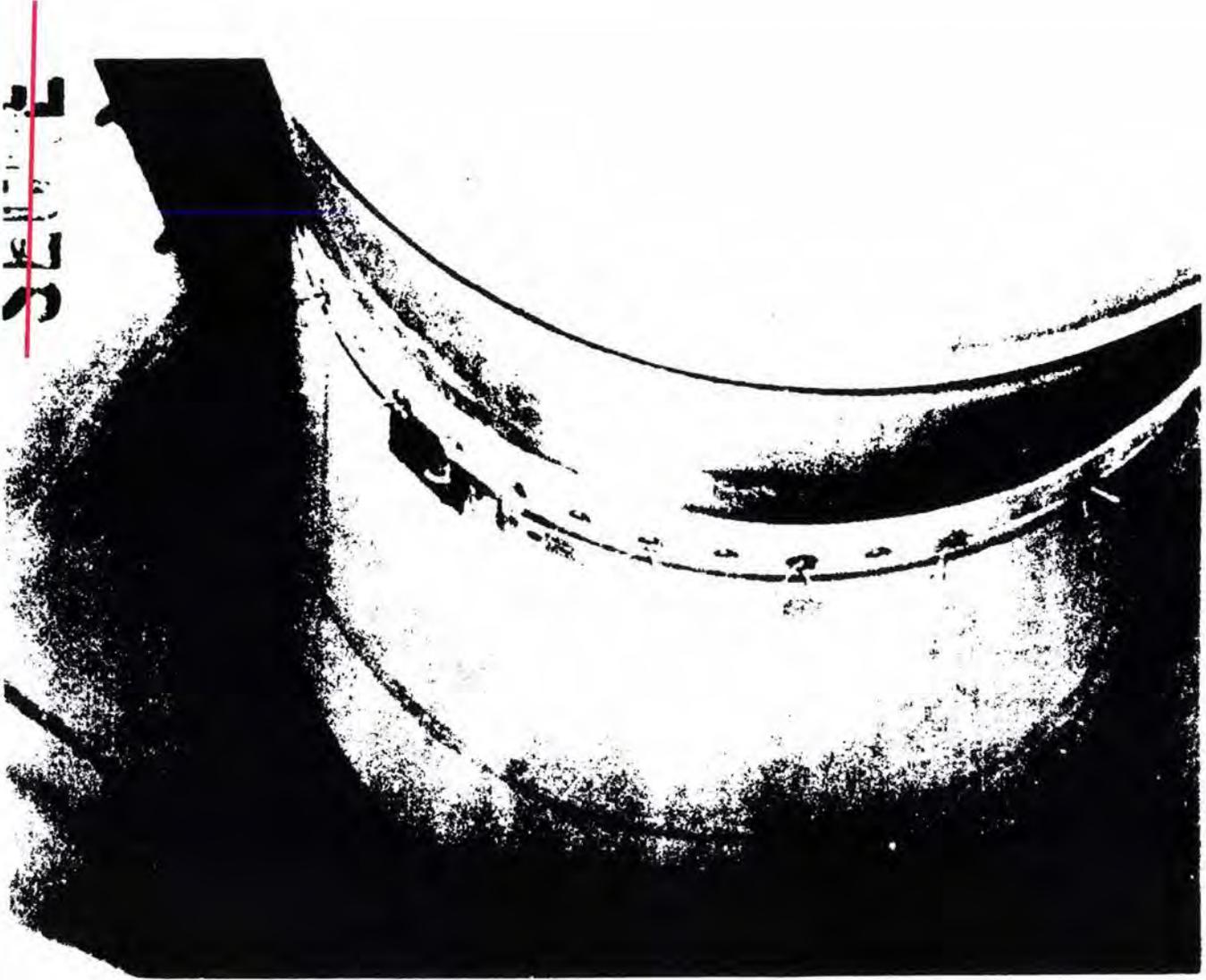


Figure 2. Abrasions on the First and Second-Stage Rocket Motors

~~SECRET~~

~~SECRET~~  
RESTRICTED DATA

~~SECRET~~  
RESTRICTED DATA

~~SECRET~~  
~~RESTRICTED DATA~~



~~SECRET~~  
~~RESTRICTED DATA~~

ELLSWORTH AFB, S. DAK.

Figure 3. Arming, Firing, and Attitude Control Assembly (Top View)

~~SECRET~~  
RESTRICTED DATA



~~SECRET~~  
RESTRICTED DATA

Figure 4. Aiming, Firing, and Attitude Control Assembly (Bottom View)



~~SECRET~~

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

ELLSWORTH AFB, S. DAK. 5 DEC 64

~~SECRET~~

Figure 5. Arming, Firing, and Attitude Control Assembly (Side View)

Missile Support  
R.L.R. Log

~~SECRET~~



ELLSWORTH AFB

AFHQ

~~SECRET~~

~~SECRET~~  
RESTRICTED DATA

~~SECRET~~  
RESTRICTED DATA

Figure 6. Re-entry Vehicle on Silo Floor

Capt. Tschirhart reported that one retrorocket had fired (Figure 7) and stated that this had caused the RV to separate and fall to the bottom of the silo. He reported that the "firing set" had broken loose and that the tritium bottle was exposed to view but seemed intact. Further, Capt. Tschirhart was certain that the warhead high explosive (HE) had broken up.

Deleted

DOE  
b(3)

(During this presentation, a faulty slide projector prevented the color slides from showing a clear picture of the situation.) Capt. Tschirhart recommended removing the RV with modified RV handling equipment and then disassembling and disposing of it somewhere at Ellsworth AFB.

After the briefing, Mr. Martin and Mr. N. D. Benedict of LRL were contacted. By using an EOD manual at each end of the telephone conversation, the following information was relayed:

1. The "firing set" had separated from the RV and was lying about 6 feet away;
2. Some water containing a yellow substance (perhaps sodium dichromate from the cooling system) was on the floor of the silo;
3. All monitoring equipment registered low readings (i. e., background only);
4. Avcoating and ablative material were shattered;
5. Deleted
6. The reservoir was intact;
7. Deleted
8. The sides of the case were not ruptured;
9. The nose of the RV was off and the forward end of RV was caved in and split;
10. Impact crystals were visible and some had peeled away;
11. The warhead was visible through the RV shell;
12. There was no apparent damage to the HE nuclear outer structure; however, the HE had probably fractured, and
13. The missile showed abrasive marks but no punctures.

DOE  
b(3)

DOE  
b(3)

It was apparent that items 1, 5, 6, and 7 did not correlate. It was also apparent to Mr. Martin and Mr. Benedict that item 12 might not be a good estimation of the situation. Mr. Benedict did not think that the HE had fractured but he felt other damage might have been done. They asked if a better look at the slides could be obtained.

~~SECRET~~



ELLSWORTH AFB, S DAK

Figure 7. Evidence of Fired Retrorocket

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~



~~S~~ ALLSWORTH AFB, S.D.K. 5 DEC 64

Figure 3. Air End of Re-entry Vehicle

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

Another slide projector was located and the slides reviewed. [REDACTED]

DOE  
b(3)

[REDACTED]  
Deleted

Mr.

Martin subsequently requested that the RV not be moved until Mr. Benedict arrived to assay the situation. The request was relayed and the Air Force agreed to wait.

Mr. Benedict arrived at 8:00 PM (MST) December 7, 1964. He was briefed and was shown the slides of the RV. The group of observers received permission to enter Lima II the next morning to conduct a first-hand investigation.

#### Condition of Weapon

On Tuesday, December 8, 1964 the observers went down the silo at Lima II. The following observations were made:

1. The missile had some minor abrasions on the side of the second and first stages;
2. The gas reservoir was intact but leaning to one side;
3. [REDACTED] Deleted
4. The electrical component deck had moved forward 1 to 2 inches and was dented;
5. [REDACTED] Deleted
6. The outer portions of the firing set had been blackened; and
7. The flare was flattened (with a major diameter of approximately 30 inches and a minor diameter of approximately 26 inches).

DOE  
b(3)

DOE  
b(3)

Mr. Benedict decided that the only way to bring the unit up would be nose down in a cargo net with the net strapped to the unit. [REDACTED]

DOE  
b(3)

[REDACTED] Deleted Any render-safe procedures would be done at a magazine, thereby minimizing personnel hazards.

The Accident Investigation Board met at 8:30 PM. Mr. Benedict briefed them as follows regarding his opinion of the condition of the warhead:

1. The step joint in the flare section had opened 30 to 50 mils, either because of sheared rivets, elongated holes, or both (Figure 10);

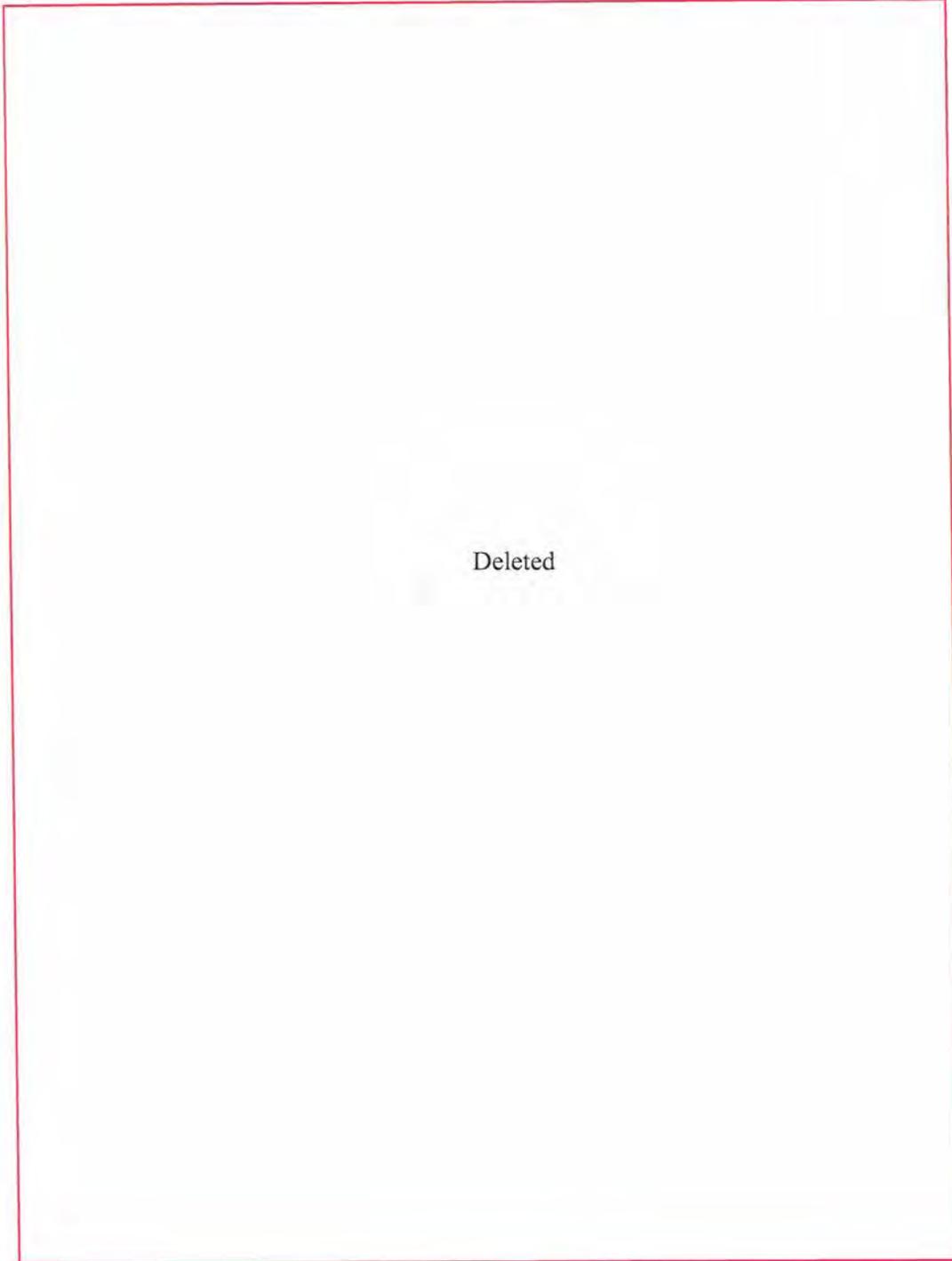
~~SECRET~~  
~~RESTRICTED DATA~~



~~SECRET~~  
~~RESTRICTED DATA~~

Figure 9. Forward End of Re-entry Vehicle

~~SECRET~~  
~~RESTRICTED DATA~~



Deleted

DOE  
b(3)  
Illegible

~~SECRET~~  
~~RESTRICTED DATA~~

2. The warhead pit seal had probably not opened (no alpha);
3. The reservoir was intact; and
4. Deleted DOE  
b(3)

The Board was also informed that the warhead was electrically inert since the power supplies had been torn away and there was no reason to suspect that any residual electrical charges were present.

#### Recovery Operation

Mr. Benedict presented his plans for RV recovery to the Accident Investigation Board. In conjunction with Mr. Benedict's plan, outlined previously, Mr. Petersen had recommended that the warhead should come up isolated electrically from the hoisting crane and other ground points since circulating ground currents in the area were undetermined. The rocket engineers now became alarmed at the possibility of static discharge, due to the cold, dry climate and the nylon cargo net. Mr. Petersen then recommended a high-resistance grounding circuit and confirmed its adequacy with Mr. J. S. Anderson, SCLL. The EOD built the device for attachment to the RV and the Board approved its use.

SAC, 15th Air Force, BSD, and others approved the plan for removal of the RV on December 9. A mobile crane was positioned over the silo. The RV was manually moved to a hoisting position and then raised slightly with the crane and a strap. A heavy nylon cargo net was slipped under the RV and securely strapped to the unit. The grounding cable and a safety rope were attached. The RV was then hoisted out in a nose-down attitude and cleared the silo at approximately 4:50 PM (MST) December 9, 1964 (Figure 11).

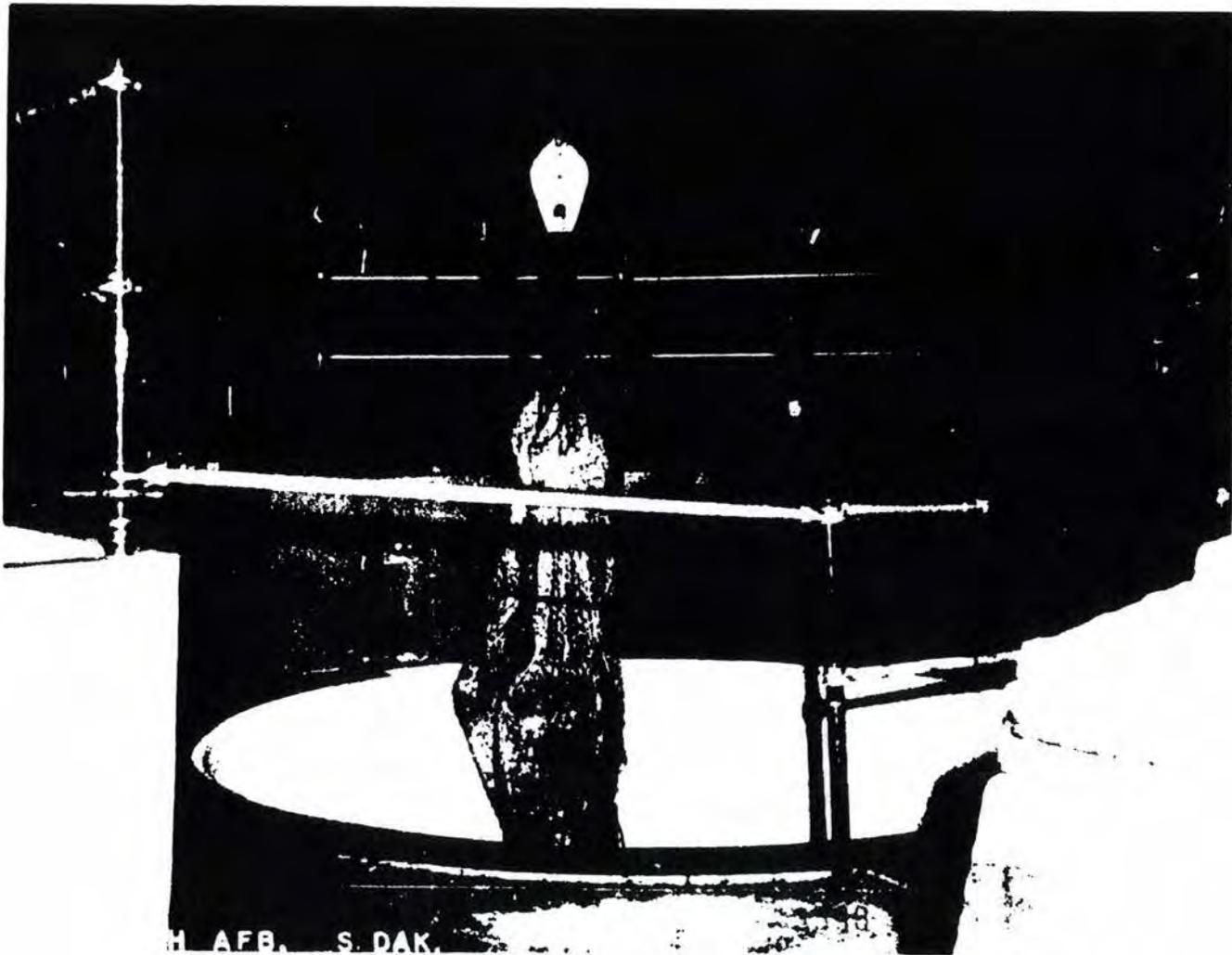
The RV was immediately transferred to an RV van, where it was suspended from an overhead, track-mounted hoist (Figure 12). The nose was rested on mattresses with the hoist used to maintain vertical alignment and cargo tie down straps used to prevent lateral motion (Figure 13). The RV was moved from Lima II to Ellsworth AFB on December 10.

Mr. Benedict had requested radiographers, a radiation safety specialist and their equipment, from LRL. Mr. W. T. Fritts and Mr. F. F. Sojka were the radiographers and Mr. G. E. Costella was the radiation safety specialist.

The RV arrived at Ellsworth AFB at 4:30 PM December 10 and was taken to a magazine for the render-safe procedures. At 9:00 PM the DT reservoir was removed and radiographs were taken to determine the condition of the internal parts. The radiographs were reviewed in the early hours of December 11 and indicated no cracked HE and no deformation of the pit. Deleted DOE  
b(3)

It was concluded that with some further disassembly and proper packaging the unit was safe for shipment to Medina.

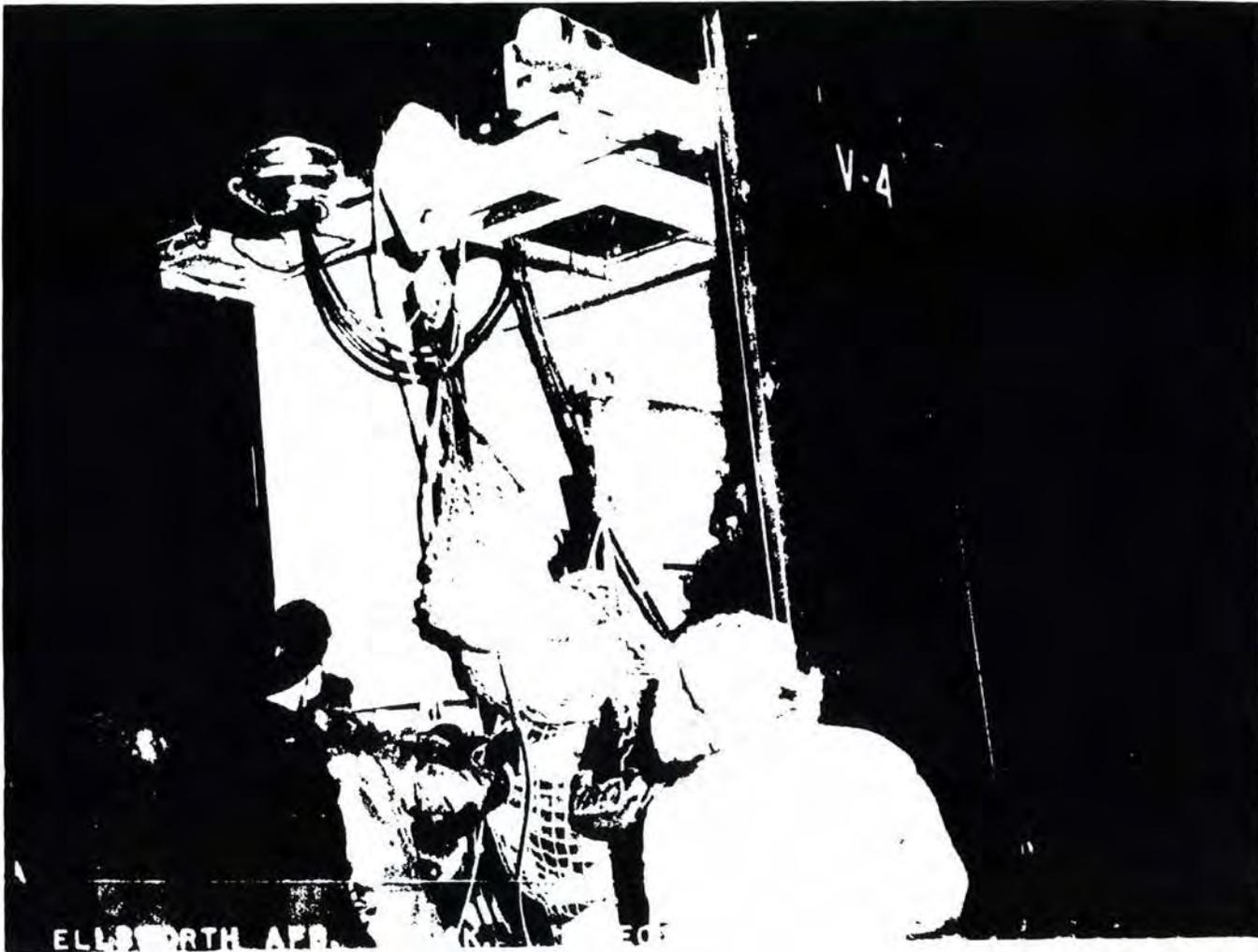
~~SECRET~~  
RESTRICTED DATA



~~SECRET~~  
RESTRICTED DATA

Figure 11. Rescuee View of Chamber

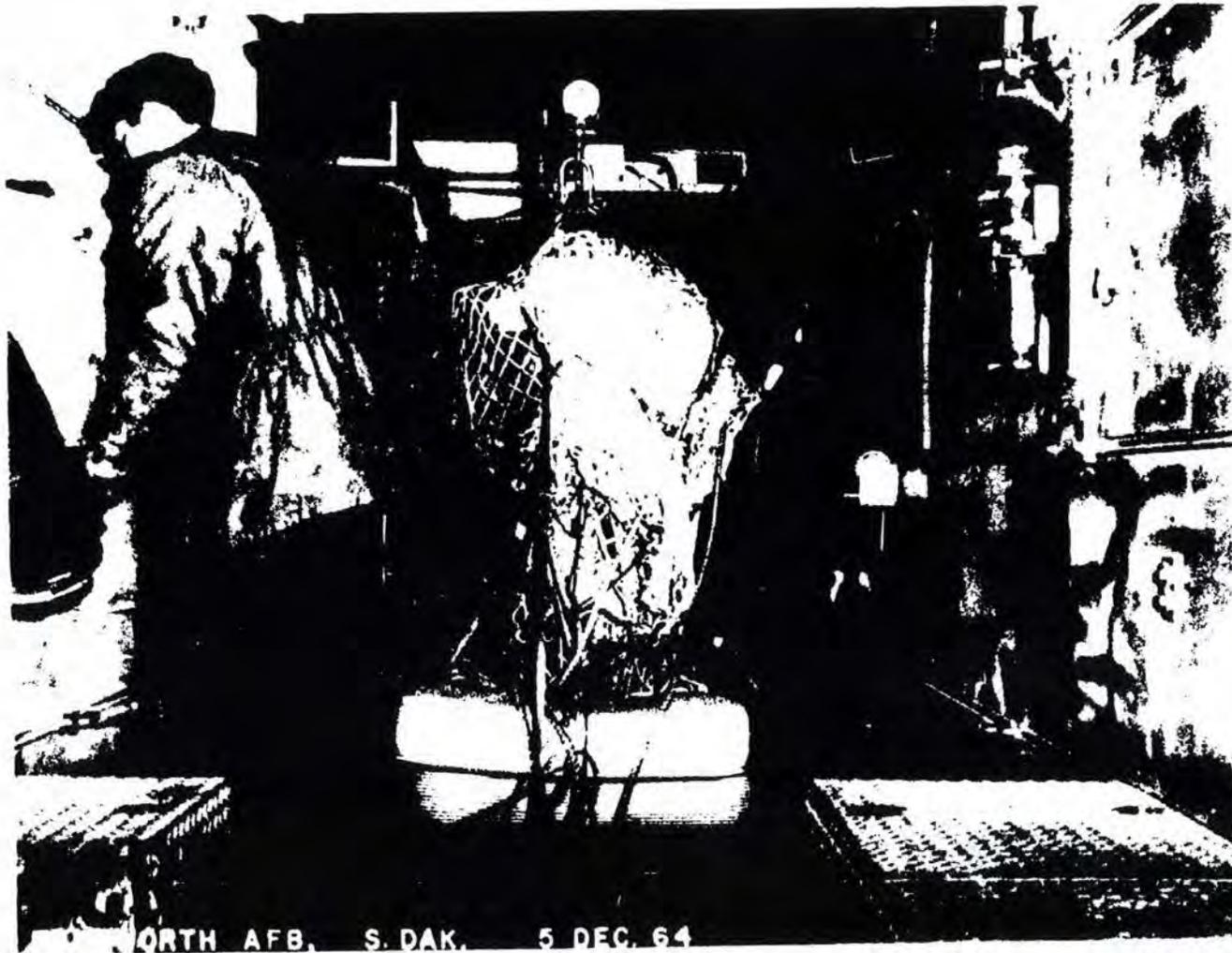
~~SECRET~~  
RESTRICTED DATA



~~SECRET~~  
RESTRICTED DATA

Figure 12. Rescue Vehicle During Transfer to Van

~~SECRET~~  
~~RESTRICTED DATA~~



~~SECRET~~  
~~RESTRICTED DATA~~

Figure 13. Recovery Vehicle (a Van)

~~SECRET~~  
~~RESTRICTED DATA~~

Deleted

This was subsequently done by the

DOE  
b(3)

EOD at Ellsworth AFB.

The group of observers, except for Mr. Benedict, left Ellsworth AFB at 2:45 PM (MST) on December 11. Mr. Benedict stayed to make arrangements for packing and shipping the unit to Medina.

#### Security and Public Relations

Security and public relations were handled by the 44 Strategic Missile Wing and Ellsworth AFB. No release concerning this incident was made to the press. The entire operation was handled in such a way that the nearby communities were not aware of and did not exhibit even a mild interest in the operation.

#### Preliminary Post-Mortem Results

At the time of this writing, a post-mortem had not been conducted. There is no reason to suspect that any of the warhead electrical components were actuated.

The warhead component deck will be shipped to SCLL from Medina for post-mortem of components by the design group responsible.

#### Summary and Conclusions

This accident shows, as do all others, that circumstances make each accident unique. The warhead had been designed to withstand and remain safe in all conceivable situations. Even so, after this accident the warhead was in such a condition that an improper recovery procedure could have had serious consequences. If not actually leading to a detonation, an improper procedure could perhaps have placed the nuclear system in a more critical state.

The Air Force never requested the assistance of the design agencies and was prepared to recover on its own. The fact that the agencies responded of their own accord, and were in fact utilized immediately, points out that they were needed.

A recommendation as to how to prevent this type of accident cannot be made here; but, a recommendation is made that the AEC laboratories respond, whether requested or not, at the first indication of trouble.

The EOD teams seem competent enough to handle most of the situations, but, in this instance, as in others, there are always those peculiar circumstances which should be viewed by persons intimately familiar with the weapon design.

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

DISTRIBUTION:

1-15/44A - D. P. Dickason, Storage Division, ALO  
16/44A - N. D. Benedict, LRL  
17/44A - M. D. Martin, LRL  
18/44A - S. P. Schwartz, 1  
19/44A - R. W. Henderson, 1000  
20/44A - L. A. Hopkins, Jr., 1300  
21/44A - J. H. Findlay, 1400  
22/44A - W. A. Gardner, 1500  
23/44A - E. H. Draper, 2000  
24/44A - H. E. Lenander, 2500  
25/44A - D. R. Cotter, 5500  
26/44A - L. D. Smith, 5600  
27/44A - L. E. Lamkin, 7300  
28/44A - A. B. Machen, 7500  
29/44A - B. S. Biggs, 8000  
30/44A - L. Gutierrez, 8100  
31/44A - D. E. Gregson, 8141  
32/44A - C. R. Barncord, 8150  
33/44A - L. E. Davies, 8160  
34/44A - E. F. Ingledue, 8166  
35/44A - Technical Library, 3421  
36/44A - Central Technical File, 3428-1; Attn: Edna Baca (Bldg. 836)  
37/44A - G. C. Newlin, 6011/Central Technical File, 3428-1  
38-39/44A - Information Distribution, 3427-3  
40/44A - E. Bodie, 8232-1  
41-44/44A - Central Technical File, 8232-2

This report was prepared for distribution within Sandia Corporation and the external distribution shown. No further external distribution of this report or dissemination of the information contained in the report shall be made without the approval of the issuing organization.

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~

~~D00033198~~

D00033905

**ANALYSIS OF THE SAFETY ASPECTS OF THE MK 39 MOD 2 BOMBS INVOLVED IN B-52G CRASH NEAR GREENSBORO, NORTH CAROLINA**

~~(Title is classified CONFIDENTIAL SRO when associated with Sigma 1)~~

**BEST AVAILABLE COPY**

SCDR 81-81

(Title is classified)

~~AEC ATOMIC WEAPON DATA~~

~~SIGMA 1~~

RS 3423/503

**CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION**

D.C. Hix, AU-63      DATE      9/30/14

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: 07/14/2014	DETERMINATION (CIRCLE NUMBER(S))
Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DS	<input type="checkbox"/> 1 CLASSIFICATION RETAINED
Name: David Hamrin DRL4 AU-63	<input type="checkbox"/> 2 CLASSIFICATION CHANGED TO:
2 <sup>nd</sup> Review Date: 7/17/14	<input type="checkbox"/> 3 CONTAINS NO DOE CLASSIFIED INFO
Authority: SU	<input type="checkbox"/> 4 COORDINATE WITH: DoD
Name: R.L. Shankle	<input type="checkbox"/> 5 CLASSIFICATION CANCELED
	<input type="checkbox"/> 6 CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY):

J. M. de Montmollin, 7118  
W. R. Hoagland, 7162

February 1981

Approved by *H. H. Patterson*      *D. R. Cotter*  
H. H. Patterson, 7110      D. R. Cotter, 7180/16

**ABSTRACT**

This report presents the results of the investigation and analysis of the safety aspects of the Mk 39 Mod 2 bombs involved in the B-52G crash near Greensboro, North Carolina. This investigation was conducted by Sandia Corporation subsequent to a preliminary investigation at the scene of the crash.

~~**RESTRICTED DATA**~~  
~~THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (75 STAT. 1013) OR THE PROVISIONS OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.~~

This document consists of 20 pages

GROUP 1 - Excluded from automatic downgrading and declassification

~~SECRET~~

20140007759

~~SECRET~~  
~~RESTRICTED DATA~~

**DISTRIBUTION:**

1-11/38A - K. F. Hertford, ALO, For:  
Brig. Gen. A. W. Betts, DMA  
LASL, Attn: Max Roy, W Division  
LRL, Attn: J. Foster  
Technical Library, DMA, Attn: Col. S. Goldenberg  
D. P. Dickason, Storage Division  
Highway, Weapon Safety Branch  
Commanding Officer, AFSWC, SWOL, For:  
Col. P. Gwynn  
SMA Resident Representative  
Col. C. B. Stewart  
EC/DASA, For:  
Lt. Col. Strickland  
Lt. Col. Schuyler

12/38A - R. W. Henderson, 100  
13/38A - H. E. Lenander, 1300  
14/38A - J. H. Findlay, 1400  
15/38A - A. B. Machen, 2300  
16/38A - L. A. Hopkins, 2500  
17/38A - G. A. Fowler, 7000  
18/38A - E. H. Draper, 7100  
19/38A - E. H. Patterson, 7110  
20/38A - E. L. Harley, 7118  
21/38A - J. W. Jones, 7120  
22/38A - R. S. Wilson, 7140  
23/38A - D. R. Cotter, 7160  
24/38A - D. M. Olson, 7182  
25/38A - S. A. Moore, 7180  
26/38A - L. E. Lamkin, 7500  
27/38A - W. J. Howard, 8100  
28/38A - L. Gutierrez, 8140  
29/38A - C. Winter, 8141  
30/38A - M. G. Randle, 3421-2  
31/38A - R. K. Smeltzer, 3421-3  
32/38A - W. F. Carstens, 3423  
33/38A - A. D. Pepmueller, 8233  
34-38/38A - R. C. Smelich, 3466-1

1/1 B - org. 3413

**REPRODUCTION PERMISSION**

This report is not to be reproduced in whole or in part, without written permission by the manager of the originating department.

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

TABLE OF CONTENTS

	<u>Page</u>
Introduction	5
Summary of Results	5
Weapon System Description	5
B-52G Aircraft	5
Mk 39 Mod 2 Weapon	6
Analysis of Weapon No. 1	11
Analysis of Weapon No. 2	11
Conclusions	20

LIST OF ILLUSTRATIONS

<u>Figure</u>		
1	Single Channel Block Diagram of Mk 39 Mod 2	7
2	Normal Trajectory Sequence of Mk 39 Mod 2	8
3	Block Diagram Mk 39 Mod 2 with ALT 187	10
4	Probable Trajectory Sequence, Weapon No. 1	12
5	Cutaway of Mk 39 Mod 2	13
6	Probable Trajectory Sequence, Weapon No. 2	15
7	MC-772 Recovered from Weapon No. 2	16
8	Internal View of Undamaged MC-772	17
9	Internal View of MC-772 Recovered from Weapon No. 2	18
10	Comparison of Reset, Undamaged MC-543 Timer with Timer Recovered from Weapon No. 2	19

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

**ANALYSIS OF THE SAFETY ASPECTS OF THE MK 39 MOD 2 BOMBS INVOLVED IN  
B-52G CRASH NEAR GREENSBORO, NORTH CAROLINA**

**Introduction**

On January 24, 1961, a B-52G carrying two Mk 39 Mod 2 bombs broke up in mid-air and crashed near Seymour-Johnson AFB, North Carolina. During the mid-air breakup of the aircraft, the weapons separated from the aircraft. The parachute of the weapon in the aft bomb bay (hereinafter called weapon No. 1) deployed, and in its retarded trajectory the weapon impacted approximately 1 mile short of the impact point of the major section of the aircraft. The parachutes of the weapon in the forward bomb bay (hereinafter called weapon No. 2) did not deploy, and the weapon impacted in the free-fall condition approximately 1500 feet past the impact point of the major portion of the aircraft fuselage.

An AEC team consisting of members from ALO, LASL, and Sandia Corporation went to the scene of the crash to assist in the preliminary investigation of the weapons involved in the crash. A report of the accident and the on-site investigation is contained in SCDR 106-61.\* Subsequently, some components of weapon No. 2 were returned to Sandia Corporation for further analysis. Detailed post-mortem of these components, along with information from the preliminary investigation, has made possible a determination of the status of the weapons during the crash.

**Summary of Results**

Analysis of the components and reports from the crew of the aircraft indicate that none of the pre-arming functions required to release a live nuclear weapon had been performed prior to the time the weapon separated from the aircraft. However, some events normally requiring crew action must have occurred mechanically due to aircraft breakup. It is known that the safing pins were extracted from the Bisch generator actuation rods, and the rods themselves were extracted from the pullout assembly. On both weapons the fuzing sequences were initiated, but, due to the fact that the aircraft-controlled Arm/Safe switch was in the safe condition at time of release, neither weapon armed. This in itself would have prevented a nuclear explosion.

When the MC-772 Arm/Safe Switch of weapon No. 2 was recovered, there was an indication that the switch might have been armed. Post-mortem results indicated that the indicator drum had rotated to the ARM position, but that the switch contacts in all probability never actually closed in the ARM position. The rotation of the indicator drum was undoubtedly due to the impact shock; however, the impact shock also damaged the switch contacts to the extent that there was no continuity through the switch in either the ARM or SAFE position.

**Weapon System Description**

**B-52G Aircraft**

The B-52G has two bomb bays, each capable of carrying one Mk 39 weapon. The weapons are separately controlled through two T-249 Aircraft Monitor and Control units. The arming circuits to the weapons are interlocked by the T-380 Readiness Switch. The T-380, under the aircraft commander's control, must be placed in the ready position and the appropriate T-249 must be placed in the air or ground position in order to prearm either weapon. The aircraft is also equipped with lanyards from the bomb bays to the crew compartment to allow extraction of safing pins during flight.

\*SCDR 106-61, Accident Report of B-52G Near Seymour Johnson Air Force Base, North Carolina, SRD, H. D. Bickelman, 7162-1, dated February 1961.

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

A modification program, ALT 197, was approved in January 1960. When incorporated, ALT 197 will make the lanyards for extracting the safing pins unnecessary in aircraft equipped with the T-380 Readiness Switch.

The aircraft system also incorporates a solenoid-operated lock which either allows the weapon to fall in free-fall trajectory or initiates parachute deployment at release. The static line from the parachute is attached to the solenoid lock, and, when the lock is operated, the parachute deploys at release.

#### Mk 39 Mod 2 Weapon

The Mk 39 Mod 2 is capable of either free-fall or completely retarded trajectories. It has a dual-channel, timer-armed and impact-fired fuzing system. The firing signal at impact is derived from closure of a crush switch in the nose of the weapon. In addition, there is a trajectory-arming feature in this weapon which functions after separation from the aircraft; before arming is allowed, the weapon must undergo a pressure change corresponding to 1500 feet at sea level.

A single channel block diagram of the fuzing and firing system is shown in Figure 1, and the normal trajectory sequence is shown in Figure 2. Detailed operation is as follows: Prior to release, the MC-772 Arm/Safe Switch, controlled from the T-249, must be placed in the ARM position, and the safing pins in the Bisch generator rods must be removed by the lanyard extending to the crew compartment. At release of the weapon, rods are extracted from the Bisch generator assembly which in turn delivers an initiation signal to the low-voltage battery and the safe-separation timer. Rods also actuate the pullout valve assembly causing the valve to close and sealing a reference pressure in one chamber of the MC-832 Differential Pressure Switch. Five to eight seconds after release, the thermal battery voltage rises to approximately 28 volts.

When the weapon has fallen the required vertical distance, the differential pressure switch contacts close, passing battery current through the MC-772 to the MC-788 High Voltage Safing Switch. Upon receipt of this current, the MC-788 is operated, connecting the output of the high-voltage thermal battery to the X-unit. When the timer contacts close, 42 seconds after release, initiation power is delivered to the high-voltage thermal battery. The high-voltage thermal battery comes up to voltage 1 to 2 seconds later. The X-unit is charged, and voltage is applied to the trigger circuit. At impact the crush switch closes, grounding one side of a firing transformer in the trigger circuit. The other side of the transformer is connected to the 28-volt low-voltage thermal battery through a fuse. When the crush switch closes, a pulse is delivered to the transformer, causing a signal to be transmitted to the gap switch, and discharging the X-unit. Each channel of the crush switch firing circuit is fused. In the event of premature operation of one channel, that fuse will clear in a few milliseconds to allow subsequent operation of the opposite channel.

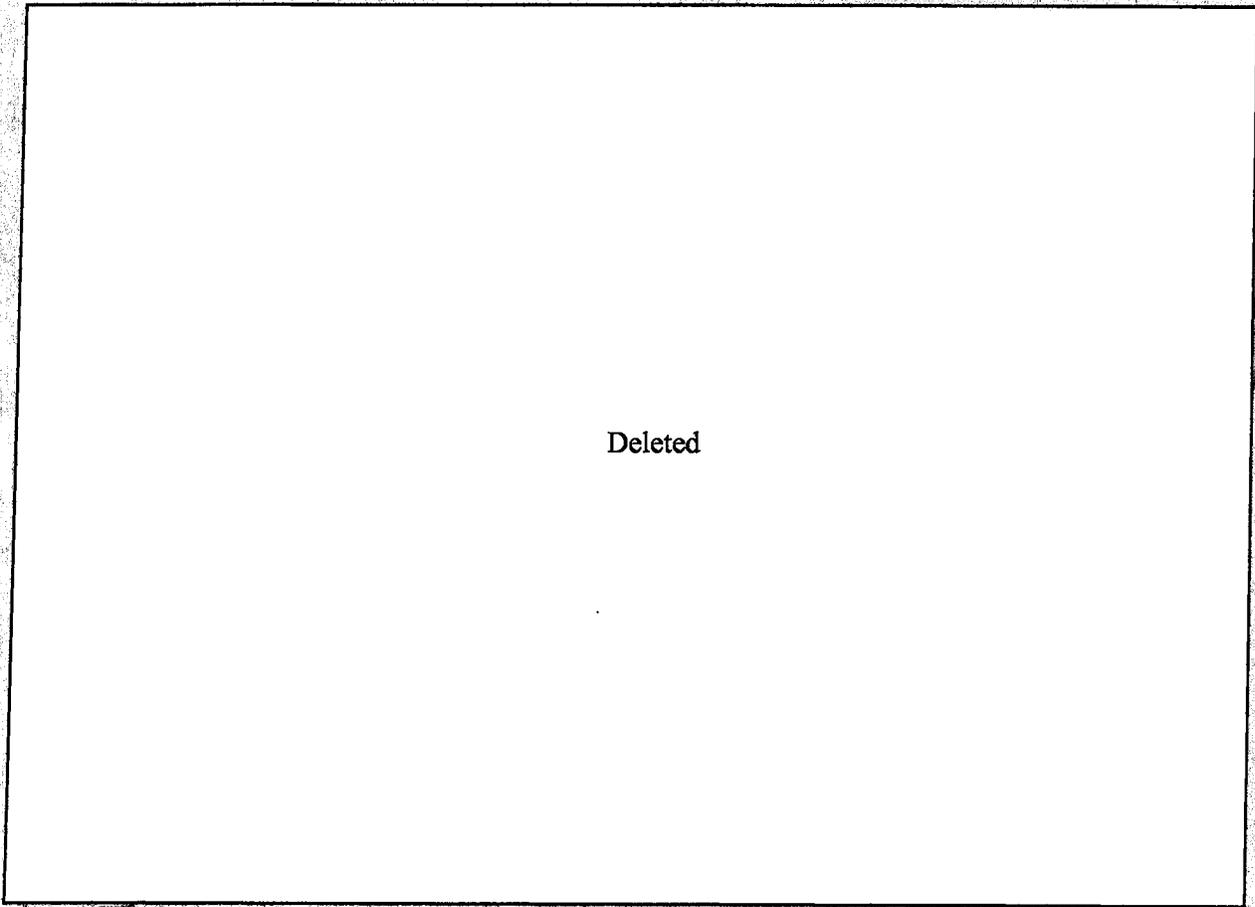
b (3) ITAR

DOE  
b(3)

Deleted

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~



DOE  
b(3)

Figure 1. Single Channel Block Diagram of Mk 39 Mod 2

~~RESTRICTED DATA~~  
~~SECRET~~

T-380 READINESS SWITCH IN READY POSITION  
T-249 CONTROL POWER SWITCH ON  
T-249 SELECTOR SWITCH IN ARMED POSITION,  
ARMING MC-772 ARM/SAFE SWITCH  
LANYARDS PULLED, REMOVING SAFING PINS

AT RELEASE  
MC-845 GENERATOR OPERATES  
ACTIVATING MC-640 THERMAL  
BATTERY AND STARTING  
MC-543 TIMER. PILOT PARA-  
CHUTE DEPLOYED. PULLOUT  
PLUGS REMOVED AND VALVES IN  
PRESSURE SWITCH SYSTEM CLOSED.

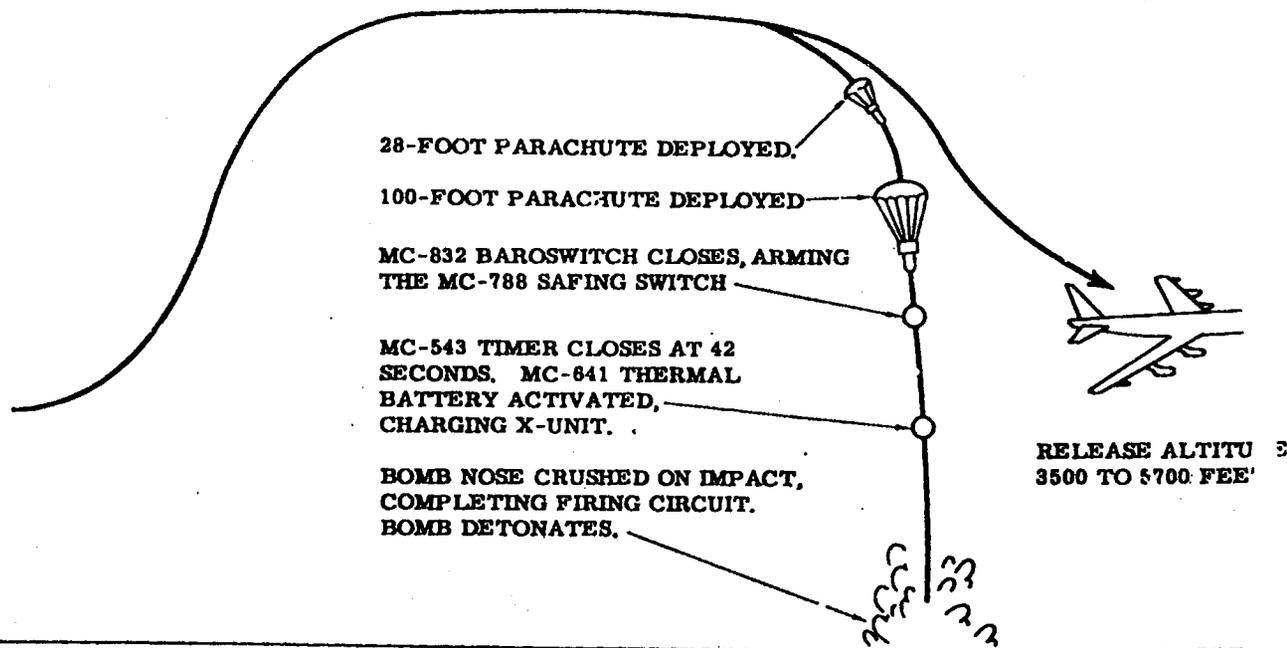


Figure 2. Normal Trajectory Sequence of Mk 39 Mod 2

~~RESTRICTED DATA~~  
~~SECRET~~

~~RESTRICTED DATA~~  
~~SECRET~~

~~SECRET~~  
~~RESTRICTED DATA~~

MC-832 Differential Pressure Switch -- The MC-832 contains four individual barometric elements. The elements of this switch are set to operate when a differential pressure equivalent to approximately 30 mm Hg is applied to the element. In the weapon, one chamber of each element is open to ambient atmospheric pressure. The opposite chamber is open to ambient pressure through a mechanically actuated valve.

Pullout Valve Assembly -- The pullout valve assembly contains rods which, when extracted from the weapon at release, close to seal the ambient pressure in one of the chambers of each of the differential pressure-switch elements. Prior to operation, the rods are retained in the weapon assembly by shear pins.

MC-772 Arm/Safe Switch -- The MC-772 is a solenoid-operated rotary switch with detents so that, if a pulse of power is delivered to the solenoid, the switch will step from SAFE to ARM or from ARM to SAFE. The solenoid operates through an axial air gap. The axial force is translated to rotational motion by balls which ride in grooves in an inclined plane. A drum attached to the rotary switch, which indicates the ARM or SAFE condition, can be observed through windows in the side of the housing. There is an auxiliary lever at the end of the switch assembly which will allow manual movement of the switch from the ARM to the SAFE position, but not vice versa.

MC-788 High-Voltage Safing Switch -- The MC-788 is also a solenoid-operated switch. The solenoid device is similar to that used in the MC-772; however, there is no detent action to cause the switch to remain in the ARM position. Continuous power must be applied to the solenoid in order to keep the contacts closed in the ARM position.

MC-641 High-Voltage Thermal-Battery Pack -- The MC-641 contains ten MC-583 or MC-818 thermal batteries. The batteries are connected in a series-parallel arrangement with five in each series leg. The complete assembly provides a total voltage of 2500 volts to charge the X-unit. Individual batteries are initiated when energy is delivered to their matches through an isolation transformer.

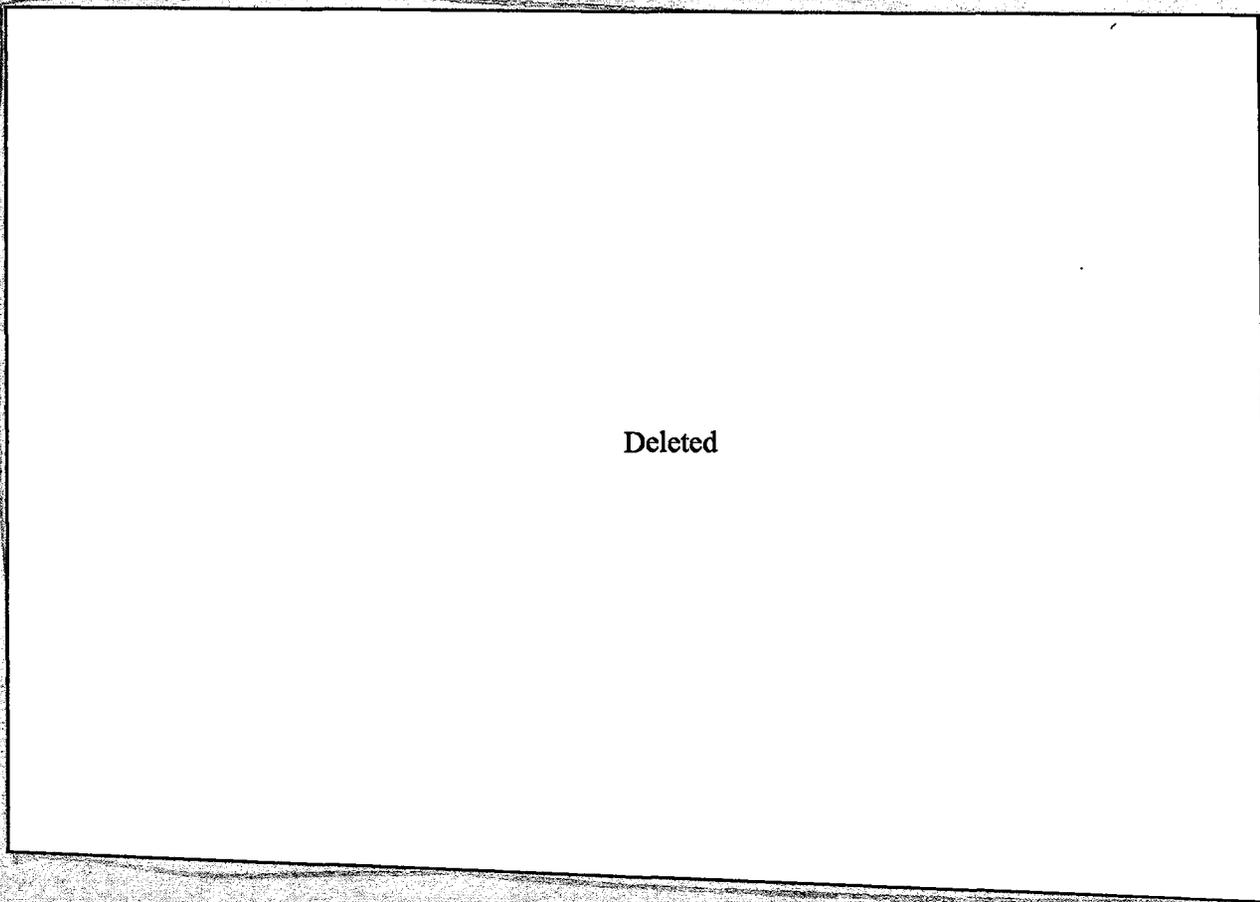
MC-787 Trigger Circuit -- The MC-787 contains two krytron tubes which are supplied plate voltage from the high-voltage thermal battery through a divider network. Pulse transformers are connected in the grid circuits of these tubes so that when the transformer is pulsed, the tubes conduct and deliver a firing pulse to the X-unit gap.

Crush Nose Switch -- The nose of the weapon is arranged so as to close an electrical circuit when it is deformed inwardly. Spaced behind the nose cap are six metal plates, each covering a 60-degree sector of the weapon's cross section. Alternate plates are connected in parallel to one trigger-circuit grid transformer through a fuse. When the nose cap is deformed at impact, contact is made with sharp projections on the switch plates, completing the circuits and pulsing the transformers.

ALT 197 provides additional safing by introducing Arm/Safe switch contacts between the Bisch generator output and the low-voltage thermal battery matches. In this ALT, the MC-1288 Arm/Safe switch is installed in place of the MC-772. In addition to the contacts in lines presently controlled by the MC-772, MC-1288 contacts in the Bisch line insure that the thermal battery will not be operated if the weapon is released in the safe condition. A block diagram of the system with ALT 197 is shown in Figure 3. When this ALT is accomplished, it is considered that the system is adequately safe for alert flying without safing pins installed in the pullout rods.

ALT 193 is a modification to provide compatibility with the aircraft clip-in suspension system by adapting the Bisch and valve pullout connections to the clip-in supporting structure. The lanyard arrangement for removing safing pins in flight cannot be used with ALT 193. For this reason, ALT 197 must be performed at the same time or prior to completion of ALT 193.

~~RESTRICTED DATA~~  
~~SECRET~~



~~RESTRICTED DATA~~  
~~SECRET~~

DOE  
b(3)

~~RESTRICTED DATA~~  
~~SECRET~~

Figure 3. Block Diagram Mk 39 Mod 2 with ALT 197

~~SECRET~~  
~~RESTRICTED DATA~~

~~Analysis of Weapon No. 1~~

Observers reported that this weapon separated from the aircraft 7000-9000 feet above terrain. Fully retarded, it impacted in the near-vertical position, penetrated the earth approximately 18 inches, and remained in an upright position with the parachute hanging in adjacent trees. The weapon was intact with only minor damage, and it was possible to analyze the components at the scene. It was found that the safing pins in the Bisch generator rods had been extracted and the pullout valves had operated. The low-voltage thermal battery pack had been initiated and the timer had run down. The differential pressure switch contacts were closed and the high-voltage thermal battery pack had been initiated. The MC-772 Arm/Safe Switch and the MC-788 Safing Switch were in the SAFE positions. The gas reservoir valve had not been actuated and the gas remained in the reservoir. The crush nose assembly was deformed, and it can be assumed that it supplied a fire signal at impact. The probable trajectory sequence is shown in Figure 4.

From examination of the MC-845 Bisch generator assembly, it appears that the pullout rods were extracted in the normal fashion. There was no scoring or other physical damage to the assembly which would indicate that any unusual forces had been applied. Also, since the holes for the safing pins were not in any way damaged, it must be assumed that the safing pins were extracted prior to separation of the weapon from the rack. It is known that the aircraft broke up in mid-air and impacted the earth in several pieces, over a wide area. One intact safing pin and a portion of the lanyard were recovered, indicating that the pin must have been removed at the time the Bisch rods were pulled. It is believed that the lanyards attached to the safing pin in this weapon caused the safing pins to be extracted during the breakup of the aircraft.

This weapon appeared to have a completely normal retarded trajectory; therefore, it is assumed that the parachute solenoid locking device had been operated, securing the parachute static line to the aircraft structure.

From the information available on this weapon, it is apparent that all components behaved in the normal manner that would be expected if the bomb were released from the aircraft with the T-249 in the safe condition. Under these conditions, arming of the weapon is prevented by the MC-772 and the MC-788.

#### Analysis of Weapon No. 2

This weapon probably separated from the aircraft between 2000 and 5000 feet above terrain. It impacted in a free-fall trajectory. The tail of the weapon was buried approximately 12 feet below the surface. The structure of the weapon was severely damaged, and there was considerable breakup due to the impact conditions; however, no HE explosion resulted. Components of the fuzing system, which are located in the aft portion of the weapon just ahead of the parachute (see Figure 5), were recovered relatively intact; however, the extent of the damage did not readily allow complete evaluation at the scene. The gas reservoir was essentially undamaged. The actuator had not been initiated and the gas remained in the reservoir. The MC-772 Arm/Safe Switch appeared to be intact when recovered from the unit, and the indicator drum indicated that the switch was in the ARM position. It was therefore requested that this component, along with other components of the fuzing system, be returned to Sandia Corporation for further analysis. Post-mortem results of various components at Sandia indicated that the fuzing sequence had been initiated similarly to weapon No. 1. The Bisch generator had been actuated, causing the low-voltage thermal battery to be activated and the timer to be started. The pullout valves had been closed and subsequently the differential pressure switch contacts had closed. The timer had not completed its timing cycle, but had stopped after approximately 12 seconds of operation as a result of the deformation which occurred at impact; therefore, the high-voltage thermal battery had not been actuated.

~~RESTRICTED DATA~~  
~~SECRET~~

BEFORE BREAKUP.

T-380 READINESS SWITCH IN SAFE POSITION  
 T-249 CONTROL POWER SWITCH OFF  
 T-249 IN SAFE POSITION; MC-772 ARM/SAFE  
 SWITCH SAFE  
 LANYARDS NOT PULLED

AT SEPARATION

MC-845 GENERATOR OPERATED  
 ACTIVATING MC-840 THERMAL  
 BATTERY AND STARTING MC-543  
 TIMER. PILOT PARACHUTE DE-  
 PLOYED. PULLOUT PLUGS RE-  
 MOVED AND VALVES IN PRESSURE  
 SWITCH SYSTEM CLOSED.

AT AIRCRAFT BREAKUP

LANYARDS EXTRACTED SAFING PINS.

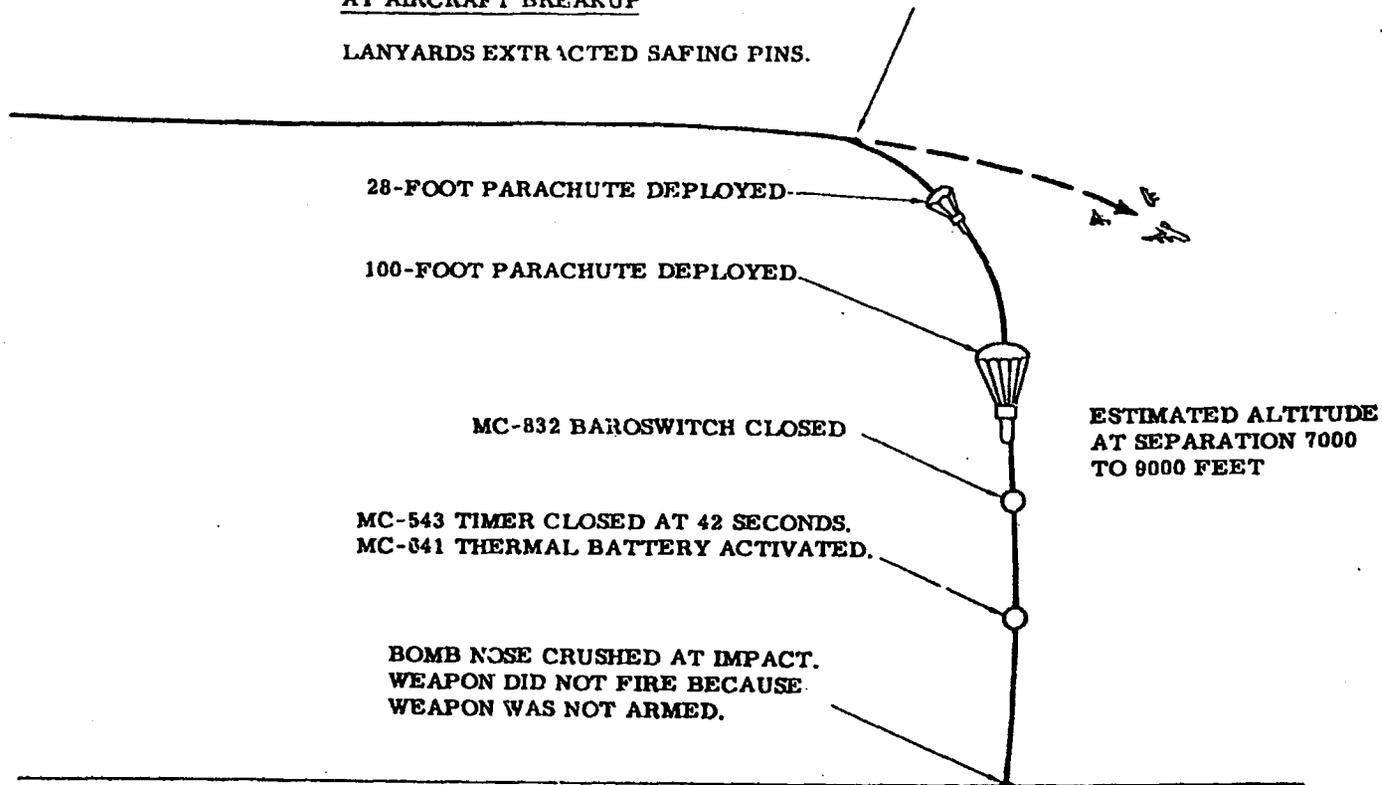


Figure 4. Probable Trajectory Sequence, Weapon No. 1

Deleted

DOE  
b(3)

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

Figure 5. Cutaway of Mk 39 Mod 2

Deleted

The probable trajectory sequence of this weapon is shown in Figure 6.

As the indicator drum of the MC-772 did indicate that the shaft of this switch was in the ARM position after impact, detailed examination of this switch was conducted. Photographs of the switch as it appeared when recovered are shown in Figure 7. The "A" indication can be seen in the window. At the time it was recovered, there was no continuity through any contacts of this switch. Upon disassembly of this switch, it was found that the stationary members of the switch contacts had been physically displaced at impact approximately 1/4 inch in the direction of travel. The direction of impact force is in the opposite direction that would be expected to operate the solenoid of this switch. However, because of the mounting configuration of the switch (see Figure 5), there is good reason to believe that a severe rebound shock would occur after impact which could cause the solenoid to rotate the switch shaft.

From the evidence available, it must be concluded that the MC-772 was in the SAFE position until time of impact. It is quite probable that the contacts of this switch never operated to the ARM position. The circumstances of this weapon up until the time of impact are very much the same as those of weapon No. 1, except that there was insufficient time between separation of the weapon from the aircraft structure until impact for the timer to operate; consequently, the high-voltage battery was not initiated.

Detailed post-mortem results on various components recovered from this unit are available in separate reports. They are summarized here to provide completeness to this report.

MC-772 Arm/Safe Switch -- Electrical checks of the circuits of the switch revealed that there was no continuity through any of the switch circuits in either the ARM or SAFE condition. Disassembly of this switch revealed that the structure on which the switch is mounted internal to the housing was severely deformed in the direction of travel of the weapon at impact. A comparison of Figures 8 and 9 shows that the plastic wafers which support the stationary contacts of the switch broke from their supporting posts and were displaced away from the switch rotor contacts. The indicator drum remained attached to the switch rotor, and the rotor was displaced to the ARM position.

MC-640 Low-Voltage Thermal Battery Pack -- The MC-473 batteries were removed from the battery pack. Scorching of materials around the batteries indicated that they had been activated. The batteries were opened and it was found that they had been activated by electrical energy to the matches and that power was probably available during the trajectory sequence.

MC-543 Timer -- The case on the MC-543 was severely distorted. The cover plate had been deformed so as to jam the gears on both timer channels. Figure 10 shows a comparison of this timer with a normal reset timer. The position of the mechanism indicated that the timer had been set at 42 seconds and had run approximately 12 seconds after initiation. Examination of the actuators indicated that they had been fired electrically.

MC-641 High-Voltage Thermal Battery Pack -- Each of the ten MC-583 Thermal Batteries was removed from the battery pack and opened. It was found that none of these batteries had been activated at any time. The squib switches used to indicate whether the battery had received an initiation pulse were also examined and it was found that they had not been activated.

MC-845 Bisch Generator -- The Bisch generator rods were found to have been extracted. There was no evidence of any unusual scoring or other damage which would indicate that the rods were extracted in other than a normal fashion. The holes through which the safing pins are installed appeared normal, and it is believed that the safing pins were extracted before separation of the weapon from the rack.

MC-788 High-Voltage Safing Switch -- The switch was crushed and severely distorted. The stationary and movable contacts were smashed, together with their plastic supporting members. Although the connectors had been ripped loose from the housing, electrical checks at the ends of the broken leads showed continuity in the SAFE position. These checks and the examination of the switch parts would indicate that the switch was in the SAFE position at time of impact.

~~SECRET~~

~~RESTRICTED DATA~~

BEFORE BREAKUP

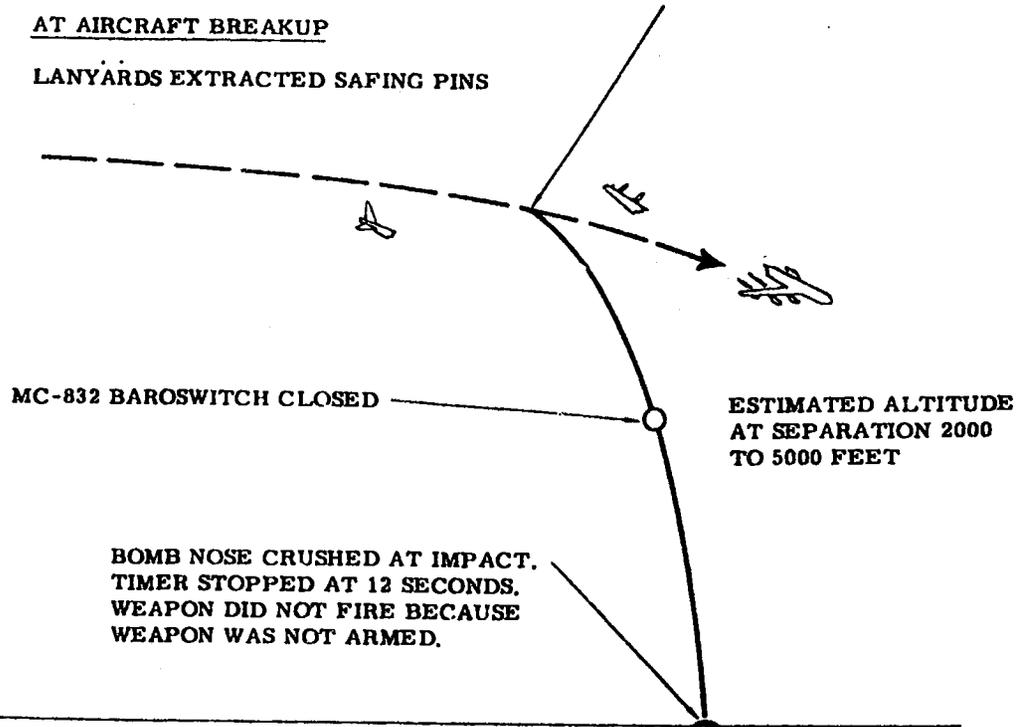
T-380 READINESS SWITCH IN SAFE POSITION  
T-249 CONTROL POWER SWITCH OFF  
T-249 IN SAFE POSITION; MC-772 ARM/SAFE SWITCH SAFE  
LANYARDS NOT PULLED

AT SEPARATION

MC-845 GENERATOR, OPERATED  
ACTIVATING MC-640 THERMAL BATTERY AND STARTING MC-543 TIMER.  
PILOT PARACHUTE DEPLOYED.  
PULLCUT PLUGS REMOVED AND VALVES IN PRESSURE SWITCH SYSTEM CLOSED.

AT AIRCRAFT BREAKUP

LANYARDS EXTRACTED SAFING PINS



~~RESTRICTED DATA~~

~~SECRET~~

Figure 6. Probable Trajectory Sequence, Weapon No. 2

~~SECRET~~

b (3) ITAR

b (3) ITAR

Figure 7. MC-772 Recovered from Weapon No. 2

~~RESTRICTED DATA  
SECRET~~

~~SECRET~~  
~~RESTRICTED DATA~~

b (3) ITAR

~~RESTRICTED DATA~~  
~~SECRET~~

~~SECRET~~  
~~RESTRICTED DATA~~

b (3) ITAR

~~RESTRICTED DATA~~  
~~SECRET~~

~~SECRET~~

~~RESTRICTED DATA~~

b (3) ITAR

~~RESTRICTED DATA~~

~~SECRET~~

~~SECRET~~  
~~RESTRICTED DATA~~

MC-832 Differential Pressure Switch and the Pullout Valve Assembly -- The pullout rods had been extracted from this valve assembly and the valves were closed. No conclusions can be drawn from examination of the MC-832; but, since it received normal inputs, it can be assumed that it operated normally.

DOE  
b(3)

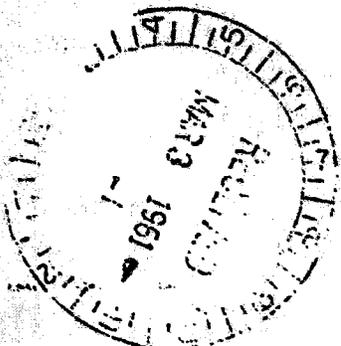
As in the case of weapon No. 1, the fuzing sequence on this weapon appeared to have been initiated when the weapon separated from the aircraft structure.

[redacted] Since the system was not armed at any time during the trajectory sequence, no nuclear explosion could have resulted.

Conclusions

Deleted

1. The lanyard-controlled safing pins cannot be relied upon to prevent initiation of the fuzing sequence when the aircraft is involved in this type of accident.
2. The Arm/Safe switch prevented a nuclear detonation in these weapons as it was designed to do.
3. Since it is undesirable to have the fuze power supply activated except when a live release is intended, ALT 197 should be incorporated as rapidly as possible in all Mods of the Mk 15/39 family which are used in the airborne alert.



~~RESTRICTED DATA~~  
~~SECRET~~

~~CONFIDENTIAL~~  
~~SECRET~~  
~~RESTRICTED DATA~~

147320 ~~D00033199~~

RS 3466 147320 147320

This Document Consists of \_\_\_\_\_ Pages.  
No. \_\_\_\_\_ of \_\_\_\_\_ Copies, Series \_\_\_\_\_

~~SECRET~~

D00033906

Table of Component Behavior, Fusing and Firing Systems (U)

2/28/61

RS 3466/147320

MC No.	Component	Bomb #434909	Bomb #359943	
	Arming Wires	Pulled	Pulled	INVENTORIED
845	Pulse Generator	Actuated	Actuated	AUG12'60
834	Explosive Actuator	Fired	Fired	8428-3
543	Timer	Run Down (42 Sec.)	Run 12-15 Sec.	
832	Differential Pressure Switch	All Contacts Closed	2 Contacts Closed	
640	Low Voltage Thermal Battery	Actuated	Actuated	
772	Arm-Safe Switch	Safe	Safe (see explanation, Section 5 of Report)	
1-A	Tritium Reservoir	Full	Full	
641	High Voltage Thermal Battery	Actuated	Not Actuated	
788	Rotary Safing Switch	Not Operated	Destroyed	
730	X Unit	Not Charged	Not Charged	
616	Nose Crystals	Crushed	Crushed	

INVENTORIED  
DATE SEP-22-1964



INVENTORIED

APR 15 1964

3427-1

INVENTORIED

FEB 24 1964

3427-1

7162	
7162-1	
7162-2	

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW

1<sup>st</sup> Review Date: 07/24/2014  
Authority:  DC  DD  
Name: David Hamrin DRL4 AM-63  
2<sup>nd</sup> Review Date: 7/15/14  
Authority: SP  
Name: R.L. Shankle

DETERMINATION (CIRCLE NUMBER(S))  
1. CLASSIFICATION RETAINED  
2. CLASSIFICATION CHANGED TO: Conf  
3. CONTAINS NO DOE CLASSIFIED INFO  
4. COORDINATE WITH: DoD  
5. CLASSIFICATION CANCELLED  
6. CLASSIFIED INFO BRACKETED  
7. OTHER (SPECIFY) w/o Att.-Encl.

INVENTORIED  
DATE AUG 15 1981

INVENTORIED

AUG 3 '66

3428-3

~~RESTRICTED DATA~~

~~This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to any unauthorized person is prohibited.~~

~~CONFIDENTIAL~~

~~SECRET~~

~~RESTRICTED DATA~~

~~SECRET~~

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

DC Hix, AU-63 DATE 9/30/2014

RECEIVED  
24701120  
MAR 2 1961

7162

20140007759

~~CONFIDENTIAL SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~

3466/147319  
RS 3466

This Document Consists of 1 Page.  
No. 3 of 11 Copies, Series 2

INVENTORIED

NOV 3 '66

3428-3

Official Observer's Report, Air Force Accident

Goldsboro, North Carolina (U)

3466/147319

2-28-61

1. Introduction

Seymour Johnson Air Force Base is a Tactical Air Command installation located in east-central North Carolina, at Goldsboro (population 22,000), fifty-two miles southeast of Raleigh. Tenant on this TAC base is the 424th Strategic Wing of the Eighth U. S. Air Force (SAC). The Fourth TAC Wing, Nineteenth U. S. Air Force, is commanded by Brig. Gen. J. H. Moore, the SAC organization by Col. O. V. Jones.

INVENTORIED

AUG 12 '64

3428-3

The accident with which this report is concerned occurred on the early morning of January 24, 1961, involved a SAC aircraft with two thermonuclear weapons (Mk-39 Mod-2) aboard, and provided significant data on weapon behavior under accident conditions. Since this report will be supplemented by those of the Sandia Corporation and Los Alamos technical representatives who accompanied me, I shall confine, to summary statements, the portions of this paper which deal with the strictly technical aspects of weapon performance.

INVENTORIED

FEB 24 '64

3427-1

2. Prelude to the Crash

On the night of January 23, 1961, a B-52G stratofortress of the 424th Strategic Wing was flying a SAC airborne alert mission over the continental Atlantic seaboard area. Aboard the craft were two Mk-39 Mod-2 bombs, numbers 359943 (forward bomb bay) and 434909 (aft bomb bay).

INVENTORIED

DATE AUG 15 1961

Shortly before midnight, the aircraft rendezvoused with its assigned tanker, and midair refueling commenced. Prior to completing the fuel transfer, the B 52 Aircraft Commander, Major W. S. Tullock, was advised by the tanker crew that his bomber had a small fuel leak in its wing tank. Refueling was discontinued immediately, the tanker was pulled away, and Major Tullock advised his control (Seymour Johnson AFB) of the situation.

INVENTORIED  
SEP 22 1964

INVENTORIED

APR 15 1964

He was ordered to circle over the Atlantic in an area just off the North Carolina coast until he had consumed the major portion of his fuel load weight. After reaching this area, the Major reported that the leak had enlarged and that he had lost 37,000 pounds of fuel in approximately two minutes time. Though excessive trim was required, the aircraft was under control and Major Tullock received permission to return to Seymour Johnson AFB. At this time, neither the Aircraft Commander nor his Control Headquarters doubted that the plane and its cargo could be landed safely.

3427-1

As Major Tullock neared Seymour Johnson AFB, he dropped down to 10,000 feet and commenced a control check. Due, apparently, to the reduced speed,

~~RESTRICTED DATA~~  
This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to any unauthorized person is prohibited.

~~CONFIDENTIAL~~

~~SECRET~~

~~RESTRICTED DATA~~

RECEIVED  
2470/100  
MAR 2 1964

Encl 1

~~SECRET~~

he could no longer trim the craft and lost all control as the B-52 went into a gyration best described as a spin. All hope of saving the craft gone, the Aircraft Commander ordered his crew to leave the plane as he himself prepared to eject. The five crewmen who survived, among them Major Tullock, report that they left the plane at about 9,000 feet and that, at this time, the fuselage was intact with both bombs aboard.

3. The Crash

In its uncontrolled gyrations, the pilotless B-52G began to break up in the air. Since ground observers reported having seen two brilliant red flashes aboard the plane while it was still relatively intact, we can assume that JP-4 fuel explosions contributed to the breakup. At some point in this midair sequence, the two bombs were separated from the aircraft.

At 12:35 a.m., EST, January 24, the B-52 wreckage crashed and was strewn over an area of approximately two square miles in a cotton/tobacco agricultural area near Faro, North Carolina. The arbitrarily established point of impact intersected a north-south county road at a point 12.2 miles north-northeast of Seymour Johnson AFB (see photos A, B and C).

The position of certain aircraft structural components, among them a wing section, indicated that the larger portions of the B-52 were upside down when they struck the ground. The tail section, relatively intact, was found upright approximately one mile east of the point of impact.

4. Bomb Number 434909 (Mk-39 Mod-2 without Alt 197)

For brevity, I shall refer to this weapon as "bomb No. 1".

It appears that, after the majority of its crew departed, the plane's fuselage separated at a point between the fore and aft bomb bay sections. This is now presumed to have been a longitudinal separation combined with a torsion breakup of the airframe. During, or immediately after this separation, bomb No. 1 twisted from its rack and fell away from what remained of its aft bomb bay section. Minor scars inflicted on the exterior of the bomb by its sway-braces indicate that it left the rack, nose first, with a slight clockwise rotation. From this rack, only the unbroken chain has been recovered.

The safing pins had been removed from the bomb's arming rods, presumably when longitudinal separation of the fuselage jerked the lanyard to which they were attached. As bomb No. 1 left its rack, therefore, the arming rods were pulled in the manner of an intentional drop sequence and the Single Pulse Generator (MC 845) was actuated. Subsequent progress of the fusing/firing sequence in bomb No. 1 is presented in tabular form (see attached Table).

Its static line being intact, the bomb's parachutes deployed normally and it landed nose down approximately one mile east of the point of aircraft

impact. Bomb No. 1 remained upright with its nose buried about eighteen inches into the sandy clay. It was located easily since the large parachute was draped in nearby trees (see photos D and E).

On January 24, this bomb was disassembled, by members of an Air Force EOD team from Wright-Patterson AFB, and its components returned to the 53rd Munitions Maintenance Squadron, Seymour Johnson AFB. Except for a broken nose plate, bomb No. 1 appeared to have sustained negligible damage (see photos F through J). EOD procedures called for the crimping and cutting of the tube between the tritium reservoir and the primary. This had been accomplished as prescribed but was unnecessary since there had been no transfer of the gas. There was never any danger from contamination or radiation (see photos K, L and M).

Approximately one pint of JP-4 fuel was found in the bomb case.

5. Bomb Number 359943 (Mk-39 Mod-2 without Alt 197)

I shall refer to this weapon as "bomb No. 2".

Bomb No. 2 is presumed to have left its forward bomb bay section subsequent to the departure of No. 1 but still at an altitude of 5,000 to 7,000 feet. Though its timer (MC 543) had run for only twelve to fifteen seconds before impact with the ground, this interval yields no real clue to the original departure altitude since it appears that bomb No. 2 left the plane still bound to its rack. The timer could not actuate until bomb and rack separated. A major portion of this bomb rack was found about one mile east of the point of aircraft impact. The chain fitting remained on its U-2 hook with safing pin in place (see photo W).

Safing pins and arming rods were pulled from bomb No. 2 as they had been from bomb No. 1. In this instance, however, the static line was not intact, parachutes did not deploy and bomb No. 2 traversed a free-fall trajectory, burying its nose approximately eighteen feet into the ground at a point roughly 1500 feet west of the point of aircraft impact (see arrow in photo A). There was no HE detonation on impact and the original crater created by the bomb's entry was only eight feet in diameter and six feet deep (see photo O).

After three days of excavation, the armed/safe switch (MC 772) was recovered in a condition which visually indicated "armed". Of concern at the time, this circumstance was later revealed, by Sandia Corporation post mortem, to have occurred when the switch sustained severe internal damage upon impact (see photos P and Q). It has been established that the MC 772 was actually in the "safe" position when the bomb separated from its rack. Progress of the fusing/firing sequence in bomb No. 2 is presented in tabular form (see attached Table).

Though the nose had opened and the case was torn back, components of bomb No. 2 were contained within its self-made, later enlarged, entry hole. The excavation operation, commenced on the afternoon of January 24, proceeded slowly due to freezing weather, mud and surface water in the hole, and the necessity for care in the presence of HE.

The tail section, with paraspac intact, was uncovered, at about eleven feet, on the evening of January 26. The following day's progress permitted Los Alamos representative, T. T. Scolman, to remove the tritium reservoir which remained full but whose tube had been broken near its monitor valve (see photos R, S and T).

On Saturday, January 28, the alignment plate (MC 1134) was recovered intact with its firing components attached. At this time, it was ascertained that the MC 772 showed "armed" and that the arming rods were, in fact, missing (see photos U and V).

The primary was recovered at about 4:00 p.m. on Monday, January 30. It is reported to have been retrieved from a depth of about twenty feet with HE crumbled but essentially contained within its sphere case. At this time, the excavation is seventy feet deep and the secondary not yet located (February 16).

## 6. Logistics

Having been aroused by telephone in the early hours of January 24, the ALO observer group assembled at Kirtland AFB Operations at 7:00 a.m., MST. David R. Smith and T. T. Scolman, W Division, LASL, arrived via a specially arranged Carco flight. Remaining group members, H. D. Bickelman, of Sandia Corporation 7162, and I, arrived by private auto.

The ALO group had been invited to share the C-47 aircraft which was to transport military representatives of the Nuclear Safety Research Directorate, Kirtland AFB. The DNSR group, headed by Col. Charles Malitz, included Lt. Col. F. S. Smith, Lt. Col. Ernest Stewart and Capt. Barry O'Grady. Capt. George Martin was included as the AFSW representative and Capt. John Mansfield piloted the plane.

Originally scheduled for a 7:30 a.m. takeoff, last minute crew changes delayed the departure until 8:30. After refueling at Little Rock AFB, Arkansas, we landed at Seymour Johnson AFB at about 10:15 p.m., EST.

Upon arrival at Seymour Johnson, we were met by Capt. W. C. Ehrman, of the 53rd Munitions Maintenance Squadron, 4241st Wing, who informed us that bomb No. 1 had already been disassembled and returned to the MMS Area. He further advised that operations had been discontinued until morning at the accident scene.

Actual participation by the ALO group began on the morning of January 25 when we were briefed on the situation to-date by Lt. Col. K. B. King, Safety Officer, 4241st Wing, who outlined the chain of events which preceded the crash and described the scene. Major R. E. Manley, Commander, 53rd MMS, then filled in the details on the recovery and current condition of bomb No. 1.

✓ We then proceeded to the crash scene, 12.2 miles from the base, where we met Col. John Kline and his assistants, Major Mathew Perry and Capt. Ralph Baska, all of whom had accompanied Lt. Gen. Sweeney, Commander, Eighth Air Force, from Westover AFB, Massachusetts. Present also was 1st Lt. Ravelle who headed an enlisted EOD team from Wright Patterson AFB, Ohio.

OFFICIAL USE ONLY  
May be exempt from public release under the Freedom of Information Act, 5 U.S.C. 552, exemption (b)(7) and (b)(7)(D).  
Department of Energy review required before public release.  
Name: Oprea, Maria Katrina, Classification Authority: ORA 01252501/IMA  
Date: 10/27/2012, Guidance: N/A

~~CONFIDENTIAL~~  
~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~

During examination of the scene, Scolman and Bickelman recovered a previously undiscovered fragment of bomb structure. This fragment was found in a fuel explosion crater about 300 yards northeast of the point of aircraft impact and led to a theory that perhaps this crater had been created by the exploding primary of, at that time undiscovered, bomb No. 2. Further credence was lent to this theory when an unbroken bomb rack chain was discovered in the same crater. At Smith's request, the crater area was monitored for activity with negative results.

Since Scolman and Bickelman were anxious to specifically identify their fragment by comparing it with its counterpart in bomb No. 1, they secured permission to remove this part from the scene and departed for the 53rd MMS Area. Smith and I discussed the military's plan of action with officers present and agreed that the next step should be immediate excavation of the small crater which was 1500 feet west of the road. I then returned to the base, and phoned my initial report to W. F. White at ALO Headquarters.

When we joined Scolman and Bickelman at the 53rd MMS, they informed us that they had positively identified the fragment as a piece of the ring adapter (Part No. 144443-00) but had discovered that it actually belonged on bomb No. 1. We then examined the disassembled parts of bomb No. 1 and found the primary undamaged and the bottle full. Bickelman, Scolman and Smith tested the fusing/firing components and established the sequence of actuation presented in the attached Table.

DOE-  
b(3)

I was informed by Capt. Zareas, Supply Officer, 53rd MMS, that his current instructions were to ship bomb No. 1 to AEC, Clarksville Base.

Deleted

I assured him that I would obtain, for his use, the necessary cylinder and suitcases to accommodate the reservoirs and detonators from both bombs. I also stated that ALO would prefer that the components be returned to Medina Base, Texas. In the course of my subsequent telephone report to Mr. White, he informed me that he would order the containers from DAO immediately and that AMC and SAC had already agreed to return both bombs to Mason and Hanger, Medina Base.

Excavation of the small crater commenced on the afternoon of January 25 but little was accomplished before nightfall. On January 26, snow and below-freezing temperatures, coupled with surface water, hampered digging. By evening, however, the parapak on bomb No. 2 had been uncovered at about eleven feet and it appeared that the entire unit was in the hole and relatively intact. I phoned this information to Albuquerque and, since the digging had been discontinued, we retired to Goldsboro for the night.

Friday, January 27, was spent largely in waiting for the excavation to progress. Weather and water were still the major problems. At about 4:00 p.m., EST, enough of the bomb was uncovered to permit T. T. Scolman to descend into the hole and to examine and remove the reservoir which was full. At this time, we were told that the arming rods were in place. Operations were again shut down for the night and I phoned my report.

With the recovery of the alignment plate (MC 1134) late on Saturday morning, January 28, two significant circumstances presented themselves. The armed/safe switch (MC 772) appeared to be in the armed position and it was discovered that the arming rods were actually missing. At this

~~Classified By: Debbie Kelson  
SNL/NM Derivative Classifier 11/22/05  
Date: 7/14/20  
Derived From: ICG/SAFE, 7/12/05  
DOE-02~~

~~CONFIDENTIAL~~  
~~SECRET~~  
~~RESTRICTED DATA~~  
~~SECRET~~

point, we wondered why bomb No. 2 had been a dud. The MC 1134 with mounted components attached was removed to the 53rd MMS Area and, while Bickelman, Scolman and Smith began checking individual components, electrically, I furnished the initial information to Albuquerque.

Electrically, the MC 772 proved to be neither in armed nor safe position. Due to the damage which they had sustained, checks on other components were inconclusive. Mr. Bickelman reported his findings to D. M. Olson, Sandia Corporation, and it was decided that an immediate post mortem should be conducted in Albuquerque. Mr. Olson switched the call to Walter White and I requested that he immediately contact SAC Headquarters and arrange for air transportation, to Sandia Corporation, of the following MC items:

543      640      641      772      832      834

This was accomplished and the items arrived in Albuquerque on Monday, January 30. The results of the post mortem are illustrated by the attached Table.

The ALO group departed Seymour Johnson at 10:00 a.m., EST, January 29. Prior to our departure, I received assurance from the military commanders that:

- (a) excavation would continue until all of bomb No. 2 was recovered;
- (b) bomb No. 2's primary will be returned minus any damaged explosive; and,
- (c) ALO will be notified in time to participate in the final packaging of both bombs.

The ALO group parted company at the Raleigh, North Carolina, airport where Smith and Scolman departed for Albuquerque. Bickelman and I had been instructed to proceed to Washington, D. C., for a meeting with Col. Sam Goldenberg, DMA. We arrived Washington on Sunday evening and checked in with Col. Goldenberg by phone.

At 9:00 a.m. Monday morning, January 30, we met with and briefed the following DMA personnel:

Col. Goldenberg	Col. Griffin
Col. Banks	Col. Hauey
Col. Scott	Ray Stone
LCDR Wagner	

At 1:30 p.m., accompanied by Colonels Goldenberg and Scott, we met and briefed Brig. Gen. A. W. Betts. Col. Goldenberg had told us to be available for a Tuesday morning briefing of Gen. Luedecke and the Commissioners. At the conclusion of our meeting with Brig. Gen. Betts, the General stated that he and Col. Goldenberg would brief the Commission.

(Continued)

-6-

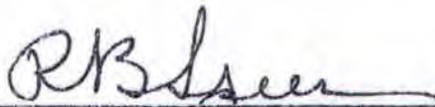
~~SECRET~~  
~~RESTRICTED DATA~~  
~~CONFIDENTIAL~~

~~CONFIDENTIAL~~  
~~SECRET~~  
~~RESTRICTED DATA~~  
~~SECRET~~

At 3:30 p.m., Mr. Bickelman, Col. Goldenberg, and I met with Gen. Loper and staff. Those present were:

Gen. H. B. Loper, Assistant to the Secretary of Defense for Atomic Energy	
Col. R. A. House, JCS	Lt. Col. G. F. Charlton, DASA
Col. V. C. Neil, JCS	Lt. Col. J. E. Edwards, DASA
Col. R. A. Bradley, AFMSS-AE	Lt. Col. C. R. Carson, DASA
Col. J. H. Mangan, DASA	Maj. G. L. Brooks, AFMSS-AE
CAPT T. L. Andrews, USN, DASA	CDR J. K. Williams, OATSD (AE)
Lt. Col. R. L. Downen, AFCIS-B	

We departed Washington on Tuesday morning, January 31, and arrived in Albuquerque at 3:45 p.m., MST.



Ross B. Speer  
Administrative Observer  
AEC/ALO

February 16, 1961

Enclosures:  
Table of Component Behavior  
Set of 23 photos

~~CONFIDENTIAL~~  
~~SECRET~~  
~~RESTRICTED DATA~~

~~RESTRICTED DATA~~  
~~SECRET~~  
~~ATOMIC ENERGY ACT~~

FLASH

PT 00316  
ZATSZYUN RUEKAAA6001 1532024-SSSS--RUMMHAC.

ZNY SSSSS  
Z 022005Z JUN 75  
FM JCS WASH DC  
INFO RUEJSA/DNA WASH DC  
RUEFHQA/CSAF WASH CC  
RUMMHAC/JI-ACC KIRKLAND AFB NM

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

DC Hix, AU-63 DATE 9/30/2014

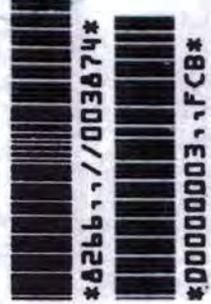
RHEGUTH/ALC GERKANTOWN MD (AICTY GEN MANAGER FOR MTL APPLICATION)

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: 07/14/2014	DETERMINATION (CIRCLE NUMBER(S))
Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DD	1. CLASSIFICATION RETAINED
Name: David Hamrin DRL4 AU-63	2. CLASSIFICATION CHANGED TO: NSI
2 <sup>nd</sup> Review Date: 7/15/14	3. CONTAINS NO DOE CLASSIFIED INFO
Authority: DC	4. COORDINATE WITH: DoD
Name: R.L. Shankle	5. CLASSIFICATION(S) CANCELED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY):

FCO2	FCDC
	FCSM
	FCIA
	FCIG
	FCM

ZEN/DEPSECDEF WASH DC  
ZEN/ATSU:AE WASH DC  
ZEN/ASD:ISA WASH DC  
ZEN/ASD:PA WASH DC

Z 021845Z JUN 75  
FM WPNSTA YORKTOWN VA  
TO RUEKJCS/NMCC WASHINGTON DC  
INFO RUCLSAA/CINCLANTFLT NORFOLK VA  
RUCBSAA/CINCLANT NORFOLK VA  
RULTSHH/CONFIVL NORFOLK VA  
RULSSAA/NAVSEASYS COM HQ WASHINGTON DC  
RUEHAAA/CNO WASHINGTON DC  
BT



~~SECRET RESTRICTED DATA~~//N00109//WPNSTA YKTN/OPREP-3 PINNACLE

- A. 021530Z JUN 75
- B. 3715N07634W BLDG 722
- C. ONE UNIT OF W45 INVOLVED. MC1188A GAS BOTTLE SERIAL 240566
- D. PERSONNEL INVOLVED AWAITING ARRIVAL OF HEALTH PHYSICIST AND URINALYSIS PROCEDURES TO BE PERFORMED.
- E. UNKNOWN
- F. UNKNOWN
- G. MC 1188A ON WORK BENCH SINCE REMOVAL 30 MAY. PERSONNEL NOT WORKING WITHIN FIVE FEET. ICT2 PADM ALARM SOUNDED AT 021530Z JUN. PERSONNEL CD

CODE	B
ADR OFF	E2.2
B	P2.3
C	130
D	E3.3
E	F3.3
F	F3.3
G	RE

PAGE TWO RUEBNUA1832 ~~SECRET RESTRICTED DATA~~

EVACUATED AREA. REENTERED WITH SEPARATE INSTRUMENT TO VERIFY ALARM. NEG READINGS OBTAINED BY REENTRY TEAM. EOD ARR ON SCENE, MADE ENTRY, RECEIVED READING OF 750 ON TEN TO MINUS THREE SCALE. EOD EVACUATED AND RETURNED TO SCENE WITH TWO INSTRUMENTS TO VERIFY INITIAL ALARMS, WITH NEG RESULTS. NEG READINGS ALSO OBTAINED WITH RADIAC AN/POB-27. EOD VERIFIED BOTTLE NOT ACTUATED.

- H. EOD DECLARED AREA SAFE 021657Z JUN. NO DETECTABLE RAD LEVELS AT SCENE. NO DETECTABLE CONTAM.
- I. INTACT
- J. ITEM ISOLATED AWAITING REPACKAGING. ALL PERSONNEL ASSOC WITH THIS EVENT AWAITING DEBRIEFING.
- K. NONE CONTEMPLATED AT THIS TIME.
- L. UNKNOWN
- M. TO FOLLOW IN COMMANDING OFFICER'S WRITTEN REPORT.
- N. REMARKS

34

FCDNA LR CODE 16W65

REF SYM 8206 / 3874

This document consists of 2 Pages  
No. 3 of - Copies, Series PCB

3345 JUN 13 1975

~~RESTRICTED DATA~~

20140007759

FC 06750056

~~SECRET~~

FLASH

FLASH

PT 00316

\*\*\*\*\*  
\* ~~SECRET~~ \*  
\*\*\*\*\*

~~RESTRICTED DATA~~  
~~ATOMIC ENERGY ACT 1954~~

Z4. REQUEST SPECIAL DISPOSITION INSTRUCTIONS FOR MC11884.

XGDS-2

BT

#6001

NNNN#

34

FC 06750056

~~RESTRICTED DATA~~  
~~ATOMIC ENERGY ACT 1954~~

\*\*\*\*\*



# BROKEN ARROW-

# THULE

WEAPON SYSTEMS DIVISION  
DIRECTORATE OF NUCLEAR SAFETY

~~This article is classified ~~SECRET~~ RESTRICTED  
DATA in its entirety.~~

## INTRODUCTION

On 21 January 1968 the United States Air Force experienced its first nuclear accident in two years. The last previous accident occurred in January 1966 near Palomares, Spain.

This latest nuclear accident, or Broken Arrow, resulted from the crash of a B-52G aircraft near Thule Air Base, Greenland.

Deleted

DOE  
b(3)

The accident occurred following an uncontrollable in-flight cabin fire which necessitated abandonment of the aircraft. Six of the seven crew members survived.

The aircraft crashed on the sea ice of Wolstenholme Fjord, 7 1/4 miles west of Thule Air Base, at an estimated speed in excess of 450 knots. Figure 1 shows the crash location. The aircraft and weapons were destroyed by impact, explosion, and fire. Burning of the JP-4 fuel produced a blackened area, shown in Figure 2, which measured approximately 160 by 720 yards. The force of the impact and detonation of the high explosives in the bombs spread aircraft debris and weapon components over a 1- by 3-mile area. Radioactive contamination could be detected throughout most of this area; however, the majority of this contamination was confined to the blackened area.

Sections of the aircraft bomb bay were found 2 miles north of the impact area. These were not con-



Figure 1—Crash location

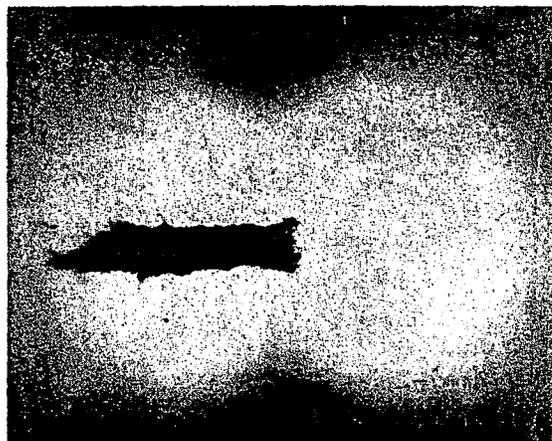


Figure 2—Blackened area

taminated. The aircraft had started to disintegrate prior to impact due to structural loads and air frame twisting at high speeds.

The thickness of the ice at the time of the crash was determined to be 30 to 48 inches. Depth of the water in the fjord under the crash site was about 800 feet.

The name "Crested Ice" was assigned to the Disaster Response Force recovery actions following the nuclear accident. Response Force actions were terminated as of 30 March 1968.

**ACCIDENT RESPONSE**

At 2040Z on 21 January 1968, the Headquarters SAC Command Post was notified that a crash had occurred at 2039Z. The SAC Disaster Control Team departed Offutt AFB at 0125Z, 22 January 1968, and arrived at Thule at 0644Z—approximately ten hours after the crash.

By 1845Z on 22 January 1968, a total of 68 people, including members of the SAC Team, were available at Thule to conduct the disaster control operation. Other commands or agencies represented were the Aerospace Defense Command, Air Force Logistics Command, Air Force Directorate of Nuclear Safety, Defense Atomic Support Agency, Atomic Energy Commission, Los Alamos Scientific Laboratory, and Sandia Corporation. Within days, the disaster control force had grown to a total of 565 people from 72 separate locations.

The On-Scene Commander was Maj Gen Richard O. Hunziker, Director of Materiel, Hq SAC. (He became the Deputy Inspector General for Inspection and Safety, Hq USAF, on 1 May 1968). Organization of the Disaster Control Team is shown in Figure 3.

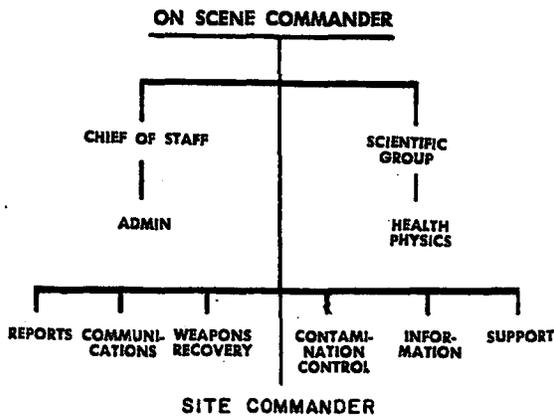


Figure 3—Organization of the Disaster Control Team

**ON-SITE FACILITIES**

To provide control, equipment support, shelter, and communications, a base camp was constructed at the accident scene.

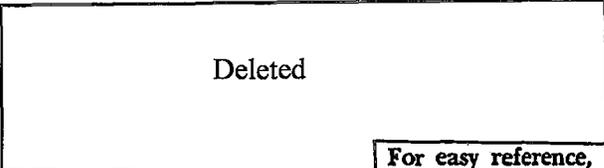
The first effort consisted of the construction of a heliport, erection of a prefab shelter and igloos, and the installation of generators, a telephone land-line, and radio communications. Much of the material for this first phase was transported to the site by helicopter sling.

Later, two ice roads from Thule Air Base to the crash scene were completed, making possible a 24-hour operation at the site. The base camp eventually consisted of a large prefab building, two ski-mounted buildings, several small huts, a Jamesway hut, a maintenance building, a decontamination trailer, a latrine, and several diesel power units.

This camp proved to be a key factor in permitting sustained operations in the arctic environment near Thule Air Base.

**WEAPONS RECOVERY**

The initial reconnaissance and early searches indicated that the 1- by 3-mile area south of the impact point was the prime area to be searched. While the total area searched was approximately 30 square miles, the search and recovery teams concentrated most of their efforts in the 1- by 3-mile area.



For easy reference, the four bombs were identified as No. 1, No. 2, No. 3, and No. 4, respectively.

Parts of the bombs were found scattered from the impact point southward for about 3 miles. The width of the scatter pattern was approximately 1 mile. Parachutes found in the burn or black area and within 1,000 feet of the impact point were heavily contaminated. Tritium reservoirs were located between 1,500 and 3,000 feet from the impact area. All reservoirs were empty and had been deformed by the detonation of the high explosives in the bombs. The reservoir from bomb No. 4 was deformed in a different manner than the ones from the other three bombs. Parts of secondaries and bomb debris were widely scattered throughout the 1- by 3-mile area. Individual bomb status is given below. Figure 4 shows the location of the recovered bomb components.

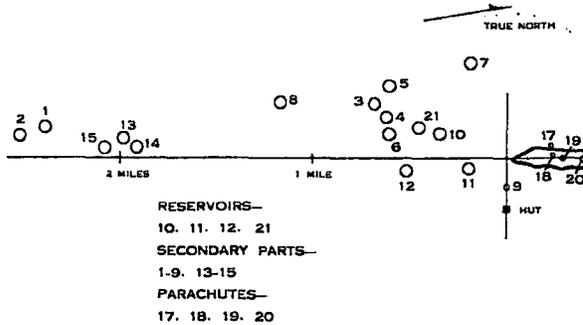


Figure 4—Location of recovered bomb components

- Bomb No. 1: Reservoir was found approximately 3,000 feet from the impact area. Parts of the secondary were found 1 mile and 2 miles south of the southern tip of the burn area.

- Bomb No. 2: Reservoir was located about 2,000 feet from the impact area.

DOE  
b(3)

Deleted

- Bomb No. 3: Reservoir was found approximately 1,500 feet from the southern edge of the burn area.

DOE  
b(3)

Deleted

- Bomb No. 4: Reservoir was found about 3,000 feet south of the impact area and 750 feet east of the reservoir from bomb No. 1.

Unnumbered parts of the bomb secondaries were found widely scattered. These pieces accounted for less than three complete secondaries. An analysis by the AEC of the recovered secondary components indicates recovery of 85% of the uranium and 94%, by weight, of three secondaries. No parts of the fourth secondary have been identified.

Other miscellaneous parts found were:

- Two 64-foot parachutes
- Two 16½-foot parachutes
- One unidentified parachute
- One tail closing plate
- Two valve assemblies
- One piece of case section, 2½ feet by 4½ inches
- One part of a low voltage power supply
- One front plate of a parachute deploying device
- One piece of coupling ring
- Four bomb lugs
- One piece of aluminum plate from fuze section (back of honeycomb)

Two irregular pieces of tuballoy—pencil size  
All recovered bomb components were moved from the crash area to Thule Air Base for inspection, identification, and packaging by AEC/PANTEX personnel prior to shipment to AEC facilities in the CONUS.

#### AIRCRAFT DEBRIS

The recovery of aircraft debris began during the early days of the disaster control operation. This was necessary in order to stop the spread of contaminated debris which occurred during periods of high winds. As this debris was collected, every effort was made to separate aircraft parts from weapon parts. Explosive Ordnance Disposal (EOD) personnel examined all questionable pieces to assure that weapon parts were not mixed with aircraft debris.

Containment of aircraft debris was started on 9 February, using 30- and 50-gallon containers, surplus R-4360 engine containers, and various large tanks obtained from the Thule Air Base salvage yard. All containers were sealed at the crash site, checked for any external contamination, and then moved to an on-base storage area where another check for external contamination was performed. Representatives from the Oak Ridge National Laboratory observed all packing, transportation, sealing, and storing procedures.

The recovered debris filled 163 drums, 14 engine containers, and 11 large tanks with a total capacity of 14,720 cubic feet.

During the summer months, the recovered debris will be shipped to a burial site within the CONUS.

#### CONTAMINATION CONTROL

Controlling the spread of contamination was one of the primary objectives of the disaster control team. Gross decontamination of personnel was accomplished at the crash site, and final decontamination was conducted in a complete on-base facility. The standards used were a maximum of 450 counts per minute (CPM) (measured with PAC-1S meters) for U. S. personnel, and zero for foreign nationals.

Vehicles underwent preliminary decontamination at the site and were then processed through water and steam facilities on base. These facilities were also used to decontaminate miscellaneous items of support equipment.

Base facilities such as billets, Officer and NCO Clubs, etc., were routinely monitored to verify the effectiveness of established contamination control procedures.

**RADIOLOGICAL MONITORING**

Radiological monitoring was accomplished throughout the entire disaster control operation.

Beta-gamma readings taken during the initial days of the operation with an AN/PDR-27J instrument did not exceed 1.5 milliroentgens per hour. This confirmed that there was no nuclear yield from any of the four weapons.

A zero line was established on 25 January. This line, enclosing a 1- by 3-mile area at the crash scene, marked the outer limits of measurable alpha contamination. This "Hot Line" was used for the control of personnel and vehicles entering and leaving the contaminated area.

Practically all metal debris within the 1- by 3-mile area was contaminated. Within the 160- by 720-yard black area, alpha contamination readings of 200,000 CPM were common; readings in excess of 2,000,000 CPM were obtained from some metal debris.

During the early phases of Operation "Crested Ice," alpha contamination measurements were made with PAC-IS meters. The effectiveness of these instruments for conducting an area radiological plot of the crash scene was questionable, since a thin cover of snow or ice would mask the alpha radiation.

Low energy X- and gamma rays are associated with the alpha decay of plutonium (17 KEV X-ray from plutonium 239 and 60 KEV gamma ray from americium 241, a daughter product of plutonium 241). For the first time at a Broken Arrow, an instrument capable of detecting these low energy X- and gamma rays was used for area surveys. The instrument is called the FIDLER (Field Instrument for Detection of Low Energy Raditions). The instrument consists of the new Eberline Instrument Company Model PRM-5 analyzer and a scintillation detector constructed by Harshaw Chemical Company. The detector scintillation crystal (Sodium Iodide) is 1/16 inch thick and 5 inches in diameter and is very efficient for low energy radiation. It was used effectively to plot plutonium contamination (area survey) by measuring the 60 KEV gamma radiation from the americium 241 which is not greatly attenuated by a thin layer of ice or snow.

The PRM-5 analyzer was also used with an Eberline SPA-3 detector, a 2- by 2-inch scintillation crystal suitable for higher energies. It was calibrated to measure the 185 KEV gamma radiation from uranium 235. This combination was used for weapon component searches.

**ARCTIC ENVIRONMENT**

On 22 January, when the SAC Disaster Control

Team conducted its initial reconnaissance of the crash area, a short period of half-light existed at midday. Twilight began on 24 January, increasing to 5 1/2 hours on 10 February. On that date, the sun appeared at Thule Air Base for the first time since 2 November 1967. The amount of sunshine increased daily until 10 April when there were 24 hours of sunlight.

The average equivalent temperature during operation "Crested Ice" was minus 40 degrees; on some days equivalent temperatures of minus 80 degrees were recorded. Associated with these extremely low equivalent temperatures were the sudden, severe arctic storms. Characteristics of these storms are as follows: Phase Alert, severe weather is forecast and probable; Phase I, wind 20-30 knots, visibility one-half to three-quarters of a mile; Phase II, wind 31-50 knots, visibility one-quarter to one-half of a mile; Phase III, wind 51 knots or more, visibility one-quarter of a mile.

DOE  
b(3)

**NUCLEAR SAFETY CONSIDERATIONS**

Deleted

Interrogation of the aircraft flight crew by the 8th Air Force Aircraft Accident Investigation Board definitely verified that the aircrew, during the flight, took absolutely no action to change any of the prescribed positions of the weapon control switches. All of these controls were maintained in the SAFE configuration in which they were originally placed when the weapons were loaded aboard the aircraft in accordance with the prescribed Technical Data.

The four weapons were subjected to the catastrophic environments of impact, explosion, and fire. Safety devices in the aircraft and the weapons prevented a nuclear detonation.

**SUMMARY**

Project "Crested Ice" was a unique operation. Most of the personnel who participated had little arctic experience. Much of the equipment was not designed for use under arctic conditions. The remote geographical location, severe weather conditions, the size of the disaster site, and the long periods of darkness all presented numerous and difficult problems not normally associated with established disaster control plans and operations. In spite of these problems, all disaster control actions were accomplished in a timely and successful manner. This outstanding accomplishment is a tribute to the professionalism of all who participated.

*I got the impression from notes that HPL developed this. JRS*

~~SECRET~~

# ~~AID~~ ~~STATION~~

by

Mark Modd

~~Individual paragraphs of the AID summaries are FOR OFFICIAL USE ONLY unless otherwise indicated. Any collection of data drawn from these summaries will bear a minimum classification of CONFIDENTIAL (paragraph 26, AFR 127.4).~~

## DON'T BREAK THE PIN

~~(S-P)~~ (Gp-1) The Mk-28 weapon-to-aircraft connectors are prone to breakage if roughly handled during loading. The break pins in the weapon connectors are particularly susceptible to shearing. The Mk-28 load/unload procedures in TO 1F-XX-16-2 and the break pin check portion (para 8-5) of TO 11N-B28-1 contain a multitude of caution notes. These notes stress that:

- Pullout receptacles are fragile.
- Extreme care is required to prevent damage to the plugs and receptacles.
- Side pressure must not be exerted on the receptacles.

~~(S-P)~~ (Gp-1) In addition to the fragile nature of the connectors, the point is that small lateral forces (side pressure) will damage (probably shear) the break pin because of the increased leverage. Since mid-March 1967, there have been six connector/break pin deficiencies attributed to personnel error. Four of these took place in a recent three-month period. The trend speaks for itself. Delicacy and gentleness go a long way. Be a lover not a rogue.

## WIND-BLOWN IGLOO DOORS AGAIN (AGAIN)

~~(S-P)~~ (Gp-1) The following is a repeat of an article from the Jan-Feb-Mar 68 issue (AID Station) of *USAF Nuclear Safety* (Part 1): "At an overseas storage site an MHU-12/M trailer loaded with a Mk-28 weapon was being removed from the igloo. Wind blew the igloo door closed and the door handle gouged the parachute cone and put a five-inch crack in the cover. This same thing happened before—and needlessly. It's a relatively simple matter to get the Civil Engineers to install door-restraining devices that will prevent the door from moving no matter how hard the wind blows. After the devices are installed, be sure to include a requirement for their use on your breakout check list!" Would you believe it happened again? This time the crack in the parachute cone was a little smaller. The wind—only 12 knots. The corrective action taken: a priority work order was submitted to have restraints installed. What is that old saying? "Forewarned is forearmed."

## OVER-CONCENTRATION AND OOPS!

~~(S-P)~~ (Gp-1) A clip-in assembly with four Mk-28 weapons was being removed from a B-52 aircraft using an MHU-7/M trailer. The munitions loading team was complying with the unloading procedure of TO 1B-52B-16CL-1 by observing the "CAUTION: 'Observe clearance between aircraft structure and clip-in package during removal.'" Good! The problem arose when the MHU-7/M trailer wheel ran over the MD-3 power cable at such a point to apply tension at the connection point of the MD-3 power cable and the MHU-7/M power receptacle. The

6

JUL/AUG/SEP 1968

~~SECRET~~

~~RESTRICTED DATA  
ATOMIC ENERGY ACT 1954~~

tension caused the power cable to twist causing a short between the power cable and receptacle which burned both connections and partially tore the rubber base of the power cable receptacle. Power was immediately turned off and a fire extinguisher broken out should a fire have developed. Then, the MHU-7/M was manually lowered to remove the weapons. Another MHU-7/M was mated to the clip-in package and the weapons were returned to the storage area. This is a case where apparently everyone was looking up to ensure that no contact would be made with the aircraft but no one was looking down to see where they were going. Take note and route the power cable so that movement of the MHU-7/M trailer will not cause this type of problem. Keep in mind that the tech order cannot include everything—play heads-up ball. This includes looking down!

**LITTLE PEBBLE-BIG TROUBLE**

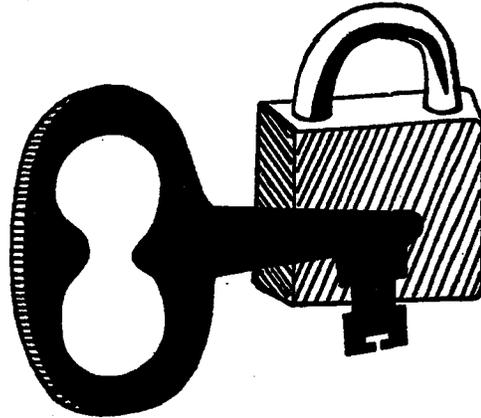
(C-FRD) (Gp-1) A Mk-53 had been transported to the alert pad for loading onto a B-52 aircraft. During the uploading operation, a break was discovered in the weapon skin. The weapon was returned to the maintenance facility for repair. Investigation revealed that a small pebble underneath the protective barrier paper was the cause of the problem. When the weapon was mated to the H-794 bolster cradle, the weight of the weapon against the pebble and bolster surfaces broke the weapon skin. Most probably the pebble was thrown up under the protective barrier paper during movement of the empty trailer. This type of incident has happened several times during the past few weeks. All loading personnel must physically inspect and insure that bolster surfaces are free of foreign objects before mating the weapon to a bolster cradle. Don't let a small pebble be the cause of this type of damage.

**KEYS AND LOCKS**

(C) (Gp-4) (Editor's Note: In the Apr-May-Jun 68 AID Station, an incident was cited in which an igloo was left unlocked. At that time we advised double checking of structure security before departing.)

(C) (Gp-4) Two munitions maintenance men had completed removal of two weapons from a storage magazine. Other weapons were in the structure. The security police strike team was called to verify that the magazine was secure. Upon arrival, a member of the strike team contacted the alarm operator and verified that the detection alarm system was set-up on

the structure. All personnel then departed the area. Twenty minutes later, a roving security patrol discovered the keys and locks on the ground in front of



the door. A HELPING HAND was declared. All hands must keep in mind that an important part of this nation's strength is contained in a nuclear weapons storage structure. Don't depart without assuring that it is secure!

**IT TAKES TWO TO TANGO**



(C) (Gp-4) A B-52 was being configured for ground alert, and the preload operational checks had been completed. The aircraft crew chief instructed an airman to clean up the crew compartment. A short time later, the weapon upload was started. When load crew personnel entered the crew compartment to perform post-load checks, they found the airman alone in the aircraft. Failure to fully understand the transition of an aircraft from a free area to a no-lone zone was the cause of this violation. Supervisors must insure that a suitable two-man team is employed during any operation requiring access to a weapon loaded aircraft.

**SECRET**

AFR 122-4 is a vital part of the USAF Nuclear Safety Program. Read it, follow it, and don't forget it!

LOOK — BEFORE YOU LEAP!

#### GAS (JP-4) PAINS

(U) There have been several reported cases of JP-4 fuel contamination on various weapons. The result is that seals and gaskets become rather fluid-like in nature and no longer serve their purpose. Besides the unnecessary weapon maintenance generated, the danger of introducing other contaminants via the deformed seals is obvious. The word is: keep the gas in the bird, and off the weapons.

#### HOT STUFF



(S) (Gp-4) A Mk 25 was being transported by an MF-9 trailer from the flight line to the munitions storage area. Six minutes after the convoy departed the flight line, smoke was observed coming from the right rear wheel of the MF-9 trailer. The convoy was stopped and fire department personnel arrived as a safety precaution. An investigation revealed that the deficiency had been caused by the right wheel brake cable sticking in the guide slot. The brake handle had been placed in the off position, but because the brake cable was stuck, the brake did not fully release. When an MF-9 trailer is to be moved, check and guarantee that the brakes have, in fact, released. This can be done by checking the brake cable for free movement. **DON'T GET CAUGHT WITH YOUR BRAKES HANGING!**



(U) A new "twist" was recently put on safety armament selector switches. When the armament selector switch was safened prior to loading on F-101 aircraft, the armament selector knob was inadvertently safety wired and sealed in a position other than safe. Neither the load crew (during the post-load checks) nor the aircrew accepting the aircraft noted the error. During aircrew changeover pre-flight, some 24 hours later, the pilot noticed and reported the switch position to the Safety Officer. No need to elaborate on the potential of this situation. Remember! Look before you safety wire. In addition, aircrew members must not only verify that a switch is safened and sealed but they must verify switch position.

#### AID REPORTING

(U) Clarification—AFR 127-4. A question arose recently on the interpretation of paragraph 7a(4)(g), AFR 127-4, which outlines a new requirement for mandatory reporting of unusual and severe environments. One intent of the reporting requirement is to ensure that heavy shocks and potentially damaging earthquakes are reported. Minor tremors of the level of a passing vehicle (and obviously well below levels of normal storage and handling shock and vibration) need not be reported even though such tremors result from earthquakes. Likewise, lightning strikes other than in the vicinity (within 1,000 yards) of a nuclear weapon need not be reported.

8

JUL/AUG/SEP 1968

**SECRET**

(This page is Confidential)

~~RESTRICTED DATA~~  
~~ATOMIC ENERGY ACT 1954~~

D00033909

~~SECRET~~

~~D00033202~~

3429-1

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: 07/14/2014	(DETERMINATION CIRCLE NUMBER(S))
Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DD	1 CLASSIFICATION RETAINED
Name: David Hamrin DRL4 AU-63	2 CLASSIFICATION CHANGED TO:
2 <sup>nd</sup> Review Date: 7/16/14	3 CONTAINS NO DOE CLASSIFIED INFO
Authority: DD	4 COORDINATION WITH: DoD
Name: R.L. Shankle	5 CLASSIFICATION CANCELED
	6 CLASSIFIED INFO BRACKETED
	7 OTHER (SPECIFY):

REC-150  
FEB 1985  
George...

**DEVELOPMENT**

**REPORT**

GENERAL TECHNICAL FILE  
SPL-DR-65-5  
4R 70A56  
R-15

~~RESTRICTED DATA This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited.~~  
**SANDIA CORPORATION**  
LIVERMORE CALIF. ALBUQUERQUE • N. MEX.

~~SPECIALLY HANDLED~~

~~CONFIDENTIAL~~

~~SECRET~~

D00033196

DC 1993-1 (11-01)  
RPA

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

DC Hix, AU-63 DATE 9/30/2014

OFFICIAL USE ONLY  
May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and Category: Exemption 6, Personal Privacy.  
Department of Energy review required before public release.  
Name/Org: Veronica Kornemann, Classification Technical Reviewer  
Org: 04255, SNL/NM  
Date: 5/22/2014 Guidance: N/A

~~SECRET~~  
~~RESTRICTED DATA~~

SCL-DR-65-5

**REPORT OF MINUTEMAN ACCIDENT  
INVOLVING A MK 11 RE-ENTRY VEHICLE  
AT SITE LIMA II, DECEMBER 5, 1964 (CFRD)**

R. K. Petersen, 8141-2  
Sandia Corporation, Livermore Laboratory

~~AEC ATOMIC WEAPON DATA SIGMA 1~~

RS 8232-2/6599

January 1965

INVENTORIED  
SEP 14 1965  
8232

~~ABSTRACT (CFRD)~~

At 3:00 PM (MST), December 5, 1964, a retrorocket fired on a MINUTEMAN missile at Site Lima II, Ellsworth AFB, South Dakota. This missile, under the command of the 44 Strategic Missile Wing, was on strategic alert and was fitted with a Mk 11 Re-entry Vehicle containing a Mk 56 Mod 1 warhead. The re-entry vehicle was dislodged and fell approximately 75 feet to the floor of the silo. This report covers the investigation conducted by AEC representatives at the accident site.

~~RESTRICTED DATA~~

GROUP 1- EXCLUDED FROM AUTOMATIC  
DOWNGRADING AND DECLASSIFICATION

~~This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited.~~

This documents consists of 22 pages.  
No. 37 of 44 copies, Series A.

~~SPECIFIED FOR EYES ONLY~~

This report was prepared for distribution within Sandia Corporation and the external distribution shown. No further external distribution of this report or dissemination of the information contained in the report shall be made without the approval of the issuing organization.

TD  
RR4

TRO. 2 of 35

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

CONTENTS

	<u>Page</u>
Introduction	3
Investigating Parties	3
Condition of Weapon	14
Recovery Operation	17
Security and Public Relations	21
Preliminary Post-Mortem Results	21
Summary and Conclusions	21

ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>
1	Re-entry Vehicle Attitude-Control Rockets	5
2	Abrasions on the First and Second-Stage Rocket Motors	6
3	Arming, Firing, and Attitude Control Assembly (Top View)	7
4	Arming, Firing, and Attitude Control Assembly (Bottom View)	8
5	Arming, Firing, and Attitude Control Assembly (Side View)	9
6	Re-entry Vehicle on Silo Floor	10
7	Evidence of Fired Retrorocket	12
8	Aft End of Re-entry Vehicle	13
9	Forward End of Re-entry Vehicle	15
10	Step Joint in Flare Section	16
11	Re-entry Vehicle Clearing Silo	18
12	Re-entry Vehicle During Transfer to Van	19
13	Re-entry Vehicle in Van	20

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

REPORT OF MINUTEMAN ACCIDENT INVOLVING  
A MK 11 RE-ENTRY VEHICLE AT SITE LIMA II, DECEMBER 5, 1964

Introduction

At 3:00 PM (MST), December 5, 1964, a retrorocket fired on a MINUTEMAN missile at Site Lima II, Ellsworth AFB, South Dakota. This missile, under the command of the 44 Strategic Missile Wing, was on strategic alert and was fitted with a Mk 11 Re-entry Vehicle (RV) containing a Mk 56 Mod 1 warhead. The RV was dislodged and fell approximately 75 feet to the floor of the silo. The missile, warhead, and Arming, Firing, and Attitude Control components (AF/AC), were in the safe condition at the time of the accident.

Investigating Parties

Around 8:00 PM (MST), December 5, Mr. D. P. Dickason, ALO, was notified by the Director of Nuclear Safety at Kirtland AFB that some squibs had fired on a MINUTEMAN missile and that a potential Broken Arrow had been declared. Mr. Dickason subsequently notified Lawrence Radiation Laboratory (LRL) and Sandia Corporation (SC) of the situation.

By midnight it was still unclear if any action by the laboratories was needed. At 6:00 AM (PST), December 6, 1964, Mr. D. M. Olson, Sandia Corporation, Sandia Laboratory (SCSL), and Mr. Dickason called Mr. R. K. Petersen, Sandia Corporation, Livermore Laboratory (SCLL), and stated that the RV had fallen 75 feet to the silo floor. They informed him that the Director of Nuclear Safety at Kirtland AFB was sending a team of observers to Ellsworth AFB and that AEC/DMA wanted an ALO representative to accompany them. It was decided that an SCLL representative should meet the team in Denver and proceed to Ellsworth AFB.

It was also decided at this time that an LRL representative probably was not required. Mr. M. D. Martin, LRL, who had been previously informed of the situation, was contacted and concurred. He asked to be notified of the conditions at the silo and stated that he would then send someone if the situation warranted it.

The group of observers consisted of Mr. D. P. Dickason, AEC/ALO; Lt. Col. J. O. Mitchell, USAF/DNS; Maj. H. B. Lacy, USAF/DNS; Capt. D. J. Loosley, USAF/AFWL; and Mr. R. K. Petersen, SCLL. The group arrived at Ellsworth AFB, South Dakota, at 3:45 PM (MST), December 6, 1964, and went immediately to the office of Lt. Col. J. W. Eskridge, Director of Safety, 44 Strategic Missile Wing. There the group was briefed, as follows:

At 2:00 PM (MST) December 5, 1964, two airmen entered Lima II to investigate an IZ (inner zone) security alarm. They opened the personnel access door and descended to the equipment room to conduct a routine check of the IZ and

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

OZ (outer zone) security circuitry. The check consisted, in part, of removing a fuse and observing the operation of a relay to determine continuity. When the fuse had been removed and reinserted the third time there was a violent explosion. This explosion occurred at approximately 3:00 PM (MST). About one hour later the two airmen returned in the company of a third airman and after a cursory inspection through openings in the launch tube reported that the RV was missing.

The group of observers then reported to the Command Post and Col. V. M. Cloyd, Commander, 44 Strategic Missile Wing. Here they were able to monitor, via remote hookup, the progress of the explosive ordnance (EOD) team as it entered the silo at 5:00 PM (MST). The EOD team was to:

1. Safe the ignitors on the missile;
2. Disconnect the ignitor batteries at the J-Box;
3. Safe and remove the RV attitude-control rockets (which were still lying on top of the missile) (Figure 1); and
4. Inspect the RV at the bottom of the silo. (This was the first close look at the RV.)

After completion of items 1, 2, and 3 Capt. M. M. Costa, 2701 EOD, Ellsworth AFB, and Capt. E. S. Tschirhart, OOAMA, Hill AFB, descended to the bottom of the silo. They reported:

1. Some abrasions were present on the first and second stage rockets (Figure 2);
2. Debris from the exit nose cone was present at the missile support ring Number 1;
3. The "firing set" was lying on the floor 6 feet from the RV (this was later identified as the AF/AC) (Figures 3, 4, and 5);
4. No contamination was indicated by monitoring equipment; and
5. The RV was damaged and lying partially under one of the base legs of the missile support ring. (Figure 6)

After completion of this operation the silo was secured and the observers adjourned for the day.

At 8:00 AM December 7, the observers met with Col. J. V. Farley, 341 SMW, Malmstrom AFB, and offered their services. Col. Farley was President of the 15th Air Force Accident Investigation Board that had been formed to investigate this accident. He invited the group to attend the briefing the EOD was about to present.

The EOD team leader, Capt. Tschirhart, presented his group's observations with the aid of color slides taken during the inspection the previous night.

~~SECRET~~  
~~RESTRICTED DATA~~

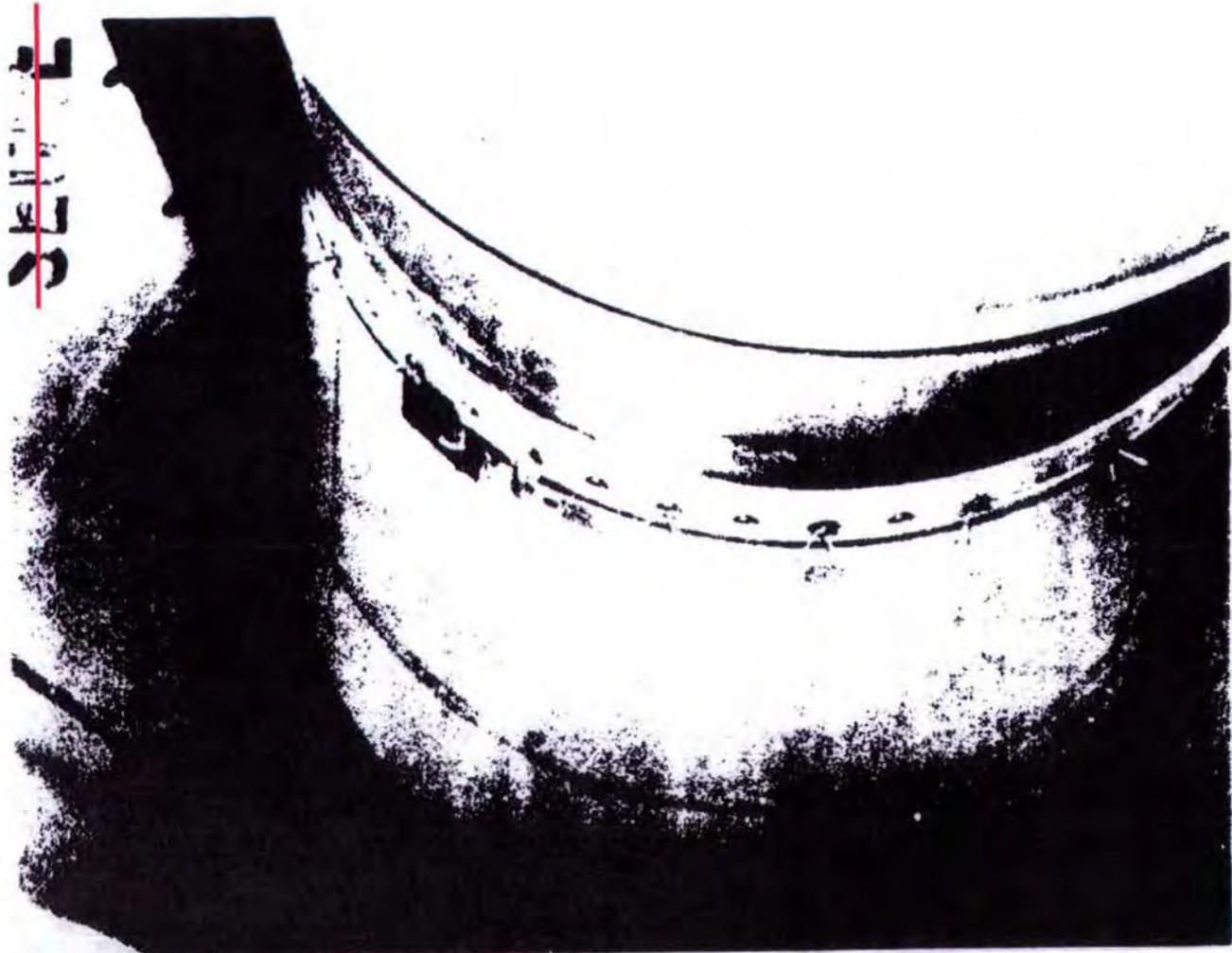
~~SECRET~~  
~~RESTRICTED DATA~~



~~SECRET~~  
~~RESTRICTED DATA~~

Figure 1. Re-entry Vehicle Attitude-Control Rockets

*poor image  
unable to  
review*



~~SECRET~~

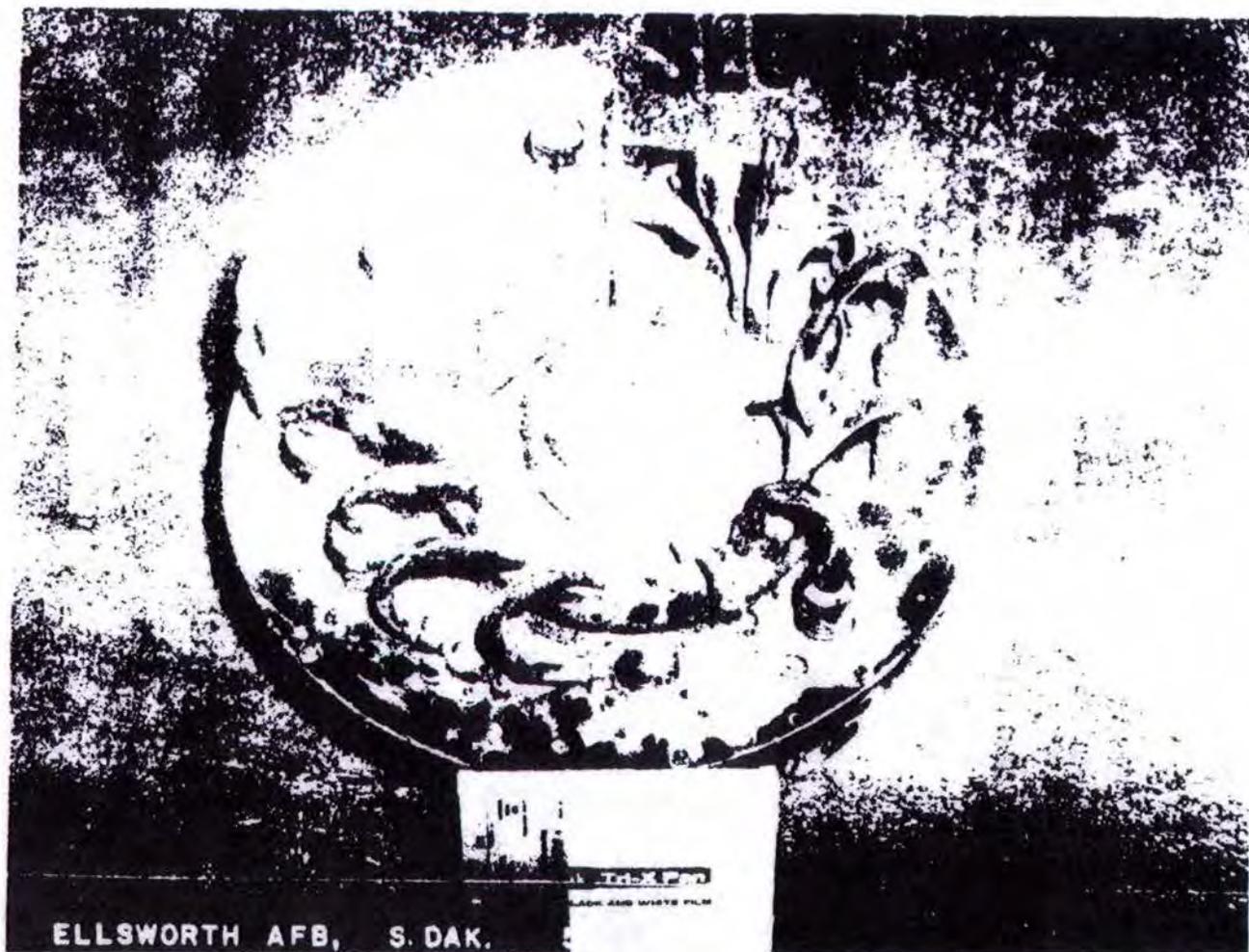
~~SECRET~~  
RESTRICTED DATA

~~SECRET~~  
RESTRICTED DATA

Figure 2. Abrasions on the First and Second-Stage Rocket Motors

*Poor image  
unable to  
Review*

~~SECRET~~  
RESTRICTED DATA

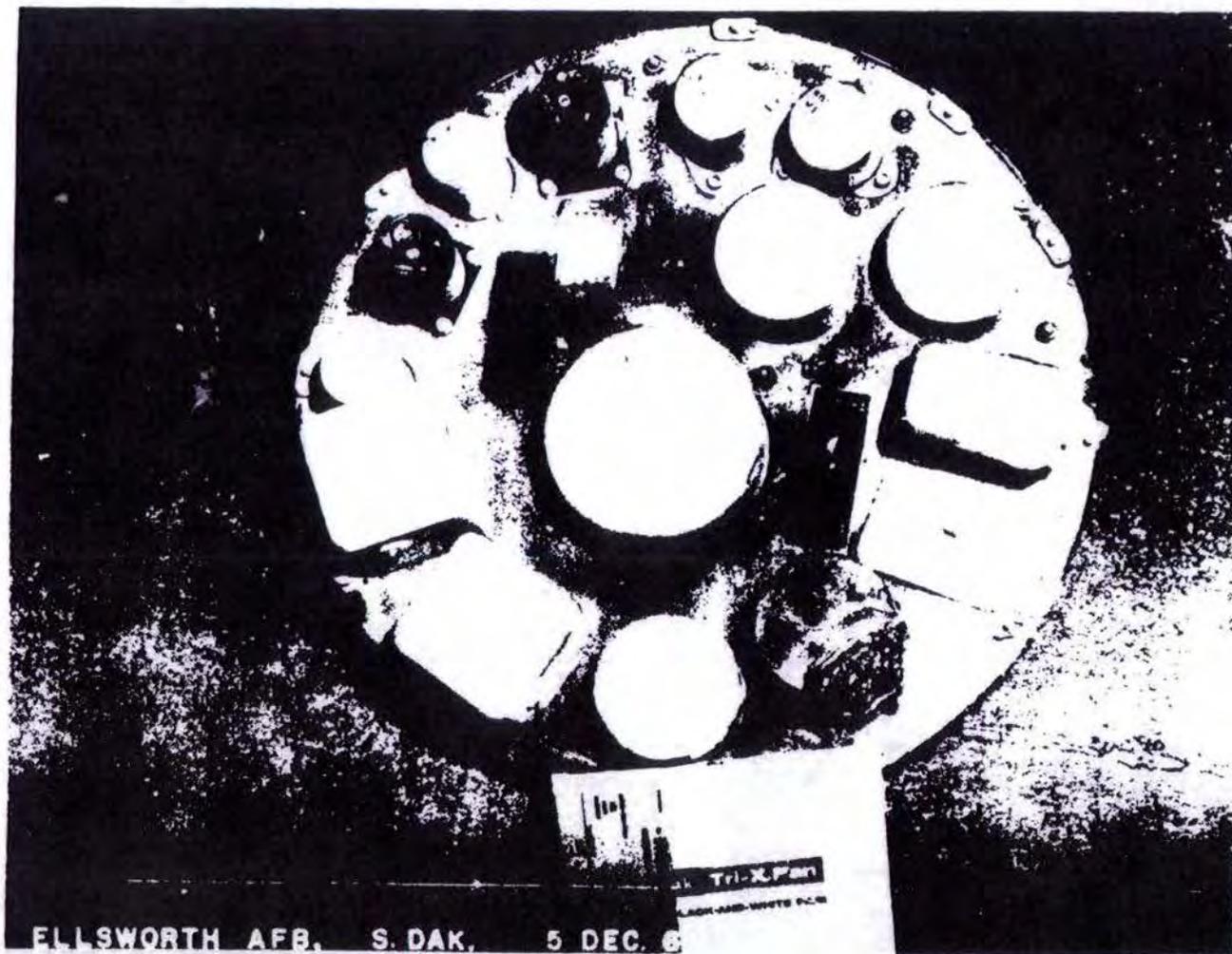


~~SECRET~~  
RESTRICTED DATA

Figure 3. Arming, Firing, and Attitude Control Assembly (Top View)

*poor image  
unable to  
review*

~~SECRET~~  
~~RESTRICTED DATA~~



~~SECRET~~  
~~RESTRICTED DATA~~

Figure 4. Aiming, Firing, and Attitude Control Assembly (Bottom View)

*Poor image  
unable to  
Review*



Figure 5. Arming, Firing, and Attitude Control Assembly (Side View)

*Poor image  
unable to  
review*

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

Missile Support  
Rate Log

~~SECRET~~



~~SECRET~~  
RESTRICTED DATA

~~SECRET~~  
RESTRICTED DATA

Figure 5. Re-entry Vehicle on Silo Floor

DOE  
b(3)

*poor image  
unable to  
review*

~~SECRET~~  
~~RESTRICTED DATA~~

DOE  
b(3)

Capt. Tschirhart reported that one retrorocket had fired (Figure 7) and stated that this had caused the RV to separate and fall to the bottom of the silo. He reported that the "firing set" had broken loose and that the tritium bottle was exposed to view but seemed intact. Further, Capt. Tschirhart was certain that the warhead high explosive (HE) had broken up.

Deleted

(During this presentation, a faulty slide projector prevented the color slides from showing a clear picture of the situation.) Capt. Tschirhart recommended removing the RV with modified RV handling equipment and then disassembling and disposing of it somewhere at Ellsworth AFB.

After the briefing, Mr. Martin and Mr. N. D. Benedict of LRL were contacted. By using an EOD manual at each end of the telephone conversation, the following information was relayed:

1. The "firing set" had separated from the RV and was lying about 6 feet away;
2. Some water containing a yellow substance (perhaps sodium dichromate from the cooling system) was on the floor of the silo;
3. All monitoring equipment registered low readings (i. e., background only);
4. Avcoating and ablative material were shattered; No DOE Bracket
5. Deleted
6. The reservoir was intact;
7. Deleted
8. The sides of the case were not ruptured;
9. The nose of the RV was off and the forward end of RV was caved in and split;
10. Impact crystals were visible and some had peeled away;
11. The warhead was visible through the RV shell;
12. There was no apparent damage to the HE nuclear outer structure; however, the HE had probably fractured, and
13. The missile showed abrasive marks but no punctures.

DOE  
b(3)

DOE  
b(3)

It was apparent that items 1, 5, 6, and 7 did not correlate. It was also apparent to Mr. Martin and Mr. Benedict that item 12 might not be a good estimation of the situation. Mr. Benedict did not think that the HE had fractured but he felt other damage might have been done. They asked if a better look at the slides could be obtained.

~~SECRET~~  
~~RESTRICTED DATA~~



~~SECRET~~

~~SECRET~~  
RESTRICTED DATA

~~SECRET~~  
RESTRICTED DATA

ELLSWORTH AFB, S. DAK

Figure 7. Evidence of Fired Retrorocket

*Poor image  
unable to  
review*

~~SECRET~~



~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

WALLSWORTH AFB S.D.K. 5 DEC 64

Figure 1. End of Reentry Vehicle

1  
*Poor image  
unable to  
review*

Another slide projector was located and the slides reviewed. [redacted]

DOE  
b(3)

[redacted]  
Deleted

Mr. Martin subsequently requested that the RV not be moved until Mr. Benedict arrived to assay the situation. The request was relayed and the Air Force agreed to wait.

Mr. Benedict arrived at 8:00 PM (MST) December 7, 1964. He was briefed and was shown the slides of the RV. The group of observers received permission to enter Lima II the next morning to conduct a first-hand investigation.

#### Condition of Weapon

On Tuesday, December 8, 1964 the observers went down the silo at Lima II. The following observations were made:

1. The missile had some minor abrasions on the side of the second and first stages; [redacted] DOE b(3)
2. The gas reservoir was intact but leaning to one side; [redacted]
3. [redacted] Deleted
4. The electrical component deck had moved forward 1 to 2 inches and was dented; [redacted]
5. [redacted] Deleted DOE b(3)
6. The outer portions of the firing set had been blackened; and
7. The flare was flattened (with a major diameter of approximately 30 inches and a minor diameter of approximately 26 inches). [redacted]

Mr. Benedict decided that the only way to bring the unit up would be nose down in a cargo net with the net strapped to the unit. [redacted]

[redacted] Deleted Any render-safe procedures would be done at a magazine, thereby minimizing personnel hazards. [redacted]

The Accident Investigation Board met at 8:30 PM. Mr. Benedict briefed them as follows regarding his opinion of the condition of the warhead: DOE b(3)

1. The step joint in the flare section had opened 30 to 50 mils, either because of sheared rivets, elongated holes, or both (Figure 10);

~~SECRET~~  
RESTRICTED DATA

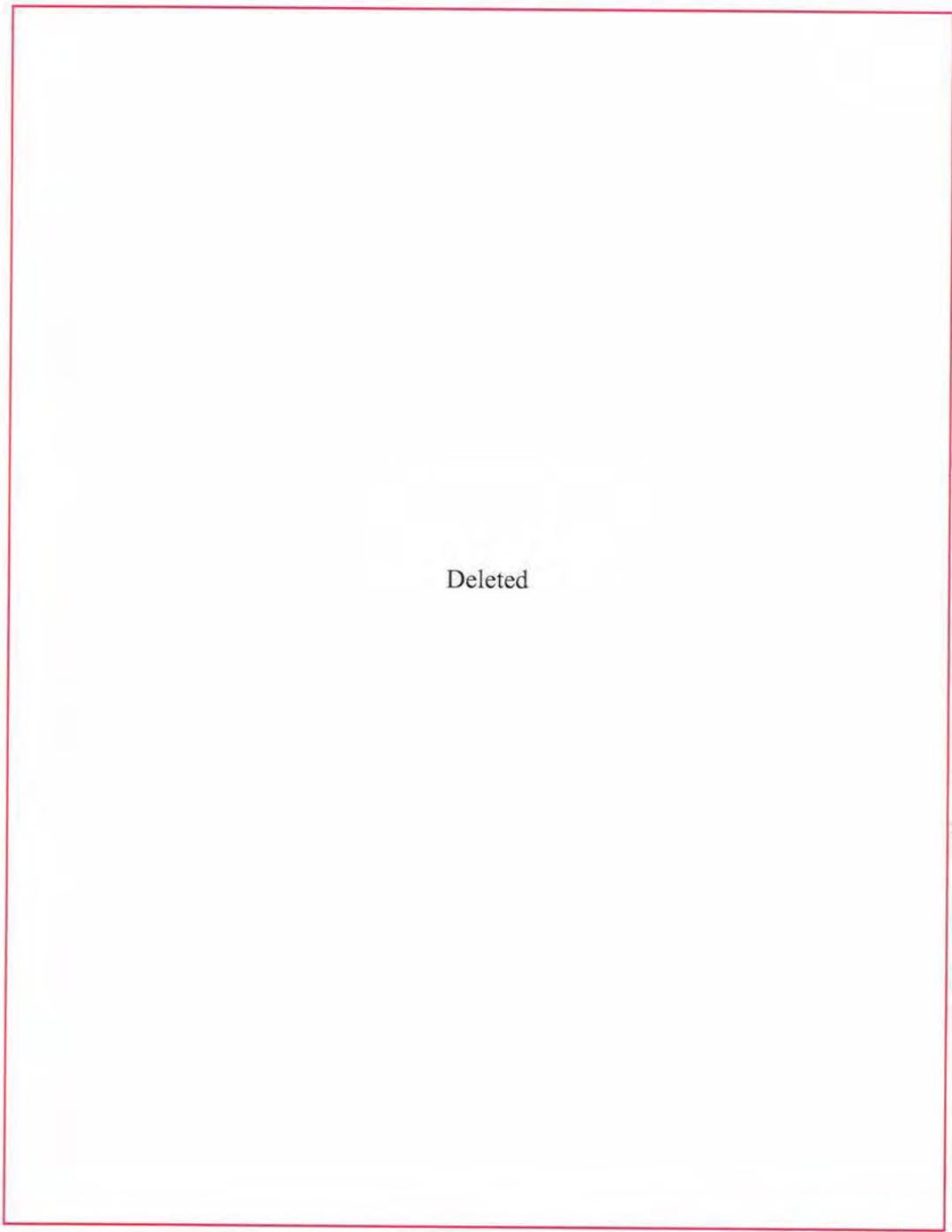


~~SECRET~~  
RESTRICTED DATA

Figure 9. Forward End of Re-entry Vehicle

1  
*Poor image  
unable to  
review*

~~SECRET~~  
~~RESTRICTED DATA~~



Deleted

DOE  
b(3)  
Illegible

*Poor image  
Unable to  
Review*

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
~~RESTRICTED DATA~~

2. The warhead pit seal had probably not opened (no alpha);
3. The reservoir was intact; and
4. Deleted

DOE  
b(3)

The Board was also informed that the warhead was electrically inert since the power supplies had been torn away and there was no reason to suspect that any residual electrical charges were present.

#### Recovery Operation

Mr. Benedict presented his plans for RV recovery to the Accident Investigation Board. In conjunction with Mr. Benedict's plan, outlined previously, Mr. Petersen had recommended that the warhead should come up isolated electrically from the hoisting crane and other ground points since circulating ground currents in the area were undetermined. The rocket engineers now became alarmed at the possibility of static discharge, due to the cold, dry climate and the nylon cargo net. Mr. Petersen then recommended a high-resistance grounding circuit and confirmed its adequacy with Mr. J. S. Anderson, SCLL. The EOD built the device for attachment to the RV and the Board approved its use.

SAC, 15th Air Force, BSD, and others approved the plan for removal of the RV on December 9. A mobile crane was positioned over the silo. The RV was manually moved to a hoisting position and then raised slightly with the crane and a strap. A heavy nylon cargo net was slipped under the RV and securely strapped to the unit. The grounding cable and a safety rope were attached. The RV was then hoisted out in a nose-down attitude and cleared the silo at approximately 4:50 PM (MST) December 9, 1964 (Figure 11).

The RV was immediately transferred to an RV van, where it was suspended from an overhead, track-mounted hoist (Figure 12). The nose was rested on mattresses with the hoist used to maintain vertical alignment and cargo tie down straps used to prevent lateral motion (Figure 13). The RV was moved from Lima II to Ellsworth AFB on December 10.

Mr. Benedict had requested radiographers, a radiation safety specialist and their equipment, from LRL. Mr. W. T. Fritts and Mr. F. F. Sojka were the radiographers and Mr. G. E. Costella was the radiation safety specialist.

The RV arrived at Ellsworth AFB at 4:30 PM December 10 and was taken to a magazine for the render-safe procedures. At 9:00 PM the DT reservoir was removed and radiographs were taken to determine the condition of the internal parts. The radiographs were reviewed in the early hours of December 11 and indicated no cracked HE and no deformation of the pit.

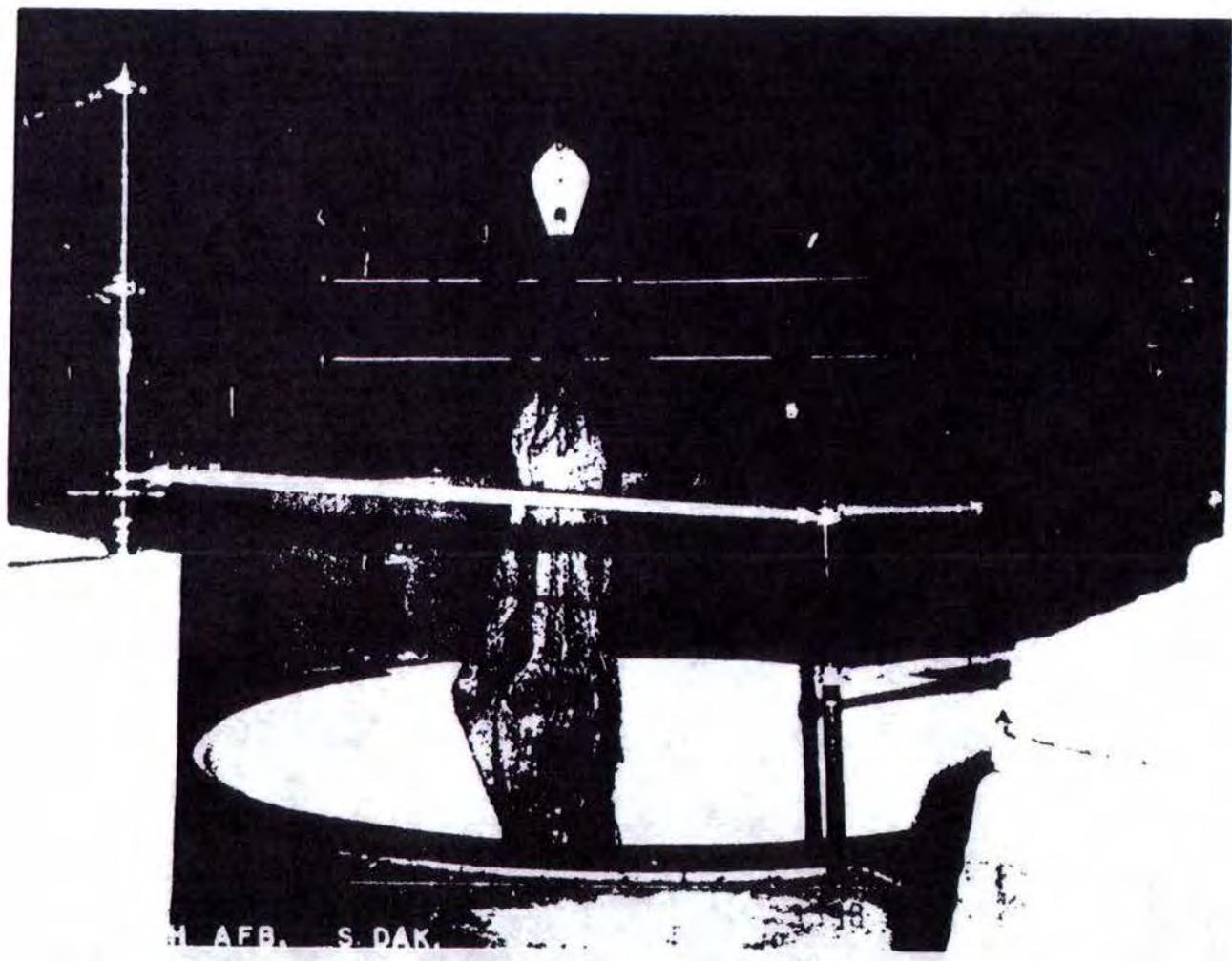
DOE  
b(3)

Deleted

It was concluded that with some further disassembly and proper packaging the unit was safe for shipment to Medina.

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~  
RESTRICTED DATA



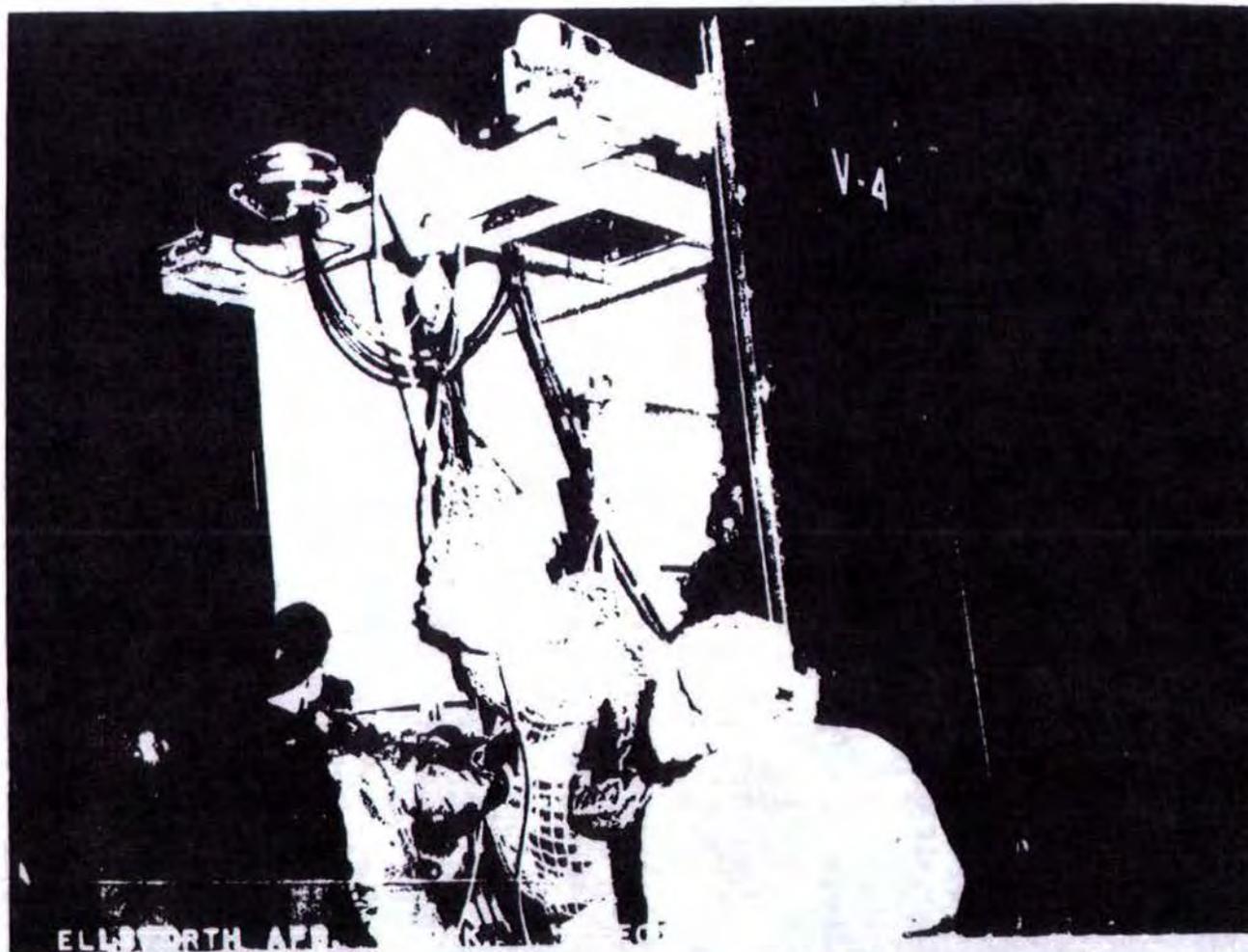
~~SECRET~~  
RESTRICTED DATA

H AFB, S. DAK.

Figure 11. Resolute Vent 10 C...

*Pool image  
unable to  
review*

~~SECRET~~  
~~RESTRICTED DATA~~

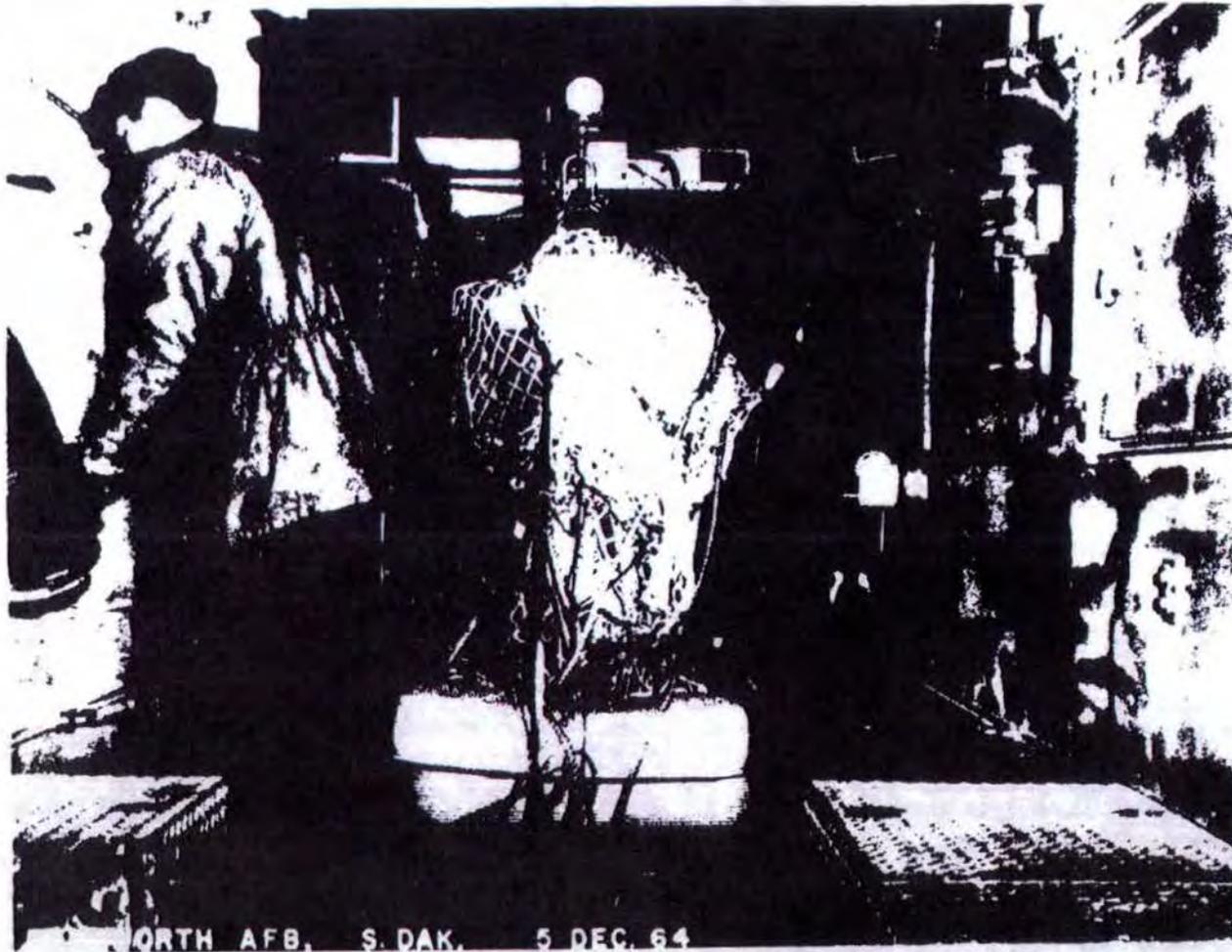


~~SECRET~~  
~~RESTRICTED DATA~~

Figure 12. Rescue Vehicle Being Hoisted to Well

1  
Poor image  
unable to review

~~SECRET~~  
~~RESTRICTED DATA~~



~~SECRET~~  
~~RESTRICTED DATA~~

Figure 14. Recovery Vehicle - 2 View

*poor  
image unable  
to review*

Deleted This was subsequently done by the  
EOD at Ellsworth AFB.

The group of observers, except for Mr. Benedict, left Ellsworth AFB at 2:45 PM (MST) on December 11. Mr. Benedict stayed to make arrangements for packing and shipping the unit to Medina.

#### Security and Public Relations

Security and public relations were handled by the 44 Strategic Missile Wing and Ellsworth AFB. No release concerning this incident was made to the press. The entire operation was handled in such a way that the nearby communities were not aware of and did not exhibit even a mild interest in the operation.

#### Preliminary Post-Mortem Results

At the time of this writing, a post-mortem had not been conducted. There is no reason to suspect that any of the warhead electrical components were actuated.

The warhead component deck will be shipped to SCLL from Medina for post-mortem of components by the design group responsible.

#### Summary and Conclusions

This accident shows, as do all others, that circumstances make each accident unique. The warhead had been designed to withstand and remain safe in all conceivable situations. Even so, after this accident the warhead was in such a condition that an improper recovery procedure could have had serious consequences. If not actually leading to a detonation, an improper procedure could perhaps have placed the nuclear system in a more critical state.

The Air Force never requested the assistance of the design agencies and was prepared to recover on its own. The fact that the agencies responded of their own accord, and were in fact utilized immediately, points out that they were needed.

A recommendation as to how to prevent this type of accident cannot be made here; but, a recommendation is made that the AEC laboratories respond, whether requested or not, at the first indication of trouble.

The EOD teams seem competent enough to handle most of the situations, but, in this instance, as in others, there are always those peculiar circumstances which should be viewed by persons intimately familiar with the weapon design.

~~SECRET~~  
~~RESTRICTED DATA~~

**DISTRIBUTION:**

- 1-15/44A - D. P. Dickason, Storage Division, ALO
- 16/44A - N. D. Benedict, LRL
- 17/44A - M. D. Martin, LRL
- 18/44A - S. P. Schwartz, 1
- 19/44A - R. W. Henderson, 1000
- 20/44A - L. A. Hopkins, Jr., 1300
- 21/44A - J. H. Findlay, 1400
- 22/44A - W. A. Gardner, 1500
- 23/44A - E. H. Draper, 2000
- 24/44A - H. E. Lenander, 2500
- 25/44A - D. R. Cotter, 5500
- 26/44A - L. D. Smith, 5600
- 27/44A - L. E. Lamkin, 7300
- 28/44A - A. B. Machen, 7500
- 29/44A - B. S. Biggs, 8000
- 30/44A - L. Gutierrez, 8100
- 31/44A - D. E. Gregson, 8141
- 32/44A - C. R. Barncord, 8150
- 33/44A - L. E. Davies, 8160
- 34/44A - E. F. Ingledue, 8166
- 35/44A - Technical Library, 3421
- 36/44A - Central Technical File, 3428-1; Attn: Edna Baca (Bldg. 836)
- 37/44A - G. C. Newlin, 6011/Central Technical File, 3428-1
- 38-39/44A - Information Distribution, 3427-3
- 40/44A - E. Bodie, 8232-1
- 41-44/44A - Central Technical File, 8232-2

This report was prepared for distribution within Sandia Corporation and the external distribution shown. No further external distribution of this report or dissemination of the information contained in the report shall be made without the approval of the issuing organization.

~~SECRET~~  
~~RESTRICTED DATA~~

~~SECRET~~

# BROKEN ARROW EXAMINATION

D00033203

D00033910

5 15033

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

D.C. Hix, AU-63 DATE 9/30/14

## MASON & HANGER - SILAS MASON CO., INC. CLARKSVILLE FACILITY FORT CAMPBELL, KENTUCKY

DEPARTMENT OF ENERGY RECLASSIFICATION REVIEW

1<sup>st</sup> Review Date: 07/16/2014

2<sup>nd</sup> Review Date: 7/16/14

Authority:  DOE  DD

Name: David Hamrin DRL4 AU-63

Authority: DR P.L. Shankle

Classification:  CONFIDENTIAL  SECRET  OTHER

Other:  CONFIDENTIAL  SECRET  OTHER

**OFFICIAL USE ONLY**

May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and Category: Exemption A - Personal Privacy

Department of Energy review required before public release.

Name/Org: Veronica Kormemann, Classification Technical Reviewer, Org 4255, SNL/NM

Date: 6/12/2014 Guidance: N/A

UNCLASSIFIED  
FEB 15 2015  
3423

DOCUMENT ACCOUNTABILITY DATA			
RS or X No. (A)	Copy No. & Series (V)		
RS-3427-8181	226		
Short Title (C) *			
MHSMGFPPRBA-			
Class. (B)	Doc. Date (G)	Limit Code	Pages (H)
<del>SECRET</del>	2/16/65	D	27

~~ATOMIC WEAPON DATA~~  
CATEGORY SIGMA 3

Control No. CB5-16,650  
This document consists of 27 pages  
No. 11 of 20 copies, series A

CONTROL NO. 8165

Group I

27p.

~~RESTRICTED DATA~~  
THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.

**FEBRUARY 16, 1965**  
~~SECRET~~

Excluded from automatic  
downgrading and declassification  
20140007759.

RS 3427 8181  
c. 11A

On December 8, 1964, a B-58 Aircraft assigned to Bunker Hill Air Force Base, Indiana, while participating in an alert exercise at this base, was involved in an accident. [The aircraft was carrying a B-53 internally and Four (4) B-43's externally.] The landing gear of the aircraft collapsed while attempting to maneuver the aircraft into take-off position. With the collapse of the landing gear, the aircraft was immediately engulfed in flames.

The examination and disposition of residues involving the B-53 are a subject of another report. This report concerns itself with the examination and disposition of residues of the four (4) B-43's involved in the accident.

Sandia Technical Library-NM



INVENTORIED  
2005

RS-3427/8181  
c. 11A

CONDITION OF WEAPONS

The general condition of the B-43's involved in the accident are enumerated below (information was obtained from AEC representatives at the site of the accident):

43 BA, S/N 92426 (See photographs - Pages 7, 8, 9, 10)

DOE  
b(3)

[Redacted]

plutonium contamination present.

Deleted

There was little

[Redacted]

present.

Considerable uranium contamination was

[Redacted]

The Nose, S/N 92646 and the Shape Component, S/N 20921 were essentially consumed by the fire.

43 BA, S/N 86766 (See photographs - Pages 11, 12, 13)

DOE  
b(3)

[Redacted]

Deleted

There was little plutonium contamination present.

[Redacted]

erable uranium contamination was present.

Consid-

**DO NOT DESTROY**  
RETURN TO  
**LIBRARY VAULT**

[Redacted] Deleted [Redacted] The Nose, S/N 35515 and the Shape Component, S/N 26111 were essentially consumed by the fire.

DOE  
b(3)

43 BA, S/N 93315 (See photographs - Pages 14, 15, 16, 17, 18, 19, 20, 21)

The Basic Assembly, with its components, were left in good condition along with the Nose, S/N 12135 and the Shape Component, S/N 33364. This unit was disassembled at Bunker Hill. The Nose and Shape Component were removed.

[Redacted] Deleted [Redacted]

DOE  
b(3)

43 BA, S/N 96642 (See photographs - Pages 22, 23, 24, 25, 26)

[Redacted] Deleted [Redacted] The Nose, S/N 17333 and the Shape Component, S/N 20633 associated with the Weapon were partially consumed by fire. The Nose and Shape Component were removed.

DOE  
b(3)

[Redacted] Deleted [Redacted]

DOE  
b(3)

PACKAGING OF RESIDUES AT ACCIDENT SITE

The residue (except for the H.E. which was burned at Bunker Hill) from the aforementioned weapons was shipped from Bunker Hill to Clarksville Facility in containers identified as indicated below:

1. B-43, S/N 92426 [Redacted]

a. Type 79 Pit in Type 2A Container (2/1)

[Redacted] Deleted [Redacted]

DOE  
b(3)

c. Fuzing and Firing components with part of case section in sealed AN Can (2/3)

[Redacted] Deleted [Redacted]

DOE  
b(3)

~~SECRET~~ ~~RD~~

2. B-43, B/N 86766

- a. Type 79 Pit in Type 2A Container (3/1)
- b. Case residue in sealed AN Can (3/2)
- c. Case residue in sealed AN Can (3/3)
- d. Remains of Nose and Shape Component in sealed AN Can (3/4)
- e. Case residue in sealed AN Can (3/5)
- f. Case residue in sealed AN Can (3/6)
- g. Remains of Fuzing and Firing components with part of case section in sealed AN Can (3/7)
- h. Case residue in sealed AN Can (3/8)

DOE  
b(3)

Deleted

3. B-43, B/N 93315

- a. Type 79 Pit in Type 2A Container (4/1)
- b. Deleted
- c. Nose, Shape Component, and case section containing Fuzing and Firing components in a 4' x 4' x 4' wooden box (4/3)
- d. Deleted
- e. Shape Component fins in pasteboard box (4/5)

DOE  
b(3)

DOE  
b(3)

~~SECRET~~ ~~RD~~

~~SECRET~~ RD

4. B-43, S/N 96642

Deleted

DOE  
b(3)

b. Type 79 Pit in Type 2A Container (5/2)

Deleted

DOE  
b(3)

d. Nose, Shape Component, and case section containing Fuzing and Firing components  
in 4' x 4' x 4' wooden box (5/4)

Deleted

DOE  
b(3)

POSTMORTEM

On February 16, 1965, postmortem of weapon residues was held at Clarksville Facility. The following individuals were present during the postmortem:

<u>Name</u>	<u>Organization</u>	<u>Name</u>	<u>Organization</u>
Lt. Adams, T. C. (observer)	Field Command DASA	Thne, Richard J.	M&H - Clarksville
Baker, E. L.	M&H - Clarksville	Kopansky, Ralph M.	AEC-CBO
Crain, John N.	M&H - Clarksville	Lampe, L. H.	M&H - Clarksville
Crismon, Wm. Jr. (observer)	M&H - Medina	Maj. Layne, William C. (observer)	Directorate of Nuclear Safety, USAF, Kirtland AFB, N. M.
Eager, Thomas A. F.	Sandia - Clarksville	Lewis, Clay	M&H - Clarksville
Elvebak, W. D.	AEC-CBO	Meacham, Jack R.	Sandia - Clarksville
Grewis, Eugene G. (observer)	NAVEODFAC - Indian Head, Md.	Mitten, Wayne B. Jr. (Mfg. Agency Rep)	ACF Industires Inc., Albuquerque, N. M.
Guier, L. M.	Sandia - Clarksville		
Hill, T. K. (Design Agency Representative)	Sandia, 1511, Albuquerque		

~~SECRET~~ RD

<u>Name</u>	<u>Organization</u>	<u>Name</u>	<u>Organization</u>
Pearson, James H.	M&H - Clarksville	Shipp, P. G. (Mfg. Agency Rep)	Union Carbide, Oak Ridge, Tenn.
CDR. Phillips, Edward G. (observer)	USN-QC Clarksville Base	Lt. Staples, Henry E. (observer)	USN-EOD Clarksville Base
Maj. Porter, Eugene R (observer)	SAC Hqs. (DM4E) Offutt AFB Omaha, Nebraska	Capt. Wadsworth, V. A. (observer)	USN-CO Clarksville Base
Rhoades, Earle D.	M&H - Clarksville	Lt. Watkins, James (observer)	NAVEODFAC, Indian Head, Md.
Schneider, Paul H. (AEC/ALO Rep)	AEC-ALO		

The following recommendations were made with respect to the disposition of the residue:

B43-0, S/N 86766

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Oak Ridge for burial: Containers 2 thru 8 (marked "BUNKER HILL RADIOACTIVE CONTAMINATED RESIDUE")
3. Ship to Oak Ridge, Y-12, for disposition: Special metal box (marked "BUNKER HILL SPECIAL RESIDUE")

B43-0, S/N 92426

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Oak Ridge, Y-12, for disposition: Deleted (marked "BUNKER HILL RESIDUE") DOD (b)(3)42 USC 2162
3. Ship to Oak Ridge for burial: Containers 3 and 4 (marked "BUNKER HILL RADIOACTIVE CONTAMINATED RESIDUE")

B43-O, S/N 93315

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Sandia Corporation, Albuquerque, for disposition: Remains of X-unit/rear case section and Nose from Container 2 (marked "BUNKER HILL RESIDUE")
3. Ship to Oak Ridge, Y-12, for disposition: [ Case section and Squash (marked "BUNKER HILL RESIDUE") ]
4. Ship to ACF, Albuquerque, for disposition: Tail fins from Shape Components (marked "BUNKER HILL RESIDUE")
5. Ship to Oak Ridge for burial: Remains of Shape Component from Container 2 (marked "BUNKER HILL RESIDUE")

B43-O, S/N 96642

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Sandia Corporation, Albuquerque, for disposition: Remains of X-unit/rear case section from Container 3 (marked "BUNKER HILL RESIDUE")
3. Ship to Oak Ridge, Y-12, for disposition: [ Case section and Squash (marked "BUNKER HILL RESIDUE") ]. Deleted

Deleted

DOD

(b)(3)42 USC 2162

4. Ship to Oak Ridge for burial: Remains of Shape Component and Nose from Container 3 (marked "BUNKER HILL RESIDUE")

On March 8, 1965, a TWX from USAEC, ALO, dated March 5, 1965 approved the recommendations indicated above. The material has been disposed of and shipped in accordance with these recommendations.

DOE  
b(3)

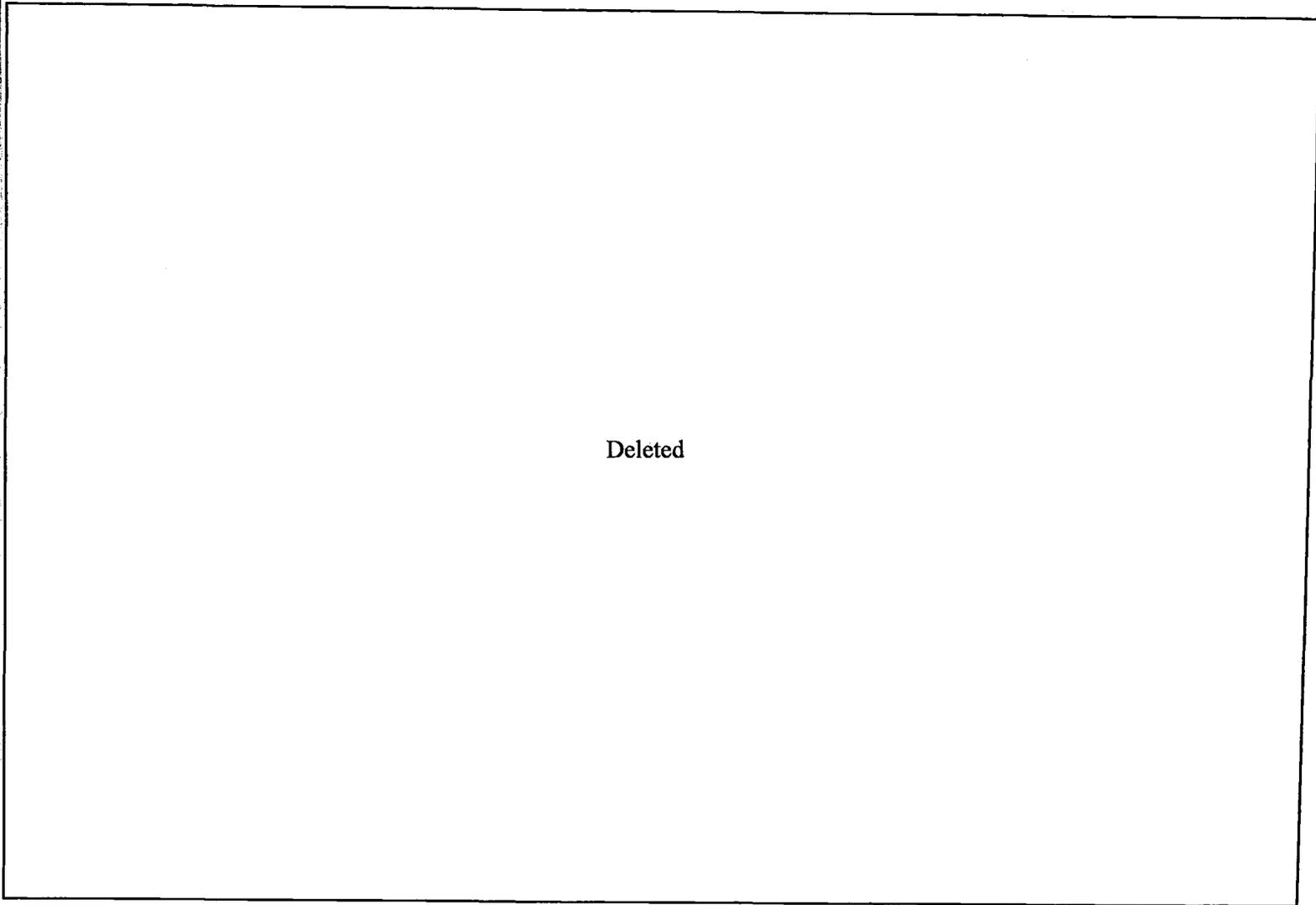
Photographs were taken of some of the residues. These photographs are made a part of this formal report.

Deleted

DOE  
b(3)

Deleted

~~SECRET RD~~



Deleted

**DOE**  
**b(3)**

~~SECRET RD~~

Deleted

Deleted

~~SECRET RD~~

Deleted

~~SECRET RD~~

DOE  
b(3)

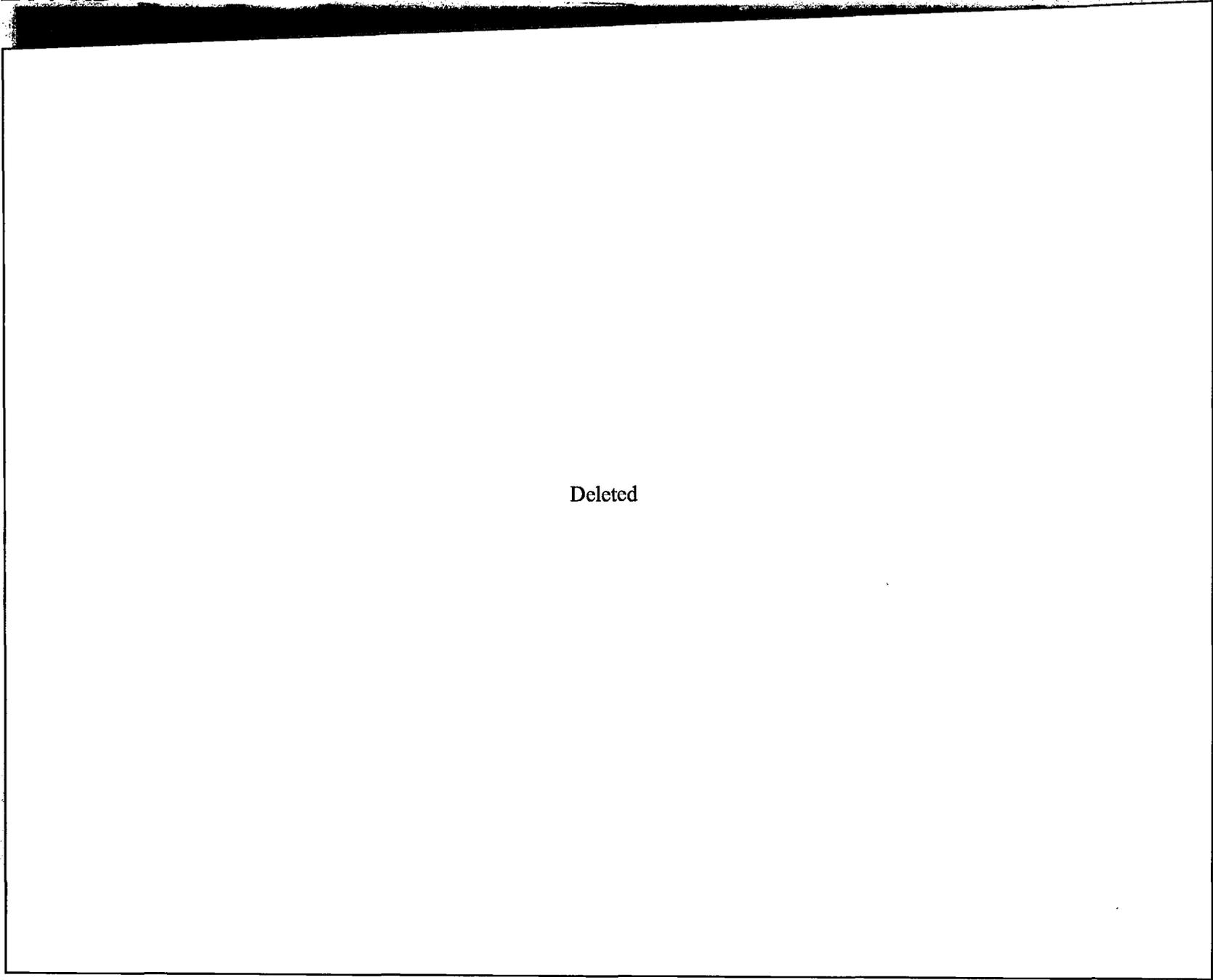
Deleted

Deleted

Deleted

Deleted

Deleted



Deleted

Deleted

Deleted

Deleted

Deleted

Deleted

Deleted

Deleted

Deleted

~~SECRET~~

# BROKEN ARROW EXAMINATION

D00033203

D00033910

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

5 15033

D.C. Hix, AU-63 DATE 9/30/14

## MASON & HANGER - SILAS MASON CO., INC. CLARKSVILLE FACILITY FORT CAMPBELL, KENTUCKY

DEPARTMENT OF ENERGY RECLASSIFICATION REVIEW

1<sup>st</sup> Review Date: 07/16/2014

Authority:  DOE  DD

Requester: David Hamrin DRL4 AU-63

2<sup>nd</sup> Review Date: 7/16/14

Authority: DR P.L. Shankle

1. DETERMINATION TO BE REVIEWED

2. CLASSIFICATION CHANGED

3. CONFIRMATION CHANGED TO

4. CONFIRMATION TO BE CLASSIFIED

5. CONFIRMATION TO BE UNCLASSIFIED

6. CLASSIFIED TO BE UNCLASSIFIED

7. OTHER AGENCY

**OFFICIAL USE ONLY**

May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and Category: Exemption A - Personal Privacy

Department of Energy review required before public release.

Name/Org: Veronica Kormemann, Classification Technical Reviewer, Org 4255, SNL/NM

Date: 6/12/2014 Guidance: N/A

UNCLASSIFIED  
FEB 15 2015  
3423

DOCUMENT ACCOUNTABILITY DATA			
RS or X No. (A)	Copy No. & Series (V)		
RS-3427-8181	256		
Short Title (C) *			
MHSMGFPPRBA-			
Class. (B)	Doc. Date (G)	Limit Code	Pages (H)
<del>SR</del>	2/16/65	D	27

~~ATOMIC WEAPON DATA~~  
CATEGORY SIGMA 3

Control No. CB5-16,650  
This document consists of 27 pages  
No. 11 of 20 copies, series A

Classified by: Veronica Kormemann

Title/Org: Classification Technical Reviewer, SNL/NM

Date Classified: June 12, 2014

Derived From: CG-HR-4, 09/10/12, DOE-CC and TCG-NAS-2, 03/07/1987, DOE OI

~~RESTRICTED DATA~~

THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.

**FEBRUARY 16, 1965**

~~SECRET~~

CONTROL NO. 8165

Group I

Excluded from automatic  
downgrading and declassification  
20140007759.

27p.

RS 3427 8181  
c. 11A

On December 8, 1964, a B-58 Aircraft assigned to Bunker Hill Air Force Base, Indiana, while participating in an alert exercise at this base, was involved in an accident. [The aircraft was carrying a B-53 internally and Four (4) B-43's externally.] The landing gear of the aircraft collapsed while attempting to maneuver the aircraft into take-off position. With the collapse of the landing gear, the aircraft was immediately engulfed in flames.

The examination and disposition of residues involving the B-53 are a subject of another report. This report concerns itself with the examination and disposition of residues of the four (4) B-43's involved in the accident.

Sandia Technical Library-NM



INVENTORIED  
2005

RS-3427/8181  
c. 11A

CONDITION OF WEAPONS

The general condition of the B-43's involved in the accident are enumerated below (information was obtained from AEC representatives at the site of the accident):

43 BA, S/N 92426 (See photographs - Pages 7, 8, 9, 10)

DOE  
b(3)

[Redacted]

plutonium contamination present.

Deleted

There was little

[Redacted]

present.

Considerable uranium contamination was

[Redacted]

The Nose, S/N 92646 and the Shape Component, S/N 20921 were essentially consumed by the fire.

43 BA, S/N 86766 (See photographs - Pages 11, 12, 13)

DOE  
b(3)

[Redacted]

Deleted

There was little plutonium contamination present.

erable uranium contamination was present.

Consid-

DO NOT DESTROY

RETURN TO

LIBRARY VAULT

[Redacted] Deleted [Redacted] The Nose, S/N 35515 and the Shape Component, S/N 26111 were essentially consumed by the fire.

DOE  
b(3)

43 BA, S/N 93315 (See photographs - Pages 14, 15, 16, 17, 18, 19, 20, 21)

The Basic Assembly, with its components, were left in good condition along with the Nose, S/N 12135 and the Shape Component, S/N 33364. This unit was disassembled at Bunker Hill. The Nose and Shape Component were removed.

[Redacted] Deleted [Redacted]

DOE  
b(3)

43 BA, S/N 96642 (See photographs - Pages 22, 23, 24, 25, 26)

[Redacted] Deleted [Redacted] The Nose, S/N 17333 and the Shape Component, S/N 20633 associated with the Weapon were partially consumed by fire. The Nose and Shape Component were removed.

DOE  
b(3)

[Redacted] Deleted [Redacted]

DOE  
b(3)

PACKAGING OF RESIDUES AT ACCIDENT SITE

The residue (except for the H.E. which was burned at Bunker Hill) from the aforementioned weapons was shipped from Bunker Hill to Clarksville Facility in containers identified as indicated below:

1. B-43, S/N 92426 [Redacted]

a. Type 79 Pit in Type 2A Container (2/1)

[Redacted] Deleted [Redacted]

DOE  
b(3)

c. Fuzing and Firing components with part of case section in sealed AN Can (2/3)

[Redacted] Deleted [Redacted]

DOE  
b(3)

~~SECRET~~ ~~RD~~

2. B-43, B/N 86766

- a. Type 79 Pit in Type 2A Container (3/1)
- b. Case residue in sealed AN Can (3/2)
- c. Case residue in sealed AN Can (3/3)
- d. Remains of Nose and Shape Component in sealed AN Can (3/4)
- e. Case residue in sealed AN Can (3/5)
- f. Case residue in sealed AN Can (3/6)
- g. Remains of Fuzing and Firing components with part of case section in sealed AN Can (3/7)
- h. Case residue in sealed AN Can (3/8)

DOE  
b(3)

Deleted

3. B-43, B/N 93315

- a. Type 79 Pit in Type 2A Container (4/1)
- b. Deleted
- c. Nose, Shape Component, and case section containing Fuzing and Firing components in a 4' x 4' x 4' wooden box (4/3)
- d. Deleted
- e. Shape Component fins in pasteboard box (4/5)

DOE  
b(3)

DOE  
b(3)

~~SECRET~~ ~~RD~~

~~SECRET~~ RD

4. B-43, S/N 96642

Deleted

DOE  
b(3)

b. Type 79 Pit in Type 2A Container (5/2)

Deleted

DOE  
b(3)

d. Nose, Shape Component, and case section containing Fuzing and Firing components  
in 4' x 4' x 4' wooden box (5/4)

Deleted

DOE  
b(3)

POSTMORTEM

On February 16, 1965, postmortem of weapon residues was held at Clarksville Facility. The following individuals were present during the postmortem:

<u>Name</u>	<u>Organization</u>	<u>Name</u>	<u>Organization</u>
Lt. Adams, T. C. (observer)	Field Command DASA	Thne, Richard J.	M&H - Clarksville
Baker, E. L.	M&H - Clarksville	Kopansky, Ralph M.	AEC-CBO
Crain, John N.	M&H - Clarksville	Lampe, L. H.	M&H - Clarksville
Crismon, Wm. Jr. (observer)	M&H - Medina	Maj. Layne, William C. (observer)	Directorate of Nuclear Safety, USAF, Kirtland AFB, N. M.
Eager, Thomas A. F.	Sandia - Clarksville	Lewis, Clay	M&H - Clarksville
Elvebak, W. D.	AEC-CBO	Meacham, Jack R.	Sandia - Clarksville
Grewis, Eugene G. (observer)	NAVEODFAC - Indian Head, Md.	Mitten, Wayne B. Jr. (Mfg. Agency Rep)	ACF Industires Inc., Albuquerque, N. M.
Guier, L. M.	Sandia - Clarksville		
Hill, T. K. (Design Agency Representative)	Sandia, 1511, Albuquerque		

~~SECRET~~ RD

<u>Name</u>	<u>Organization</u>	<u>Name</u>	<u>Organization</u>
Pearson, James H.	M&H - Clarksville	Shipp, P. G. (Mfg. Agency Rep)	Union Carbide, Oak Ridge, Tenn.
CDR. Phillips, Edward G. (observer)	USN-QC Clarksville Base	Lt. Staples, Henry E. (observer)	USN-EOD Clarksville Base
Maj. Porter, Eugene R (observer)	SAC Hqs. (DM4E) Offutt AFB Omaha, Nebraska	Capt. Wadsworth, V. A. (observer)	USN-CO Clarksville Base
Rhoades, Earle D.	M&H - Clarksville	Lt. Watkins, James (observer)	NAVEODFAC, Indian Head, Md.
Schneider, Paul H. (AEC/ALO Rep)	AEC-ALO		

The following recommendations were made with respect to the disposition of the residue:

B43-0, S/N 86766

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Oak Ridge for burial: Containers 2 thru 8 (marked "BUNKER HILL RADIOACTIVE CONTAMINATED RESIDUE")
3. Ship to Oak Ridge, Y-12, for disposition: Special metal box (marked "BUNKER HILL SPECIAL RESIDUE")

B43-0, S/N 92426

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Oak Ridge, Y-12, for disposition: Deleted (marked "BUNKER HILL RESIDUE") DOD (b)(3)42 USC 2162
3. Ship to Oak Ridge for burial: Containers 3 and 4 (marked "BUNKER HILL RADIOACTIVE CONTAMINATED RESIDUE")

B43-O, S/N 93315

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Sandia Corporation, Albuquerque, for disposition: Remains of X-unit/rear case section and Nose from Container 2 (marked "BUNKER HILL RESIDUE")
3. Ship to Oak Ridge, Y-12, for disposition: [ Case section and Squash (marked "BUNKER HILL RESIDUE") ]
4. Ship to ACF, Albuquerque, for disposition: Tail fins from Shape Components (marked "BUNKER HILL RESIDUE")
5. Ship to Oak Ridge for burial: Remains of Shape Component from Container 2 (marked "BUNKER HILL RESIDUE")

B43-O, S/N 96642

1. Ship to Rocky Flats for disposition: Type 79 Pit (marked "BUNKER HILL RESIDUE")
2. Ship to Sandia Corporation, Albuquerque, for disposition: Remains of X-unit/rear case section from Container 3 (marked "BUNKER HILL RESIDUE")
3. Ship to Oak Ridge, Y-12, for disposition: [ Case section and Squash (marked "BUNKER HILL RESIDUE") ] Deleted

Deleted

DOD

(b)(3)42 USC 2162

4. Ship to Oak Ridge for burial: Remains of Shape Component and Nose from Container 3 (marked "BUNKER HILL RESIDUE")

On March 8, 1965, a TWX from USAEC, ALO, dated March 5, 1965 approved the recommendations indicated above. The material has been disposed of and shipped in accordance with these recommendations.

DOE  
b(3)

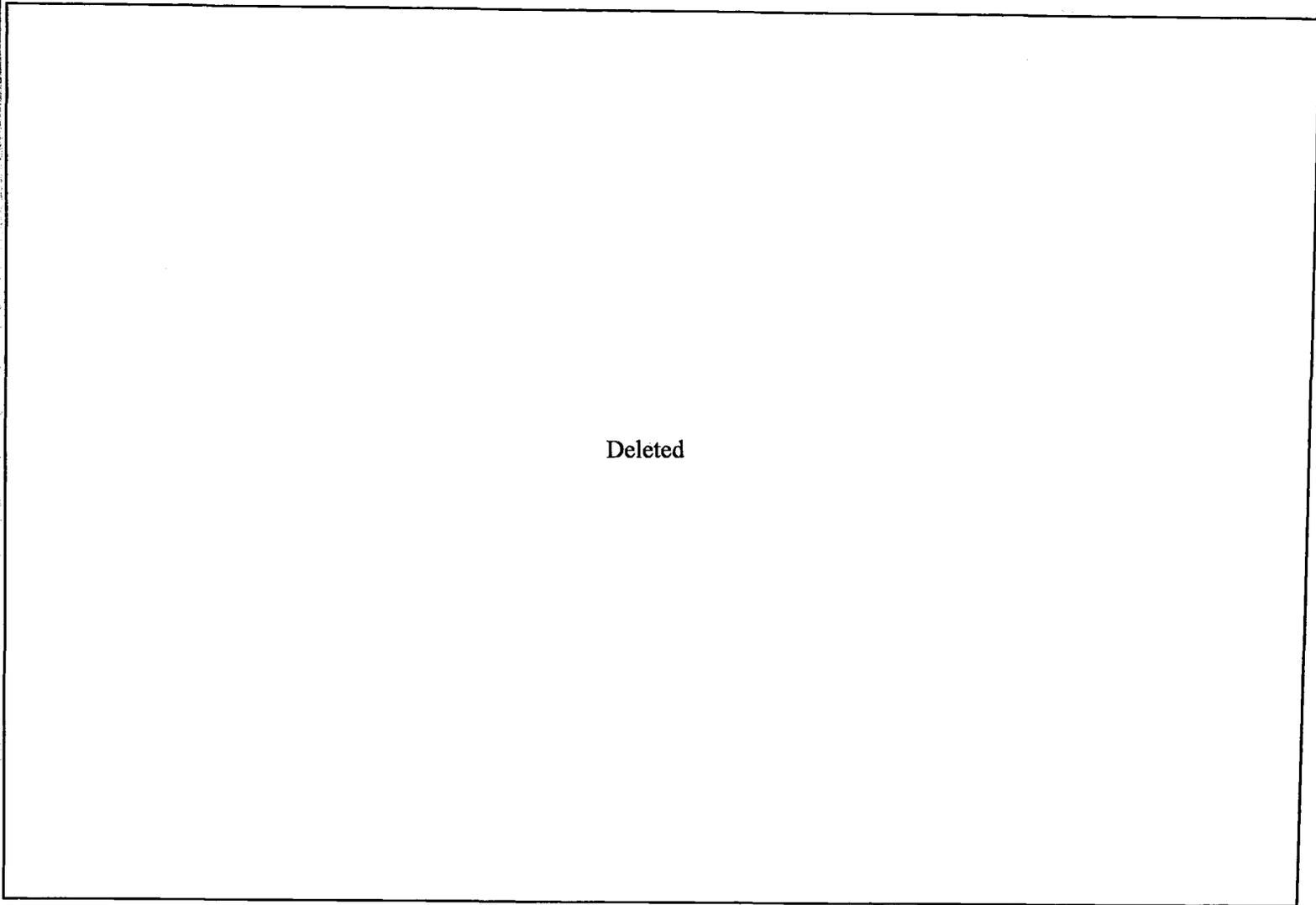
Photographs were taken of some of the residues. These photographs are made a part of this formal report.

Deleted

DOE  
b(3)

Deleted

~~SECRET RD~~



Deleted

**DOE**  
**b(3)**

~~SECRET RD~~

Deleted

Deleted

~~SECRET RD~~

Deleted

~~SECRET RD~~

DOE  
b(3)

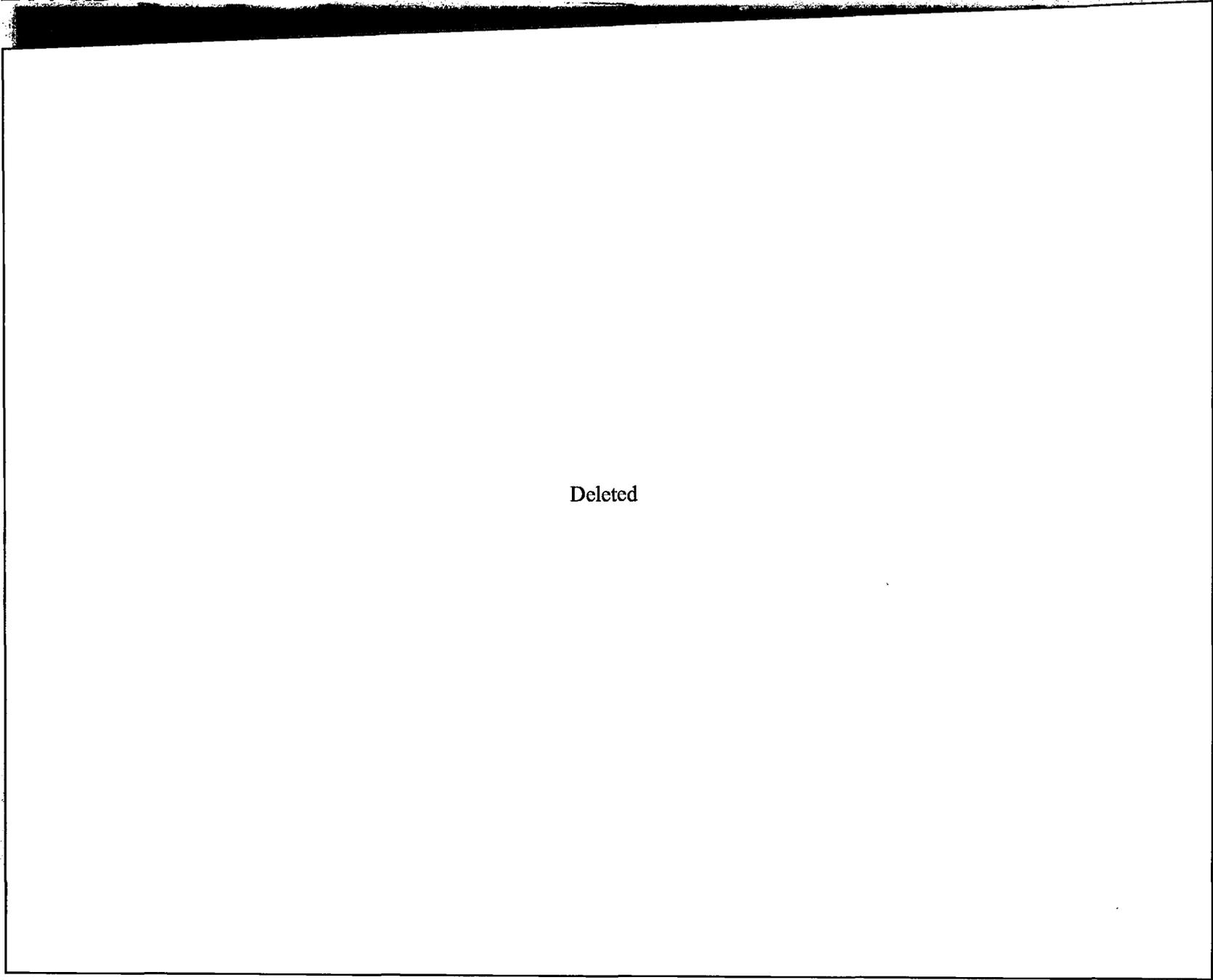
Deleted

Deleted

Deleted

Deleted

Deleted



Deleted

Deleted

Deleted

Deleted

Deleted

Deleted

Deleted

Deleted

Deleted

MAR 20 1979

JAN 11 1979

D00033204 *dec 1978*

REC.	
8110	
8100	
8111	
8115	
8115	
C.F.	
DES.	

8160	
8161	
8162	
8166	
8168	
C.F.	DES.
8160	

Rec JAN 10 1979	
8150	
8151	
8152	
CIF	
Des.	

### Sandia Laboratories

Albuquerque, New Mexico 87115

D00033911

REC'D S100	
1. ACTION	2. INFO
3. FILE	4. RETURN

December 14, 1978

To: Distribution

Subject: Summary of Nuclear Weapon/Material Accidents and Related EOD Activities (U)

The enclosed summarizes EOD participation at nuclear weapon accidents over the past 28 years. This task was undertaken to delineate the activities of EOD personnel in executing their specifically defined missions, and to indicate trends in weapon Render Safe and Disposal.

The "Broken Arrow" files of Dept. 1230, Operational Safety Division, ALO, and AF Directorate of Nuclear Surety were most helpful in preparing this summary.

RECEIVED

MAR 30 '89

GENERAL TECH FILE

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

D.C. Hix, AU-63 DATE 9/30/14

*I. M. Moore*

I. M. Moore, Mgr.  
Military Liaison Dept. 1210

Enc: RS 1210/24, Series, Copies 1 thru 12

Copy to:

- MO659 J. R. Roeder, Dir. Op. Safety Div. ALO/DO, w/enc. cy 1
- MO737 E. H. Eyster, WX-DO, LASL, w/enc. cy 2
- MO828 W. E. Nelson, L-125, LLL, w/enc. cy 3
- MO801 W. J. Spencer, S100, w/enc. cy 4
- 2 W. J. Howard, w/enc. cy 5
- 1200 L. D. Smith, w/enc. cy 6
- 1211 D. R. Knapp, w/enc. cy 7
- 1212 G. J. Hurley, w/enc. cy 8
- 1213 J. E. Hasland, w/enc. cy 9
- 1230 W. L. Stevens, w/enc. cy 10
- 4300 R. L. Peurifoy, Jr., w/enc. cy 11
- 1210 I. M. Moore, w/enc. cy 12
- 3144 Central Technical Files, w/enc. cy INF1

065440

~~RESTRICTED DATA~~  
This document contains Restricted Data as defined in the Atomic Energy Act of 1954. Unauthorized disclosure subject to Administrative and Criminal Sanctions.

~~TRANSMITTAL~~

~~WHEN SEPARATED FROM ENCLOSURES, HANDLE THIS DOCUMENT~~

~~UNCLASSIFIED~~

816A MAR 9 1979

1129  
30P.  
20140007759

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW

1st Review Date: 07/14/2014

Authority: X100 [ ] 00

Name: David Hamrin DRL4 AU-63

2nd Review Date: 7/17/14

Authority: [ ] 00

Name: R.L. Shankle

DETERMINATION AND ACTION NUMBERS

1. CLASSIFICATION RETAINED

2. CLASSIFICATION CHANGED TO:

3. COORDINATE WITH: DoD

4. CLASSIFICATION CANCELLED

5. CLASSIFIED INFO BRACKETED

6. OTHER (SPECIFY):

~~SECRET~~ RD

[REDACTED]

1210 //000024

[REDACTED]

00120004 A

December 14, 1978

RS 1210/24

V13852

SUMMARY OF NUCLEAR WEAPON/MATERIAL  
ACCIDENTS AND RELATED EXPLOSIVE ORDNANCE  
DISPOSAL (EOD) ACTIVITIES  
1950  
DESCRIPTION - VANCOUVER

RECEIVED  
MAR 30 '89  
CENTRAL TECH FILE

On February 14, a B-36 from Roswell AFB, NM, malfunctioned and experienced icing.

Deleted

DOD  
42 USC 2168  
(a)(1)(C)

The release was over water. The B-36 was flown over Vancouver and the crew bailed out. The aircraft was found, approximately one year later, on land in the wilderness.

EOD ACTION

No EOD action required

DESCRIPTION - ALBUQUERQUE

On April 11, a B-29 ferrying a Mk4 (w/o capsule) from Albuquerque, NM, to a remote location, as part of a "maneuver," crashed into the Manzano mountains southeast of the city. The crash occurred after takeoff from KAFB. Total loss of aircraft and crew. Weapon broke open upon impact. HE was scattered and burned (detonators were installed). A training capsule was aboard.

EOD ACTION

EOD action consisted of recovery of weapon parts.

[REDACTED]

1210 //000024

[REDACTED]

00010001 NF1

THIS DOCUMENT CONSISTS OF 29 PAGE(S)

~~RESTRICTED DATA~~

~~This document contains Restricted Data as defined in the Atomic Energy Act of 1954. Its transmission or disclosure to any unauthorized person is prohibited.~~

I. M. Moore	
CLASSIFIED BY	
Mgr. Military Liaison	
TITLE	Dept.
1210	12/14/78
ORG	DATE

~~SECRET~~ RD

DESCRIPTION - LEBANON

On July 13, a B-50 with a Mk-4 (w/o capsule) aboard went into a steep dive and crashed near Lebanon, Ohio. Cause of accident could not be established. Weapon HE detonated on impact. The crew was lost. No capsule was aboard.

EOD ACTION

No EOD RSP action required. EOD action consisted of recovery of weapon parts.

DESCRIPTION - FAIRFIELD-SUSUIN AFB

On August 5, a B-29 carrying a Mk4 (w/o capsule) "lost" an engine on takeoff and attempted to swing around for an emergency landing. From an altitude of about 150 feet, the plane crashed near Fairfield-Susuin AFB (now Travis AFB) Calif. trailer court and burned. The fire was fought for 12-15 minutes before the weapon detonated killing several individuals including Brig. Gen. Robert Travis. The crew was killed. No capsule was aboard.

EOD ACTION

No RSP required. The EOD action consisted of recovery of weapon parts.

[Redacted] Deleted

DOE  
b(3)

weapon was set for live burst and detonated.

EOD ACTION

No EOD action required.

1952

[Redacted] Deleted

Deleted

No EOD action possible.

DESCRIPTION - LORING AFB

In March at Loring AFB, Maine, during B-36 normal engine run-up operating and preflight checks, the manual U-2 locking pin was removed and about four minutes later defective AC wiring activated the U-2 release dropping the Mk17 bomb (OST-LIVE HE) through the bomb bay doors onto the warmup pad. The weapon did not burn or detonate.

EOD ACTION

RSP performed.

Deleted

DOE  
b(3)

An aircraft fire resulted which was successfully extinguished by fire fighters. The three bombs sustained considerable damage but no fire or detonation resulted. In addition, one Fuze and one Power Supply were damaged.

Two Fuzes, three Fire Sets and two Power Supplies received minor damage. There were no contamination or cleanup problems. The damaged weapons and components were returned to AEC.

**EOD ACTION**

RSP performed.

1957

**DESCRIPTION - KIRTLAND AFB**

On May 22, a B-36 was on the downwind leg of its landing pattern at Kirtland AFB, NM, when a Mk17 bomb was accidentally released at about 1700 feet - a crew member grasped an exposed release cable. The Mk17 (w/o capsule) fell thru the bomb bay doors.

[Redacted] Deleted [Redacted] There

was no property damage or loss of life.

DOD  
42 USC 2168  
(a)(1)(C)

**EOD ACTION**

No RSP required, EOD action consisted of recovery of weapon parts.

[Redacted] Deleted [Redacted] There

were no health safety problems.

DOD (b)(3)  
42 USC 2162

**DESCRIPTION**

[Redacted] Deleted [Redacted] No detonations were observed. The

Navy searched the area but found nothing.

**EOD ACTION**

DOE  
b(3)

No EOD action possible.

DESCRIPTION

On October 11, a B-47 carrying a Mk15 Mod 0 weapon (150-DE capsule <sup>000,842</sup> in carrying case) crashed on takeoff about 3800 feet off the end of the runway at Homestead AFB, Fla. Both plane and weapon burned and the crew was killed. The weapon burned for about 4 hours and there were two low order detonations but no radiation.

DOE  
b(3)

Deleted  The weapon pit melted, settled and resolidified in the weapon case.

DOD (b)(3)  
42 USC 2162

Deleted  The capsule in the M-102 case remained intact but was slightly damaged by heat. Residue shipped to Burlington. <sup>000,842</sup>

EOD ACTION

No RSP required. EOD action consisted of recovery of weapon residue.

Deleted

RSP performed.

DOD  
42 USC 2168  
(a)(1)(C)

1958

Deleted

DOE  
b(3)

A fire truck arrived in three minutes and fought the fire with foam for about ten minutes. Base evacuated - HE and dets burned but did not detonate. AC fuel

~~SECRET~~ RD

85 1210/25

-6-

burned about 7 hours. Reported that weapon safety pins were in, A/S switch on Safe, Baros set, Capsule in IFI. The bomb with a 150DE Capsule in the IFI (retracted) did not detonate but was almost destroyed by fire. Most of the nose and lower half of the case remained. The capsule melted and settled into the molten slag of the burned aircraft and bomb. The slag and metal was heavily contaminated. The aircraft and unburned bomb parts were found to be contaminated. The area over which the smoke cloud passed to a distance of one mile downwind from the accident revealed negligible contamination which required no decontamination. The asphalt runway was contaminated requiring disposal by burying. Off-base EOD personnel inspecting the accident scene apparently picked up alpha particles on their shoes and clothing from the dust on the ground. This contamination was subsequently spread to their automobile and carried back to areas of their home base. However, contamination received by those individuals was considered to be well below current health hazard standards.

Because of concern about reliability of limited monitoring equipment on base, it was requested that nuclear experts be dispatched with monitoring equipment to monitor all phases of operation including crating. "Salvage" operations halted until arrival on Dec. 3, of 2700 EOD Sqdn, Hill AFB.

Deleted

DOE  
b(3)

AF said no. On Feb. 11, Wm. Carter, LASL, and Capt Tyson monitored residue and runway (new asphalt), and old slab buried alongside the runway with no reading obtained. Staplex air samplers were set up and dust stirred up - counts were well below accepted tolerances, much higher readings from work on slabs of residue. EOD personnel in protective clothing packaged residue and cleaned up revetment where work was done. Residue was returned to KAFB and Able.

~~SECRET~~ RD

**EOD ACTION**

No RSP required. EOD assisted in monitoring and disposal as noted above.

**DESCRIPTION - SAVANNAH RIVER**

On February 5, following a midair collision with an F-86, a B-47 jettisoned a Mk15 Mod 0 weapon (w/o capsule) seven miles east of the mouth of the Savannah River. There was no detonation and the weapon was not recovered.

**EOD ACTION**

No EOD action was possible.

**DESCRIPTION - FLORENCE SC**

On March 11, due to the malfunction of equipment in the B-47 bomb bay (crew member grabbed exposed release cable bell crank in bomb bay), a Mk6 bomb (w/o capsule) was accidentally jettisoned from an altitude of 6000 feet near Florence SC. The weapon detonated on impact damaging six houses, a church, and injured six people.

**EOD ACTION**

No RSP required, EOD action consisted of recovery of weapon parts.

**DESCRIPTION - DYESS AFB**

On November 4, a B-47 with a MK39 Mod 1 (sealed pit) weapon aboard crashed and exploded shortly after takeoff from Dyess AFB Texas. The plane had reached an altitude of about 1500 ft.

[Redacted] Deleted [Redacted] crater 35 ft. in diameter.

Radiation was limited to small numbers of alpha. The residue was shipped to OR and LASL.

DOD (b)(3) 42 USC 2162 42 USC 2168 (a)(1)(C)

EOD ACTION

No RSP required, EOD action consisted of recovery of weapons parts.

1959

DESCRIPTION - CHENNAULT AFB

On July 6, during pilot's acceptance check at Chennault AFB, LA, JATO bottles inadvertently fired and the B-47 caught fire. Fire-fighting efforts began quickly but were abandoned when fire engulfed the bomb bay. There was no high order HE detonation, although a minor explosion of undetermined origin was observed. The residue was shipped to Medina and then to Oak Ridge. David Smith, LASL, reported to the accident site.

EOD ACTION

No RSP required. EOD action consisted of recovery and disposal.

DESCRIPTION

On July 6 at 2010Z hours at Barksdale AFB, LA, a C-124 crashed on takeoff from about 40-60 ft. high when engines 3 and 4 failed. The aircraft came to rest and burned about 3500 ft. from the end of the runway. Three Mk39 Mod 2 (sealed pit) weapons were aboard. There was no detonation. One weapon was almost completely destroyed by fire. The other two were disassembled and salvaged. The residue was shipped to OR and LASL.

EOD ACTION

The EOD unit from Bossier Base responded, but as requested by AEC Research and appraisal team, no effort was made to remove any of the

three Mk39 Mod 2 weapons prior to arrival of the team on July 7 at 2350Z. The AEC team consisted of William Carter, T. Scholman, LASL, Robert Bayless, Sandia Corp. and Kenneth Jay, ALO. [In making a contamination appraisal, a PAC-3C alpha meter indicated in excess of 100,000 counts/min. in an area approximately 12 inches in diameter directly beneath the pit of the weapon which had the HE consumed by fire (hereafter designated #1). The number 1 weapon was removed from the debris on July 8. Following removal of this unit no measurable alpha was present. Carter indicated that the two remaining weapons were leaking tritium.

DOE  
b(3)

Deleted

He wanted to release the gas from the system. Of the two remaining weapons, one suffered considerable heat damage and is hereafter designated #2 and one suffered minor heat damage, #3. Carter and Scholman (suited out and with SCBA) worked on #3 first. The tube was crimped and cut.

Deleted

DOD (b)(3)  
42 USC 2162  
42 USC 2168  
(a)(1)(C)

Detonator bridge wires had not fired but dets showed evidence of heat. Alignment plate wires were scorched but not charred or burned out.

Deleted

The #2 weapon was more severely burned. About 1/3 of

DOE  
b(3)

the rear bomb subassembly and parachute were burned out. The reservoir squib had cooked off.

DOE

b(3)

[Redacted] Deleted [Redacted]

The remainder showed affects of heat but otherwise appeared normal. Some HE extrusion. Both weapons were contaminated by T but not to a dangerous degree. The weapons were turned over to the AEC.

[Redacted] Deleted [Redacted]

DOD (b)(3)  
42 USC 2162  
42 USC 2168  
(a)(1)(C)

**AFTERMATH**

DOE

b(3)

[Redacted] Deleted [Redacted]

**DESCRIPTION**

DOE

b(3)

[Redacted] Deleted [Redacted]

One tank ruptured and ignited. The fire was extinguished with foam in approximately seven minutes. The Mk7 Mod 4 weapon (not containing capsule) was exposed to intermittent fire but did not detonate.

**EOD ACTION**

[Redacted] Deleted [Redacted]

1. Fwd section of Fwd case had melted so that the forward half (ahead of P.O.) cable had fallen off exposing battery boxes - battery leads had separated.
2. Bottom portion of side panels had melted away exposing dets.
3. Some dets showed fire damage - insulation softened but intact.
4. P.O. wires were in place and A.S. Switch was in Safe position.

DOE

b(3)

-11-

Weapon was considered nuclearly and electrically safe. The team felt that jarring might cause weapon to drop so was considered explosively unsafe. Further EOD operations:

AEC had requested return for post mortem and wanted EOD Det to make every effort to insure safety for air lift. If considered too hazardous, request assistance.

1. Monitored weapon, 0.2 MR/hr max.
2. Positioned MB5 Cradle and removed weapon from pylon.
3. Removed tail section for access to IFI.
4. 

Deleted
---------

 DOE  
b(3)
5. Moved weapon to remote revetment.
6. Removed dets from sphere, removed panels as necessary.
7. Removed batteries, one shorted but other charged.
8. Removed cartridge structure and exposed dets.
9. Removed remaining components from sphere.
10. Sphere inspected - paint intact. There was no evidence of fire damage. Sphere considered safe to ship although it should be handled as being more hazardous than a normal sphere.

1959

## DESCRIPTION

On September 25, a Mk90 Bomb/Mk7 WH was jettisoned in deep water when the A/C carrying it caught fire in flight and subsequently ditched and sank in deep water.

## EOD ACTION

No EOD action possible.

~~SECRET~~

NS 1210/24

~~RESTRICTED DATA~~  
12

DESCRIPTION - HARDINSBURG

On October 15, a KC-135 tanker and a B-52 carrying two Mk15 Mod 2 (sealed pit) weapons were involved in a midair accident near Hardinsburg, Ky, during a refueling operation. The weapons broke apart on impact and were exposed to a small fire but did not detonate.

EOD ACTION

The two bombs were found "in train" in the horizontal position, over half buried in soft earth with the noses slightly down. An Army EOD team checked with Beta, Gamma survey meters and found no contamination. Several AF NET and EOD teams arrived and confirmed the Army findings. The afterbodies of both units were torn away; Low Voltage A/S on both indicated Safe. The HE did not burn or detonate - the forward case sections were both intact and unmarred by fire. The forward weapon afterbody was torn free and completely burned.

Forward Weapon - EOD personnel assessed major HE damage through  
DOD (b)(3) 42 USC 2162 Detonator access holes. [Redacted]

[Redacted] Deleted

[Redacted] The X unit was also removed.

Reservoir torn free - line to pit open. Reservoir located with tube sheared. No T indication in urinalysis.

Rear Weapon - Afterbody and alignment plate located about 4-6 ft. to right rear of weapon. Burned in spots, HV Safing Switch was badly burned. The Low Voltage Safing Switch was on Safe. Reservoir  
DOD (b)(3) 42 USC 2162 attached and tubing intact. [Redacted] Deleted

[Redacted] HE sent to Ft. Knox for destruction The weapons were mounted on lowboy and returned to Clarksville (AEC).

[Redacted] Deleted

[Redacted] Some Sandia components were returned to Sandia Laboratories.

DOD (b)(3) 42 USC 2162 Bob Kail, Sandia Labs and Paul Schneider, ALO, were at the scene of the accident.

~~RESTRICTED DATA~~  
~~SECRET~~

1960

DESCRIPTION - McGUIRE

On June 7, a Bomarc burned at McGuire AFB, NJ. (A missile helium tank exploded and missile fuel burned.) The W40 burned but did not explode. [Redacted] Radiation was confined to the missile launch area. Residue was sent to Medina Base. Frank Dunn, LASL; Wayne Earl, ALO; and Maynard Cowan, Sandia Labs; responded to the accident.

DOE  
b(3)

EOD ACTION

No RSP required. EOD consisted of recovery of weapon parts.

1961

DESCRIPTION - SEYMOUR JOHNSON

On January 24, a B-52 crashed near Seymour Johnson AFB, NC, following rupture of a wing tank. The B39's separated from the aircraft during breakup at 2000-10,000 ft. altitude. One weapon parachute deployed and the weapon received little damage. The other weapon fell free and was essentially destroyed on impact but there was no detonation. The recovered material was sent to Medina. Theodore Scholman, LASL; David Smith, LASL; Don Bickleman, SLA; and Ross Speer, ALO; reported to the accident site.

EOD ACTION

The retarded weapon and impact hole of the unretarded weapon had been located by local personnel by the time the AF team arrived. The retarded weapon came to rest in a vertical position with the parachute draped in a nearby tree. The RSP was completed on the 24th, with no problems, as follows:

- The nose was dented in (crush switches actuated). Weapon secured in upright position. Monitored for T - none indicated.
- Removed afterbody - made necessary electrical disconnections -

removed alignment plate.

Deleted

From upwind crimped transfer tube about two inches apart, cut tube and monitored with T290A - no T indication.

DOD (b)(3)  
42 USC 2162

Deleted

Repeated

procedure for tube to pit. Det removed from under reservoir. Sling attached to polar cap support - bolts removed and HE/nuc assembly removed. All dets removed except the one under the XU. XU removed and final det removed. HE/nuc assembly lowered to cushions. Remainder of B removed from ground. Weapon and components turned over to the 53 MMS. The unretarded unit went into the ground and came apart on impact. After digging for several days (24-27) about half of the alignment plate was exposed. The Hi Pac, HVAS Switch, Reservoir, Resistor Connector box, and case with spare dets were identified. The reservoir was removed and tube crimped (the tube to the pit had been severed at impact). No T contamination.

Started finding pieces of HE and some dets on the 28th and on the 29th the main HE/nuc section and additional dets were exposed. On the 30th additional pieces of HE, dets and the pit were recovered. The EOD team stood by to recover additional pieces. Heavier equipment continued excavating but the rest of the weapon was not recovered.

DESCRIPTION - YUBA CITY

On March 14, a B-52 carrying two Mk39-2 weapons crashed near Yuba City, CA. The weapon from the rear bomb rack (designated No. 1) had not been damaged as severely as the forward weapon in that the primary and secondary remained in the weapon case. The Arming Pull-out rods were extracted and the afterbody and alignment plate were broken from the case. The tritium reservoir had been broken off, however, the valve did not function and the reservoir was full.

Weapon No. 2 from the forward rack separated from the aircraft after impact and the Arming Pull-out rods were extracted. The afterbody and alignment plate separated from the case. The warhead had tumbled several times and the primary and most of the secondary was thrown out of the forward ballistic case. The primary was destroyed - HE and sphere case shattered and scattered. The X-unit was relatively intact as was the pit which had separated from the HE assembly. The detonators were found scattered over a wide area.

Deleted

radiation hazard existed. The tritium reservoir separated from its mounting and the fill tube was broken. The valve did not function and the reservoir was full.

NO  
DOE  
b(3)

The design safety features of the bombs performed adequately. The Arm/Safe switches were in the Safe position. The thermal batteries in the Low Voltage Battery pack of one weapon were actuated. The High Voltage Batteries of neither weapon were activated. Wm. Kirk, AEC; David Hart, ALO; David Smith, LASL; Wm Nobles, LASL; and Don Bickleman, SL; responded to the accident.

#### EOD ACTION

On March 14th, EOD personnel from Beale and McClelland AFB's had located and removed to Beale AFB, for storage, two tritium reservoirs and the pit of one weapon. On the 15th the EOD personnel removed the HE sphere assembly from Weapon No. 1 and separated and burned the HE. The pit and secondary (still in the case) were returned to AEC custody. The scattered HE from weapon No. 2 was collected and burned.

DOD (b)(3)  
42 USC 2168  
(a)(1)(C)

1961

DESCRIPTION

Deleted

EOD ACTION

No EOD requirements.

DOE  
b(3)

Deleted

One squib in the W49-3 had fired, boosting the pit. No detonation resulted. The warhead was returned to Clarksville.

EOD ACTION

DOD (b)(3)  
42 USC 2162  
42 USC 2168  
(a)(1)(C)

EOD team responded since there was a tritium monitor indication and requested approval to RSP per the AML. LASL advice was "ship as is, ie., rendered safe."

Deleted

Ted Scholman, LASL, Don Bickleman, SC, and Paul Schneider, ALO, responded.

The weapon was purged and packaged for return shipment without further EOD action.

DOD (b)(3)  
42 USC 2162  
42 USC 2168  
(a)(1)(C)

Deleted

DOD (b)(3)  
42 USC 2168  
(a)(1)(C)

DOD (b)(3)  
42 USC 2168  
(a)(1)(C)

EOD ACTION

Deleted

No EOD action required.

1963

DESCRIPTION - MEDINA

On November 13, at 0920 MST, approximately 123,000 pounds of HE exploded in an igloo at Medina base.

DOE  
b(3)

Deleted

Three Mason & Hanger, Silas Mason Company, employees received minor injuries.

EOD ACTION

No EOD action required.

1964

DESCRIPTION - CUMBERLAND

On January 13, 1964, at 0145 MST, a B52 carrying two B53-0 Y1's crashed near Lonaconing (Cumberland), MD. The weapons were in ferry configuration with no electrical connections between bombs and aircraft. Pullout wires were not attached and the safing switches

-18-

were in the "Safe" position. There was no fire or explosion on impact but the impact was such as to strip almost all of the shock-mitigating aluminum honeycomb from the basic assemblies.

**EOD ACTION (INITIAL)**

Two Army EOD teams (Ft. Clinton, OH, and Ft. Mead, MD) enroute to their home stations following a test/training exercise at Huntsville, Alabama, were diverted and arrived first at the scene and performed the following RSP:

1. Sniffed both units with T290 with negative indications.
2. Since X-unit on the unit designated #1 had been ripped off on impact, the Army EOD units did not need to disconnect any det cables from the warhead.

DOE  
b(3)

Deleted

**EOD CONTINUATION OF RSP AND DISPOSAL**

Gene Wilson's representative, Lt Col A. A. Gomes, arrived at 0745 MST on January 14. Other AF participants were Capt Gobble (now EOD staff officer, CSAF SSSM) and Lt Col Oscar Sundstrom (formerly EOD and CO SSSM). Walt White, AEC/ALO, and Dan Buchly, Sandia Corporation, arrived with Lt Col Gomes. Examination of weapon residue showed the following:

**Weapon #1**

1. Thermal batteries not fired.
2. Safety switch indicator torn off; switch position could not be determined.
3. The pullout wires were not visible (under the weapon); after movement, the wires were found to be broken but pullout rods were not extracted.

**Weapon #2**

1. Thermal batteries not fired.

~~SECRET~~

NS 1210/24

~~RESTRICTED DATA~~

~~19~~

2. Upon movement, the safety switch was noted to be in the "Safe" position.
3. The pullout rods were not extracted.

Even though it was evident that Weapon #1 had received a severe impact, it was determined by AF and AEC to be safe to ship, and AF EOD team prepared for movement by:

1. Disconnecting electrical connectors from thermal batteries and the LLC's (also X-unit on #2 unit).
2. Sniffed LLC's at LASL request.
3. Removed two detonators from fin of one bomb. Dets and fin on other bomb not present.

Residue shipped to Medina.

#### Afterthoughts

The EOD procedures performed were essentially nuclear (electrical) RSP. Upon disassembly at the AEC plant, the nuclear assembly of Weapon #2 was in excellent condition; however, the HE of weapon #1 was badly mashed and cracked.

1964

#### DESCRIPTION

On March 15, an ICX trailer carrying radioactive material veered into a ditch near Grants. The material, uranium oxide, was being shipped from Apollo, PA, to Atomics International, Canoga Park, CA. The response team monitored the area and determined that no spillage had occurred.

#### EOD ACTION

No EOD action required.

~~RESTRICTED DATA~~

~~SECRET~~

DESCRIPTION - ELLSWORTH AFB

At 1500 MST, December 5, 1964, an error by a member of a maintenance crew that was investigating a security alarm in a MINUTEMAN missile system caused a retrorocket to fire and topple a W56-1 off the missile into the silo. The W56-1 fell about 75 ft. Don Dickason, AEC/ALO, was notified and he and R. K. Peterson, SCLL, arrived at the site at 1545 MST, December 6.

EOD ACTION

The missile was safed and an initial inspection was made at the bottom of the silo. At first it was indicated that the firing set had been detached from the warhead. (Item thought to be FS was the arming, fuzing, and attitude control device.)

DOE  
b(3)

Deleted

The EOD element talked to Nate Benedict, LLL, on the 6th, and Benedict decided to go to the site. He arrived on the 7th at 2000 MST and on December 8, he inspected the unit and confirmed the above. Following discussions among Benedict, Dickason, and the EOD team, the unit was hoisted out in a grounded net and moved to Ellsworth in an RV van and taken to a storage bunker. The RV was unloaded into a plywood stand. The tritium reservoir was removed and placed in a shipping container.

DOE  
b(3)

Deleted

The HE assembly was radiographed to confirm that there was no broken HE. The warhead sealed cover was removed.

Deleted

DOE  
b(3)

The consensus was that the unit was safe to ship.

Deleted

This was done and the unit was transported to Medina.

DOE  
b(3)

Afterthoughts

Procedures performed were essentially nuclear RSP with no continuation of RSP. Matches present procedures with the exception of X-ray of nuclear system.

DESCRIPTION - BUNKER HILL AFB

On December 8, 1964, at 0945 MST, a B58 with four B43's on the wings and a BA53 in a pod skidded off the runway while taxiing during an ORT and burned. The Fire Department fought the fire for six minutes and then withdrew.

ALO was notified at 1040 MST. Paul Schneider, ALO, Oscar Oren, 1531, and George Tucker, 3310, departed Albuquerque 1335. H. R. Maltrud, LASL W7, departed later the same day. The AEC contingent arrived at Bunker Hill the morning of December 9. The initial reconnaissance by EOD and CBR personnel at 1415 on the 8th showed no appreciable radiation. On the 9th at 0830, the EOD and AEC personnel approached for a closer look and reported no Pu contamination. Up to this point, nothing had been touched or moved.

EOD ACTION

BA53 - At about 1130 on the 9th, the BA53/pod was removed from the wreckage. The HE had burned and the pit and other structures had melted into a slag at the bottom of the ECA; the reservoir was embedded in the slag. (It was found to be full when removed from the slag at Medina.) The secondary was okay although the front weld was broken. No RSP was required on this weapon.

Right Front B43 - The right front B43 removed from the wreckage at about 1130 on the 9th. The HE had burned and the pit weld had melted but there was no Pu contamination. The thermal plug in the reservoir valve had fired as designed and the reservoir was full. The secondary was okay to ship. No RSP was required on this weapon, only recovery and packaging for shipment.

Left Front B43 -



Deleted

DOE  
b(3)

Deleted

The HE of this unit had burned and melted the pit weld but there was no Pu contamination. The reservoir thermal plug fired but the reservoir had ruptured. No RSP was required on this weapon - only recovery and packaging for shipment.

The right and left rear B43's were moved to an igloo area for disassembly and packaging.

Right Rear B43 - The EOD team completed all RSP procedures on the right rear weapon including removal of the HE hemispheres from around the pit for local disposal. The AEC requested a normal disengagement of the reservoir rather than crimping and cutting the transfer tube. EOD FAC approved the deviation and AEC assets were thus conserved. This unit was in excellent condition.

Left Rear B43 - The EOD team completed the sawing on the left rear bomb but could not get the unit apart. A black, sticky substance seemed to be the problem. The DOD arranged for X-ray equipment from the EOD FAC (arrived on the 16th) but were unable to get pictures. Ned Swygard, M&H, Burlington, suggested that heat and solvents might release the sticky parts. This suggestion was tried and the unit disassembled. The HE was in excellent condition. The reservoir was okay - the thermal plug had fired.

Afterthoughts

Present concepts/procedures are such that there would be no reason to do more than nuclear RSP to the right and left rear B43's. In this instance, the AEC/LASL representatives recommended the continuation of RSP to separate the HE and the pits. DOE b(3)

[Redacted] Deleted

1965

DESCRIPTION - WRIGHT-PATTERSON AFB

On 12 Oct 1965 an inadvertent disconnect of a refueling hose resulted in a C-124 being engulfed in flames at Wright-Patterson AFB. Cargo included reservoirs, neutron generators and one B53 TYPE 3.

DOD (b)(3)  
42 USC 2162

[Redacted] Deleted

DOE  
b(3)

[Redacted] No significant health hazard resulted since the tritium readily dispersed in the atmosphere.

EOD ACTION

EOD team action consisted of assessment and assistance in recovery and disposal of debris. DOE b(3)

DESCRIPTION -

[Redacted] Deleted

Investigation revealed that squibs were blown on all missiles on the launch pad connected to lines 21, 22, 23, and 25. Warhead continuity checks could not be obtained for missiles on lines 21 and 22. Continuity checks showed lack of continuity on the two W28Y3-3's mated to the missiles on these lines.

On 16 July 65, weapons maintenance personnel performed a T290 check of one of the affected warheads and tritium was indicated. EOD personnel were called.

**EOD ACTION**

EOD personnel were called to monitor removal of the affected warheads from the missiles. When WH pressures were released at the battery access covers, positive T290 indications were obtained from both warheads. EOD personnel donned protective equipment and entered the area with another T290 instrument. Tritium was indicated when the battery access cover was removed. EOD personnel withdrew from the area to allow tritium gas to dissipate. Monitoring at a later time gave no positive indication.

[Redacted]

Deleted

Both weapons were reassembled and removed to a storage igloo. The four weapons connected to lines 21, 22, 23 and 25 were rejected and returned to AEC for postmortem.

**POSTMORTEM RESULTS**

[Redacted]

Deleted

the pit. The MC796 Thermal Batteries had been activated. The other two warheads showed no discrepancies though there was a higher than normally expected T289 indication on one of the units. The cause of the higher than normal reading was not determined in that the reservoir leakage rate was acceptable.

DOD (b)(3)  
42 USC 2162

DOD (b)(3)  
42 USC 2162  
42 USC 2168  
(a)(1)(C)

~~SECRET~~

RD

79 12104 21

-25-

1965

DESCRIPTION

An aircraft with B43 aboard was lost overboard from a carrier and

EOD ACTION

No EOD action possible.

1966

DESCRIPTION - PALOMARES, SPAIN

On January 17, 1966, at about 0230 MST a K135 tanker and a B52 collided in midair over Palomares, Spain, during refueling. Four B28F1s in a MHU-20/c clip-in were torn loose from the forward bomb bay. The upper left weapon deployed the 16-foot parachute and was recovered relatively intact. The upper and lower right weapons fell free and detonated on impact, scattering Pu over approximately 600 acres. The lower left weapon fell, parachute retarded into the Mediterranean Sea about 8 miles east of the collision point. At a considerably later date the Navy located and recovered this weapon from a depth of 2850 feet.

Maj Gen A. J. Beck and Col C. R. Rhodes, SAC directed on-scene operations. David Hart, ALO, S. Asselin, SC, Doug Evans and Bill Chambers, LASL, arrived at the accident site on January 18. The

DOD (b)(3)  
42 USC 2168  
(a)(1)(C)

Deleted

The B28's

were numbered 1, 2, 3 and 4 in the sequence located.

~~SECRET~~

RD

EOD ACTION

The EOD team performed its normal initial functions of reconnaissance, monitoring and weapon evaluation. The specific EOD operations are outlined below:

1. The parachute of this unit deployed and the unit struck struck the edge of a bank, caved it down, and was found on its side essentially intact. Nuclear RSP was performed. (Ready/Safe Switch checked in "Safe" position and the HV thermal battery was removed.) The unit was lifted by heli- DOE  
copter cargo net onto a truck bed. b(3)

2. Detonated on impact.<sup>1</sup>

[Redacted]

Deleted

Extensive Pu contamination in the area. The reservoir was found intact in the crater.

3. Detonated on impact. The secondary was found in the crater and was intact. There was extensive Pu contamination in the area. The reservoir was mashed and ruptured. The only EOD required on items 2 and 3 was recovery of residue and preparation for shipment to the AEC.

<sup>1</sup> On January 20, EOD personnel (and others) completed a sweep of -No. 2 and No. 3 areas to recover readily visible weapon fragments. The DOD had concluded that these two weapons detonated low order and reported finding a considerable amount of unexploded HE in the vicinity. This was collected and disposed of. Doug Evans, LASL, HE expert, reported that the two bombs went high order, and he seriously questioned the amount and authenticity of the HE collected.

4. After considerable elapsed time and search, No. 4 was located offshore in 2900 ft. of water. On April 7, 1966, it was recovered and brought on board a Navy vessel. Nuclear RSP was performed by AF/Navy EOD personnel. The Ready Safe Switch was in the "Safe" position. The pullout rods had been extracted. The thermal battery was removed (with difficulty), the fuze section was removed, and the WH cover was removed and det cables disconnected. The gland nut was removed.

[Redacted] Deleted

The unit was packaged and shipped.

DOE  
b(3)

1968

DESCRIPTION - THULE, GREENLAND

[Redacted] Deleted

The crew abandoned the aircraft and the B52 crashed and burned on the ice of Wolstenholme Fjord, 7 1/2 miles west of Thule, at 1639 MST. The aircraft and weapons were destroyed by impact, explosion, and fire. The force of the impact and detonation scattered aircraft debris and weapon components over

DOE  
b(3)

<sup>2</sup> AF EOD personnel, Sgts Nowak and Grimmet, and Navy EOD personnel were directed by LCDR "Red" Moody with Navy LT Funston doing most of the work. LT Huntsinger, EOD FAC, was also present. After completing the above, LT Funston (in Moody's absence) indicated to Asselin and Lt Col Marshal Neal, DNS, that he intended to continue RSP through HE/nuclear disassembly because of unknown nature of pressure on HE and dets. "Marsh" Neal advised against it as did Asselin. LT Funston agreed and Moody on return concurred. Moody asked Asselin for certification of "safe to ship" condition of No. 4. This was given by Asselin and Neal along with Moody.

-28-

a 1- by 3-mile area. Radioactive contamination could be detected throughout most of this area. Following notification of the accident, an initial AEC group of P. R. Smith, ALO, John Kinker, LASL, and Roy Lambert, SC, together with five NDS representatives and ten DASA NET personnel departed from KAFB at 2318 MST and arrived at Thule at approximately 1150 MST, January 22. Maj Gen R. O. Hunziker, Hq SAC, was the on-scene commander.

#### EOD ACTION

Because of the explosion, no Render Safe Procedures (RSP's) were required for any of the weapons and EOD activities consisted of debris/component identification and recovery.

~~SECRET~~ RD

ATA -29-

RS 1210/24

RS 1210/24, Series A, 12 Copies, 29 Pages, SRD, 12/14/78

Distribution:

1	MO659	J. R. Roeder, Dir. Op. Safety Div. ALO/DOE
2	MO737	E. H. Eyster, WX-DO, LASL
3	MO828	W. E. Nelson, L-125, LLL
4	MO801	W. J. Spencer, 8100
5	2	W. J. Howard
6	1200	L. D. Smith
7	1211	D. R. Knapp
8	1212	G. J. Hurley
9	1213	J. E. Haaland
10	1230	W. L. Stevens
11	4300	R. L. Peurifoy, Jr.
12	1210	I. M. Moore

SUBSEQUENT DISTRIBUTION: SERIES MF: 3/22/89

1/IMF1 - Central Technical Files, 3144 MCO650A

~~SECRET~~ RD

~~SECRET~~  
BEST AVAILABLE COPY

W.O. # 583233

21 Copies Recd.

ACCIDENT REPORT OF B52G  
NEAR SEYMOUR JOHNSON AIR FORCE BASE  
NORTH CAROLINA

~~(Title SRD When Associated With Sigma 1)~~

~~D00033205~~

D00033912

SCDR 106-61

~~Title is Classified~~

~~AEO ATOMIC WEAPON DATA~~

~~SIGMA 1~~

RS 3423/506

INVENTORIED

AUG 1 1963

3427-1

INVENTORIED

MAR 1 1966

3428-3

INVENTORIED

MAR 1 1966

H. D. Bickelman, 7162-1

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

February 1961

DC Hix, AU-63 DATE 9/30/2014

INVENTORIED

MAR 8 1965

3427-1

Approved by

*D. R. Cotter*  
D. R. Cotter, 7160

ABSTRACT

On January 24 through January 31, 1961, a trip was made to Goldsboro, North Carolina, to collect information regarding the nuclear weapon safety hazards in connection with the crash of a B52G aircraft of the SAC airborne alert force. The aircraft was carrying two Mk 39 Mod 2 weapons. There were no detonations of either of the weapons; no radiological safety hazards resulted from the accident. All procedures as outlined in appropriate Air Force manuals for ensuring that weapons of this type are rendered safe were followed by the EOD team on the site.

The two weapons were separated from the aircraft as a result of aircraft breakup; on one weapon the parachute deployed; the other fell in a free-fall trajectory. The safety features of both bombs behaved in a normal manner. No hazard from the weapons resulted. The public relations throughout this incident were handled by the Air Force in a highly competent manner.

~~RESTRICTED DATA~~

~~This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited.~~

THIS DOCUMENT CONTAINS 8 PAGES

NO. 21 OF 31 COPIES, SERIES A.

~~SECRET~~

1

2014007759

~~SECRET~~

~~RESTRICTED DATA~~

**DISTRIBUTION:**

- 1-11/21A - K. F. Hertford, ALO, For:  
Brig. Gen. A. W. Betts, DMA  
L.A.SL, Attn: Max Roy, W Division  
LRL, Attn: J. Foster, Livermore  
Technical Library, DMA, Attn: Col. S. Goldenberg  
D. P. Dickason, Storage Division  
Hugh Kay, Weapon Safety Branch  
Commanding Officer, AFSWC, SWOI, For:  
Col. P. Gwynn  
SAC Resident Representative  
Col. C. B. Stewart  
FC/DASA, For:  
Lt. Col. Strickland  
Lt. Col. Schuyler  
12/21A - D. M. Olson, 7162  
13/21A - M. G. Randle, 3421-2  
14/21A - R. K. Smeltzer, 3421-3  
15/21A - W. F. Carstens, 3423  
16/21A - A. D. Pepmueller, 8233  
17-21/21A - R. C. Smelich, 3466-1

**Reproduction Permission**

This report is not to be reproduced, in whole or in part, without written permission by the manager of the originating department.

~~SECRET~~

~~RESTRICTED DATA~~

~~SECRET~~

~~RESTRICTED DATA~~

## ACCIDENT REPORT OF B52G AIRCRAFT CRASH NEAR SEYMOUR JOHNSON AIR FORCE BASE, NORTH CAROLINA

### Introduction

At approximately 12:30 am, EST, the morning of January 24, 1961, a B52G aircraft carrying two Mk 39 Mod 2 weapons crashed near Seymour Johnson AFB, North Carolina. The aircraft was stationed at Seymour Johnson and was on a SAC airborne alert mission over the Atlantic Ocean and the East Coast of the United States. During a refueling operation over the Atlantic, the airmen in the tanker plane advised the Commander of the B52 that he had a fuel leak in his right wing and that the tanker plane was separating from the B52. The B52 pilot immediately contacted Seymour Johnson, reported the fuel leak and that he had complete control of the plane, and requested instructions from Seymour Johnson. He was advised at that time to fly over the ocean and burn up his excess fuel. While in the act of burning up the excess fuel in the aircraft, the hole in the right wing apparently became a major rupture; and it is reported that the aircraft lost 37,000 pounds of fuel in a two-minute time period. Following this action, the aircraft commander still had complete control of the airplane and was instructed by Seymour Johnson to come in over the land and prepare to make a landing. Normal procedure in this situation is for the aircraft to do a simulated landing at approximately 10,000 feet to assure that the aircraft commander has control of the plane. The pilot was making his "stabilization run" when he lost complete control of the aircraft; the aircraft apparently lost a wing or a portion of a wing. The air crew was ordered to bail out, and five of the eight members aboard did get out alive. The other three members were killed. The crew members reported that both Mk 39 Mod 2 weapons were still aboard the aircraft and all the switches were in the normal (Safe) position when they bailed out. Sometime between bail-out of the crew and the crash of the airplane, both Mk 39 weapons were separated from the aircraft. The wreckage of the aircraft was strewn along the flight path for a distance of approximately one and a half miles.

### Investigation Parties and Activity

A group left Kirtland Air Force Base at approximately 8:30 am, MST, the morning of January 24, 1961, via C-47 aircraft, to advise on matters of nuclear safety. The group consisted of two teams: Team 1, representing the Directorate of Nuclear Safety Research (DNSR), consisted of Col. Charles Malitz, Lt. Col. Francis Smith, Lt. Col. Ernest Stuart, and Capt. Barry O'Grady. In addition, Capt. George Martin from AFSWC was in the party. Team 2, representing the AEC, was made up of Mr. Ross Speer, ALO, Mr. Theodore Scolman and Mr. David Smith from Los Alamos, and Mr. H. D. Bickelman, Sandia Corporation. These teams arrived at Seymour Johnson Air Force Base at approximately 10:15 pm, EST, the night of January 24, 1961. Upon arrival at Seymour Johnson, Col. Malitz reported to Col. O. V. Jones, Commander of the 4241st Strategic Wing at Seymour Johnson, and to Brig. Gen. A. H. Moore, Commander of the Fourth TAC Wing at Seymour Johnson. Already on the scene were Lt. Gen. Sweeney, Commander of the Eighth Air Force from Westover Air Force Base, and Col. John Kline, Chief of the Disaster Control Team for Eighth Air Force, and Gen. Sweeney's personal representative. Col. Kline remained on the scene throughout the investigation. EOD personnel on the scene included the EOD officer of the 53rd Munition Maintenance Squadron (MMS) at Seymour Johnson AFB, an EOD team from Wright-Patterson AFB, the EOD officer of the Fourth Tactical Wing at Seymour Johnson AFB, and an EOD officer from Eighth Air Force, Westover AFB, Mass. At the time of the arrival of the teams from the Albuquerque area, no work was taking place at the accident site.

The following morning at approximately 8:15, the teams were briefed by Lt. Col. K. B. King, the safety officer of the 4241st Strategic Wing and Major R. E. Manley, the Commander of the 53rd MMS at Seymour Johnson AFB. In this briefing we were advised that weapon No. 1, serial No. 434909, which was in the after bomb bay of the B52, had been found essentially intact in a vertical position with its nose penetrating some 18 inches of North Carolina sandy soil shortly after the crash. The parachute pack on this weapon had operated successfully and the weapon had been disarmed by the EOD team, disassembled, and returned to the 53rd MMS Inspection and Storage Building. We were also advised at that time that a hole had been found which apparently was caused by the second weapon. The crater was 5 feet deep and approximately 9 feet in diameter. The first

~~SECRET~~

~~RESTRICTED DATA~~

~~SECRET~~

~~RESTRICTED DATA~~

assumption by the people on the site was that there had been a one-point detonation of the HE in the second weapon which caused this crater. The serial number of the second weapon is 359943.

Immediately following this briefing, the members of the teams from the Albuquerque area departed for the crash site and spent the balance of the morning looking over the area, speculating as to whether or not there had been a one-point detonation of weapon No. 2 and, in general, searching out the area looking for any signs that could be of interest to us in our investigations.

A detailed examination of the components in weapon No. 1 was made the afternoon of January 25, 1961 and the morning of January 26, 1961. Weapon No. 2, serial number 359943, was not definitely located until late Friday afternoon of January 27, 1961, and due to working difficulties (weather, surface water in the crater which was restricting the digging operation, and similar occurrences), weapon components were not available for examination until the morning of January 28, 1961.

The personnel from Sandia Corporation, ALO, and Los Alamos Scientific Laboratory remained at the crash site until the morning of Sunday, January 29, 1961. Mr. Speer, ALO, and Mr. Bickelman proceeded to Washington, D. C., and briefed Brig. Gen. A. W. Betts and Col. S. Goldenberg at DMA, and Gen. Loper, Office of the Assistant to the Secretary of Defense for Atomic Energy, on the results of our investigation.

#### Aircraft Wreckage

A sketch of the area of the aircraft accident, Figure 1, shows that the aircraft had broken into several pieces in the air. The major wing area and the crew compartments were found in an inverted position, severely burned, and completely demolished. Whether this inverted position was the result of one wing-over or a continuous gyrating action, no one is sure. As indicated in the sketch, one portion of the aircraft, the tail section, was found one mile from the location of the wing and crew compartment of the aircraft. Break-up of the aircraft, it was assumed, occurred in the vicinity of 9,000 feet altitude. Those parts of the aircraft which impacted on the ground showed, except for the tail section, signs of severe burning. The rear truck and bomb bay area especially showed signs of a severe fuel fire. This aircraft was equipped with a T-249 Aircraft Monitor and Control Unit and a T-380 Readiness Switch. These were not recovered.

#### Weapon Wreckage

The B52G carried two Mk 39 Mod 2 weapons. These weapons were being flown on airborne alert under safety rules which have been approved by the Headquarters, United States Air Force, and the AEC. These rules require that the U2 rack lock will be safety sealed in a lock position, the T-249 Aircraft Monitor and Control and T-380 Readiness Switch will be safetied and sealed in the "Off" position, and the safing pins will be installed in the pullout rod assembly.

#### Weapon No. 1, Serial No. 434909

This was a Mk 39 Mod 2 weapon on which Alts 184, 189, and 190 had been performed. This weapon left the aircraft at an estimated altitude of 9,000 feet. The arming rods were pulled at the time of separation from the aircraft, the weapon parachute deployed in a normal manner, and the weapon impacted in sandy clay soil and penetrated a depth of approximately 18 inches. The weapon was found in a vertical position with the parachute hanging in the adjacent trees. A post-mortem examination of the weapon indicated the following:

1. On the weapon case, the holes through which the safing pins pass were not damaged; therefore, the assumption is that the safing pins were pulled in a comparatively normal longitudinal manner.
2. The arming rods had been pulled.
3. The MC-845 Bisch Generator had been operated.
4. The MC-840 Low Voltage Thermal Battery had fired.

~~SECRET~~

~~RESTRICTED DATA~~

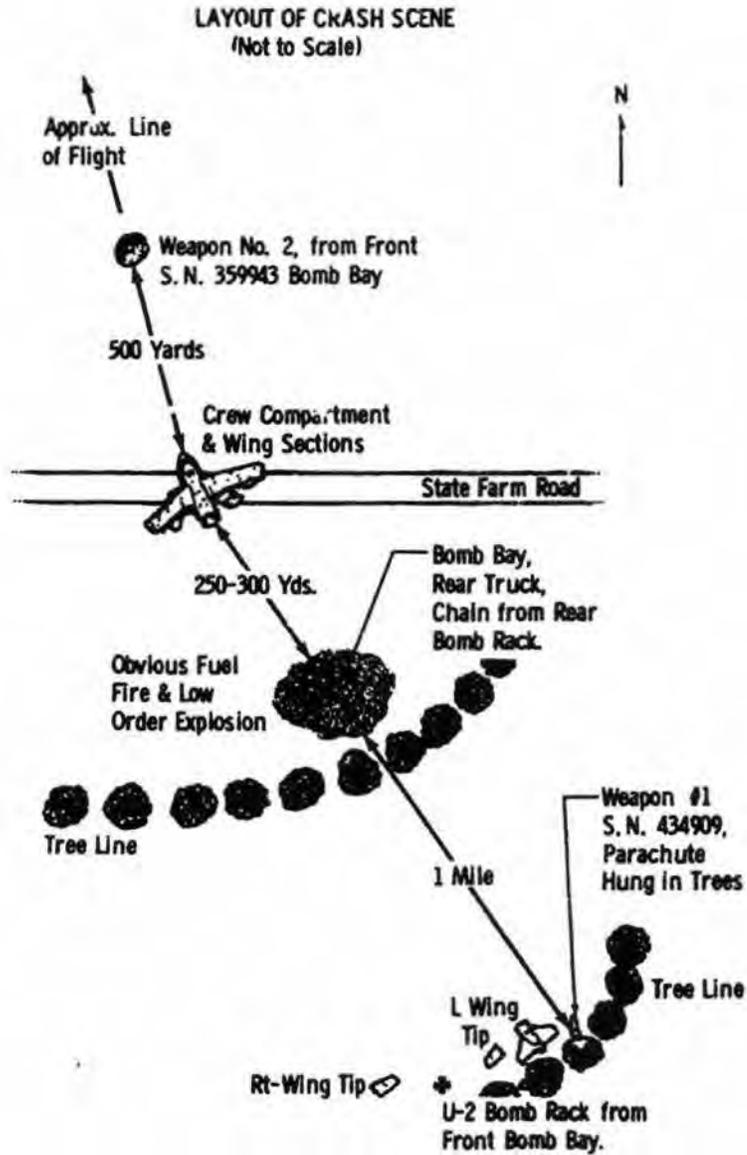


Figure 1

~~SECRET~~

~~RESTRICTED DATA~~

5. The MC-641 High Voltage Thermal Battery had fired.
6. The squibs of the Los Alamos Scientific Laboratory 1A Valve Mechanism on the gas reservoir had not been fired, and the tritium was retained in the reservoir.
7. The MC-543 Timer had been operated and completed its timing cycle.
8. The MC-832 Trajectory Arming baroswitch showed all the contacts closed.
9. The MC-788 High Voltage Safing Switch was in a "safe" position.
10. The MC-772 Low Voltage Arm/Safe Switch was in a "safe" position.

The appearance here is that the tearing apart of the aircraft removed the safing pins from the Bisch generator arming rods and, from that point onward, the weapon went through a normal sequence of events in which a detonation was prevented by the MC-722 Arm/Safe Switch being in the "safe" position.

In the recovery operation, the EOD personnel performed rendering safe procedures, which called for pinching and cutting the fill tube between the reservoir and the pit of the weapon, and then disassembling the weapon to minimize the effects of any detonation. When we saw this weapon, the reservoir had been removed, the primary had been removed from the weapon case, and these parts were stored in a storage area of the 53rd MMS. The conclusion to be drawn from this weapon is that all of the Sandia components performed as expected in a bomb separated from the aircraft in a safed condition. This unit is being returned by the 53rd MMS squadron to either Medina Base or to Clarksville Base, as directed by the AEC.

Weapon No. 2, Serial No. 359943

This was a Mk 39 Mod 2 weapon on which Alts 184, 189, and 190 had been performed. This weapon separated from the aircraft and did not have normal parachute deployment. The weapon impacted as a free-fall ballistic device in sandy clay and penetrated a minimum depth of 15 to 18 feet (Figure 2). At the time of our return to the Albuquerque area, neither the primary nor the secondary of the weapon had been recovered (the primary was recovered on January 31 at a depth of about 20 feet). However, large portions of the weapon case had been recovered at a depth of about 15 feet. The parachute pack and the fuzing and firing components of the weapon were recovered in the following condition:

1. The parachute had not been deployed. (Information from Strategic Air Command now indicates that the parachute deployment mechanism, the explosive devices, and timers did operate. The reason for the parachute not deploying is unknown at the moment.)
2. The MC-845 Bisch Generator arming rods had been pulled from the weapon.
3. The MC-640 Low Voltage Thermal Battery had been actuated.
4. The MC-543 Timer had run some 12 to 15 seconds and apparently was stopped in its operation at that time by the severe damage suffered at impact.
5. The MC-641 High Voltage Thermal Battery had not fired. This is normal since the MC-543 Timer contacts had not closed. At impact, the unit suffered severe physical damage.
6. The MC-772 Arm/Safe Switch gave a visual indication of ARM; however, a post-mortem conducted on this switch indicated that the switch had undergone severe internal damage, and, in fact, the rotating wafers had been separated from the contacts in the switch. All indications are that the contacts never operated to the ARM position.
7. The squibs in the 1A valve assembly on the reservoir of this weapon had not been fired, and the tritium gas was retained inside the reservoir.

Deleted

DOE  
b(3)

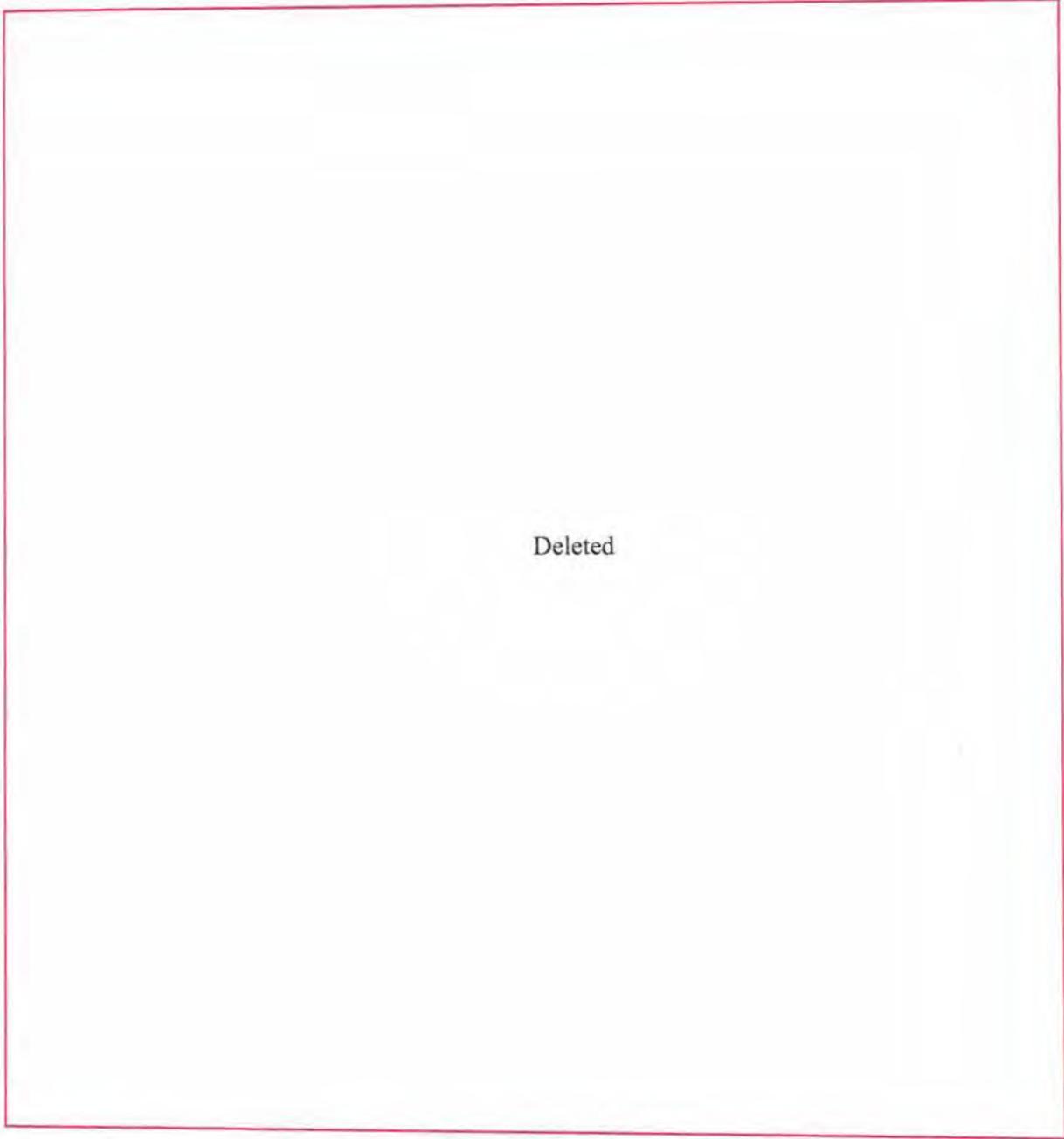
8. The MC-834 Explosive Switch had been actuated and was broken from the MC-543 Timer.

~~SECRET~~

~~RESTRICTED DATA~~

~~SECRET~~

~~RESTRICTED DATA~~



Deleted

DOE  
b(3)

~~SECRET~~

~~RESTRICTED DATA~~

~~SECRET~~

~~RESTRICTED DATA~~

The components recovered from this weapon, and in fact the position of these components themselves, indicate that there was not a one-point detonation in this weapon. All of the parts of the weapon were inside the hole which was caused by the ballistic entry of the weapon. The damage to the fuzing and firing components occurred at impact. The U2 bomb rack and release mechanism for this weapon was found in the general vicinity in which the tail section of the aircraft and weapon No. 1 were found. This mechanism was essentially intact; the safing pins in the release mechanism were in place, and a large piece of aircraft material was still attached to one side of the rack.

There is no way of determining how these weapons, or, in fact, when these weapons left the aircraft. The indication on weapon No. 2, that the timers ran approximately 12 seconds, is that this weapon separated from its rack, or at least that the arming rods were pulled, at an altitude of some 2000 to 3000 feet. This is based on the time required for free ballistic fall. However, the velocity and position of the weapon when the arming rods were pulled is subject to some speculation. The velocity components in either vertical or longitudinal direction are unknown, and therefore a positive statement as to when this weapon left the aircraft cannot be made.

The fact that the safing rods had been pulled from both of these weapons indicates that, during the breakup of the aircraft, the lanyard to the safing pins, which is secured in the pilots' compartment, was pulled due to the forces of aircraft breakup.

The T-249's in B52G aircraft are located in the navigator's compartment, and this is one part of the airplane which suffered severe burning. Some parts of the T-249's were found, but no determination can be made at this time as to their condition. However, a logical assumption, because of the condition of the weapons, is that the T-249's and the T-380 Readiness Switch, were, in fact, in the Safe/Off position.

#### Security

Security was controlled on the scene of this accident by the personnel from Seymour Johnson AFB, with assistance from the North Carolina State Police. Press releases were made immediately and appeared in the Tuesday evening newspapers in the area. The details of the crash, as far as they were then known, were given, and the fact that the aircraft carried two nuclear weapons was made known. A statement to the fact that the weapons were both safe and that no radiological hazards existed was in the papers. Following some additional human interest stories the second day, the matter was dropped from the local newspapers as no longer newsworthy.

#### Summary

In the opinion of the writer, the best summarization of this accident is that an aircraft accident under extremely unusual circumstances caused two nuclear weapons, Mk 39 Mod 2, to separate from the aircraft.

One of these weapons underwent a normal release sequence in which the parachute opened and the components of the weapon which were given an opportunity to actuate by the pulling of the Bisch rods did behave in the manner expected. Full operation of this weapon was prevented by the MC-772 Arm/Safe Switch, the primary safing device.

Weapon No. 2, which underwent something other than a normal release from the aircraft, evidenced by the fact that the parachute did not deploy, also had its arming rods extracted, and those components which were given the opportunity to act, did act in the manner expected. Full operation of this weapon was prevented by several things:

1. Impact occurred so soon after separation of the Bisch rods that the timers were not given an opportunity to run down.
2. The Arm/Safe Switch was in the "Safe" condition as the weapon left the aircraft.

There is much valuable information to be gained from this incident, and the post-mortem examinations being conducted at the present time should provide us more technical information in the near future. A separate technical report, including appropriate photographs, will be published when post-mortems are complete and photographs are available.

~~SECRET~~

~~RESTRICTED DATA~~

~~OFFICIAL USE ONLY~~

~~SECRET~~

D00033207

D00033914

SANDIA CORPORATION  
SANDIA BASE ALBUQUERQUE, N. M.

MEMORANDUM FOR THE DIRECTOR, SANDIA CORPORATION  
FROM: [Illegible]

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: 07/14/2014	DETERMINATION/CIRCLE NUMBER(S)
Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DD	1 CLASSIFICATION RETAINED
Name: David Hamrin DRL4 AU-63	2 CLASSIFICATION CHANGED TO:
2 <sup>nd</sup> Review Date: 7/17/14	3 CONTAINS NO DOE CLASSIFIED INFO
Authority: DD	4 COORDINATES WITH: DoD
Name: R.L. Shankle	5 CLASSIFICATION CANCELED
	6 CLASSIFIED INFO BRACKETED
	7 OTHER (SPECIFY):

100-443887-1000  
Albuquerque, N. M.

Re: Initial Report and Analysis of the Safety Aspects of the  
MK 19 and 2 Bombs Involved in the 692G Crash Near Salisbury,  
North Carolina

We have completed our analysis of the safety aspects of the  
MK 19 bombs involved in this crash. By this memorandum we are  
transmitting eleven (11) copies each of the reports of the  
incident and subsequent safety analysis for your retention  
and/or further distribution.

Please retain the copies of our internal Technical Memoranda  
TCM 59-01(71) which were forwarded earlier pending the comple-  
tion of the analysis.

W.H. 7162-1-50

Enc. RS 3423/503, Copies 1-11  
RS 3423/506, Copies 1-11

Copy to:  
S. W. Henderson, 100, Attn: U. M. Olson, 7162, wo/enc.

~~RESTRICTED DATA~~

~~This document contains Restricted Data as defined in the  
Atomic Energy Act of 1954. Unauthorized disclosure subject  
to Administrative and Criminal Sanctions.~~

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION  
D.C. Hix, AU-63 DATE 9/30/14

~~OFFICIAL USE ONLY  
May be exempt from public release under the Freedom  
of Information Act (5 U.S.C. 552), exemption number  
and Category: Exemption 6, Personal Privacy  
Department of Energy review required before public release.  
Name/Off: Patricia Korman, Classification Analyst, Ory 4275, 505-824-4000  
Date: 7/3/2012 Guidance: N/A~~

~~SECRET~~

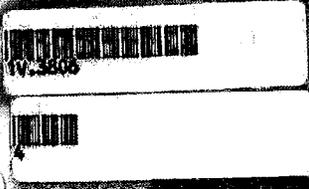
~~OFFICIAL USE ONLY~~

20140005759

~~OFFICIAL USE ONLY~~

~~SECRET / RD~~

SANDIA CORPORATION  
SANDIA BASE, ALBUQUERQUE, N. M.



Dr. John S. Porter  
Associate Director  
University of Tennessee  
Department of Aerospace and Astronautics  
1212 S. OAK ST.  
Knoxville, Tennessee

Re: Initial report and analysis of the Safety Aspects of  
the use of Mod 2 Bombs Involved in the B52G Crash Near  
Goldboro, North Carolina

We are forwarding through the Aerospace Operations Office copy  
of the initial report and subsequent safety analysis of the  
mod 2 bombs involved in the B52G crash near Goldboro,  
North Carolina.

Please return the copy of the internal technical and random  
copy of this report which was forwarded to you earlier pending the  
completion of the analysis.

John S. Porter

Dr. John S. Porter, 100, Attn: J. S. Porter, 7162, W-7162

7162	2/7/72
7162-1	01/18/72

~~OFFICIAL USE ONLY~~  
 May be exempt from public release under the Freedom  
 of Information Act (5 U.S.C. 552), exemption number  
 and Category: Exemption 6, Personal Privacy  
 Department of Energy review required before public release.  
 Name/Off: Paula Korman, Classification Analyst, OHS-275, SNL/NM  
 Date: 7/9/2012, Guidance: N/A

~~SECRET / RD~~

~~OFFICIAL USE ONLY~~

RECEIVED  
367  
OCT 17 1961

7162

~~OFFICIAL USE ONLY~~

~~SECRET / RD~~

SANDIA CORPORATION  
SANDIA BASE, ALBUQUERQUE, N. M.

R. W. HENDERSON  
DIRECTOR, OPERATIONS DIVISION

Attn: Gen. Austin W. Belts  
Director

Division of Military Applications  
U. S. Atomic Energy Commission  
Washington 25, D. C.

Re: Initial Report and Analysis of the Safety Aspects of  
the M1 Mod 2 Bombs Involved in the B52 Crash Near  
Goldboro, North Carolina

We are forwarding through Albuquerque Operations Office copies  
of the initial report and subsequent safety analysis of the  
M1 Mod 2 weapons involved in the B52 crash near Goldboro,  
North Carolina.

We are returning the copies of our internal technical memorandum  
SA-59-61(71) which were forwarded to you earlier pending the  
completion of the analysis.

SAO 7152-1,70

Copy to:

Mr. W. Henderson, 100, Attn: R. W. Henderson, 7102, w/hnd

~~OFFICIAL USE ONLY~~  
May be exempt from public release under the Freedom  
of Information Act (5 U.S.C. 552), exemption number  
and Category: Exemption B, Privacy  
Department of Energy review required before public release.  
Name/Off: Robbie Kernan, Classification Analyst, Org: 8205, SNL/NM  
Date: 7/9/2012, Guidance: N/A

~~SECRET / RD~~

~~OFFICIAL USE ONLY~~

RECEIVED

368

FEB 2 1961

7102

~~OFFICIAL USE ONLY~~

~~SECRET / RD~~

~~ANALYSIS CORPORATION  
1000 WASHINGTON AVENUE, SUITE 1000  
WASHINGTON, DC 20004~~

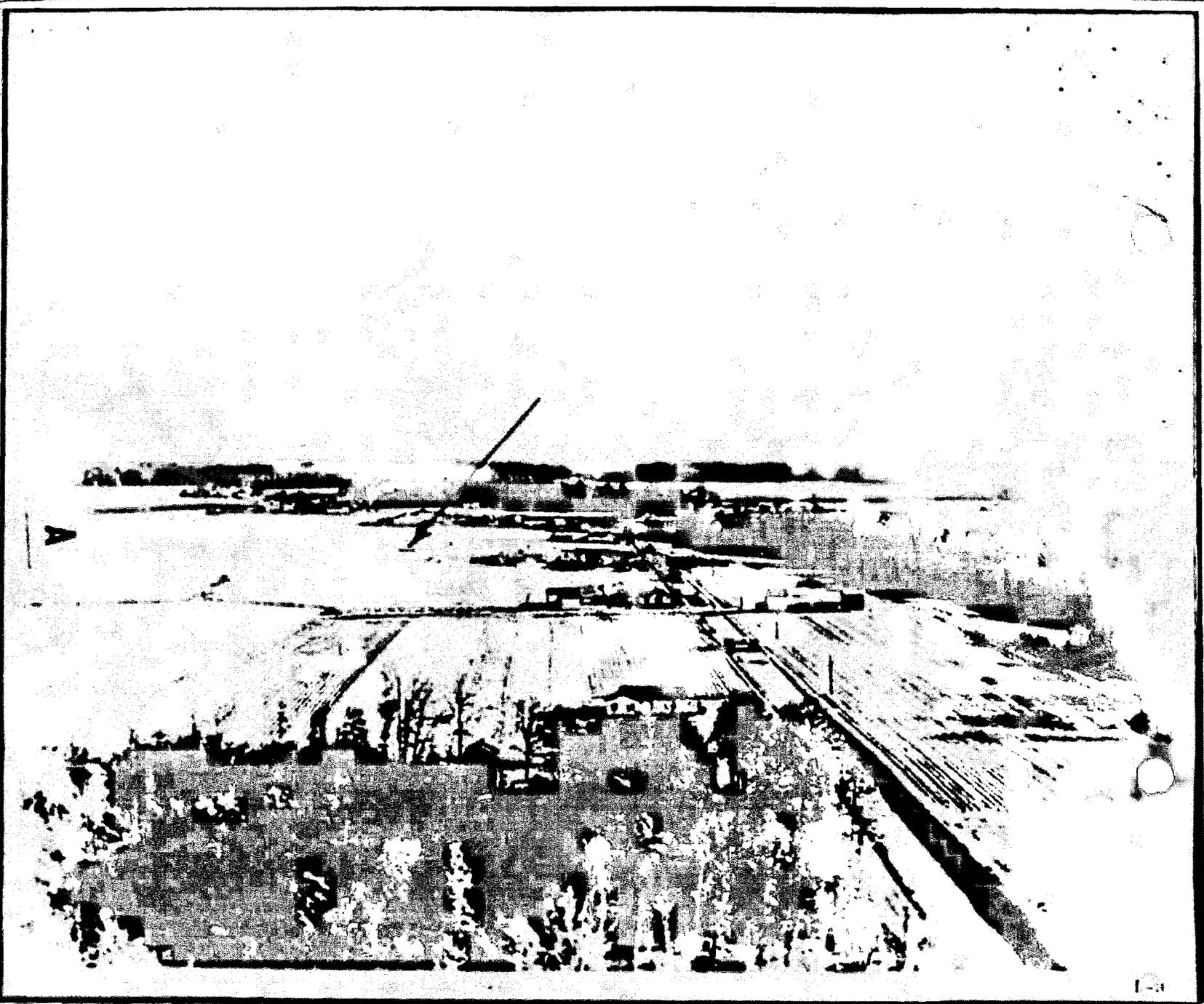
~~SECRET~~

~~SECRET~~

~~OFFICIAL USE ONLY  
May be exempt from public release under the Freedom  
of Information Act (5 U.S.C. 552), exemption number  
and Category: Exemption 6, Personal Privacy  
Department of Energy review required before public release.  
Name/Date: Debbie Kernan, Classification Analyst, 08/09/2012, SNI/NM  
Date: 7/9/2012 Guidance: N/A~~

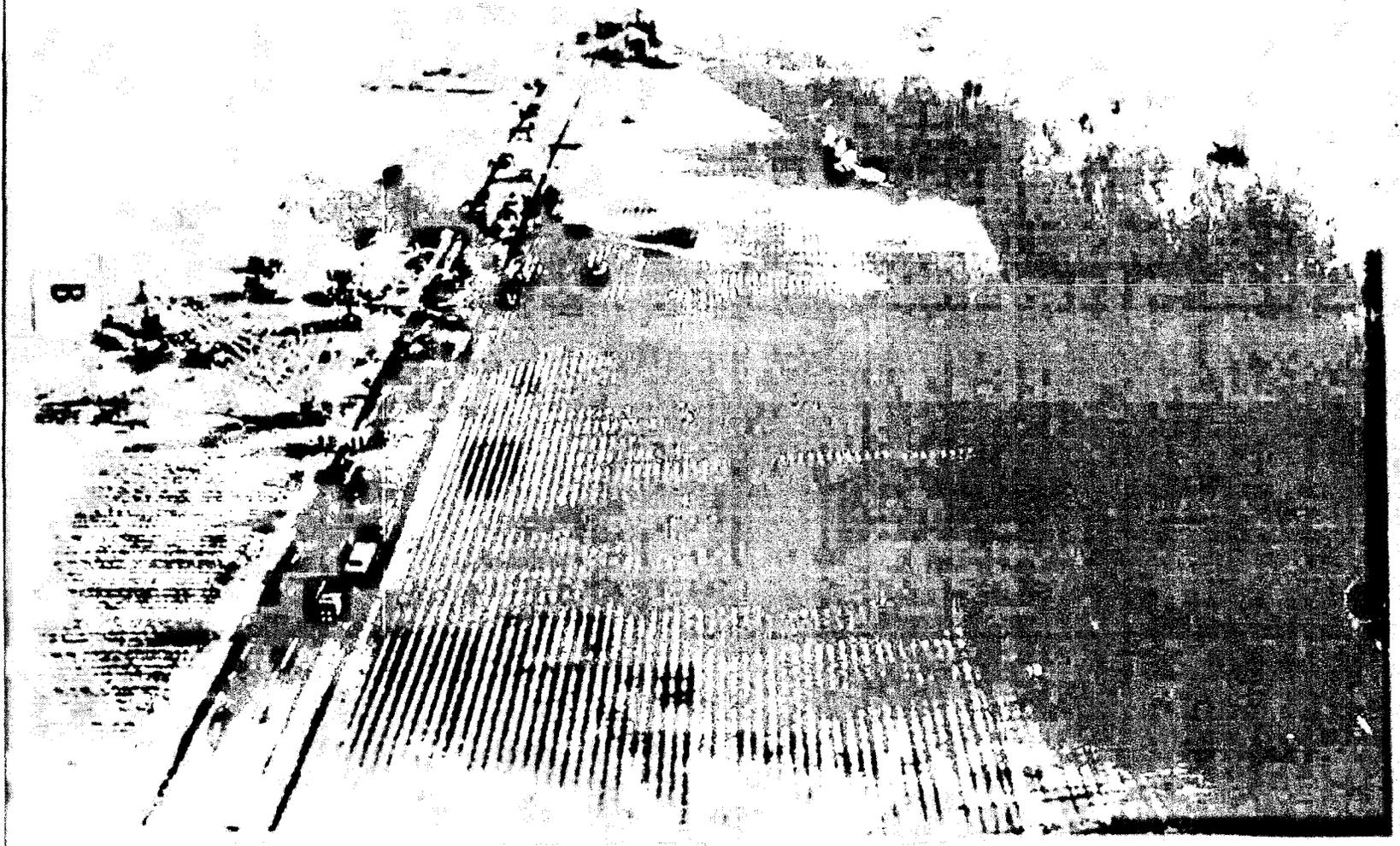
~~SECRET / RD  
OFFICIAL USE ONLY~~

~~UNCLASSIFIED~~ — ~~SECRET~~ / RD —

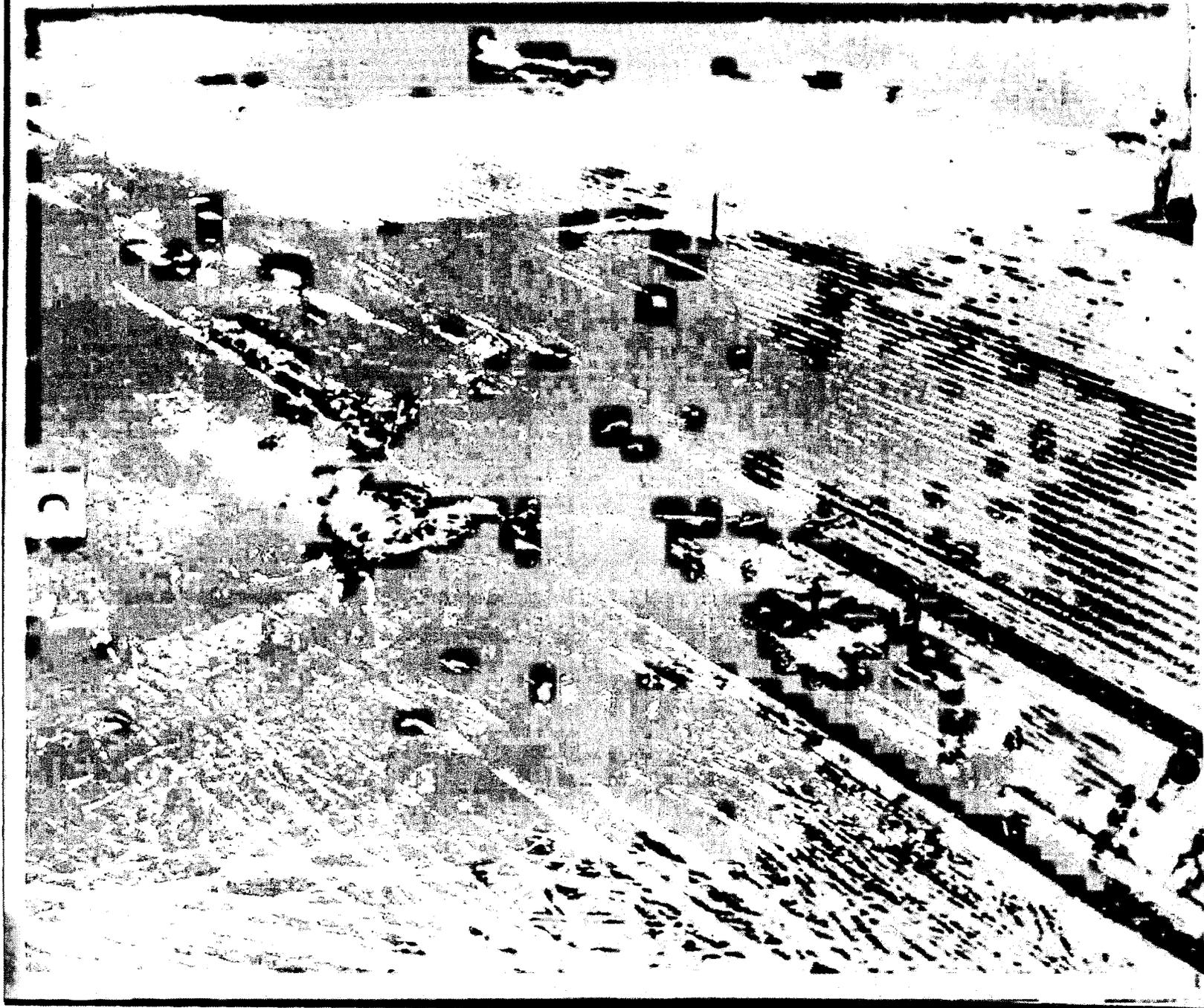


~~UNCLASSIFIED~~ — ~~SECRET~~ / RD —

~~UNCLASSIFIED SECRET / PD~~



~~UNCLASSIFIED SECRET / PD~~



~~UNCLASSIFIED~~

~~SECRET / RD~~

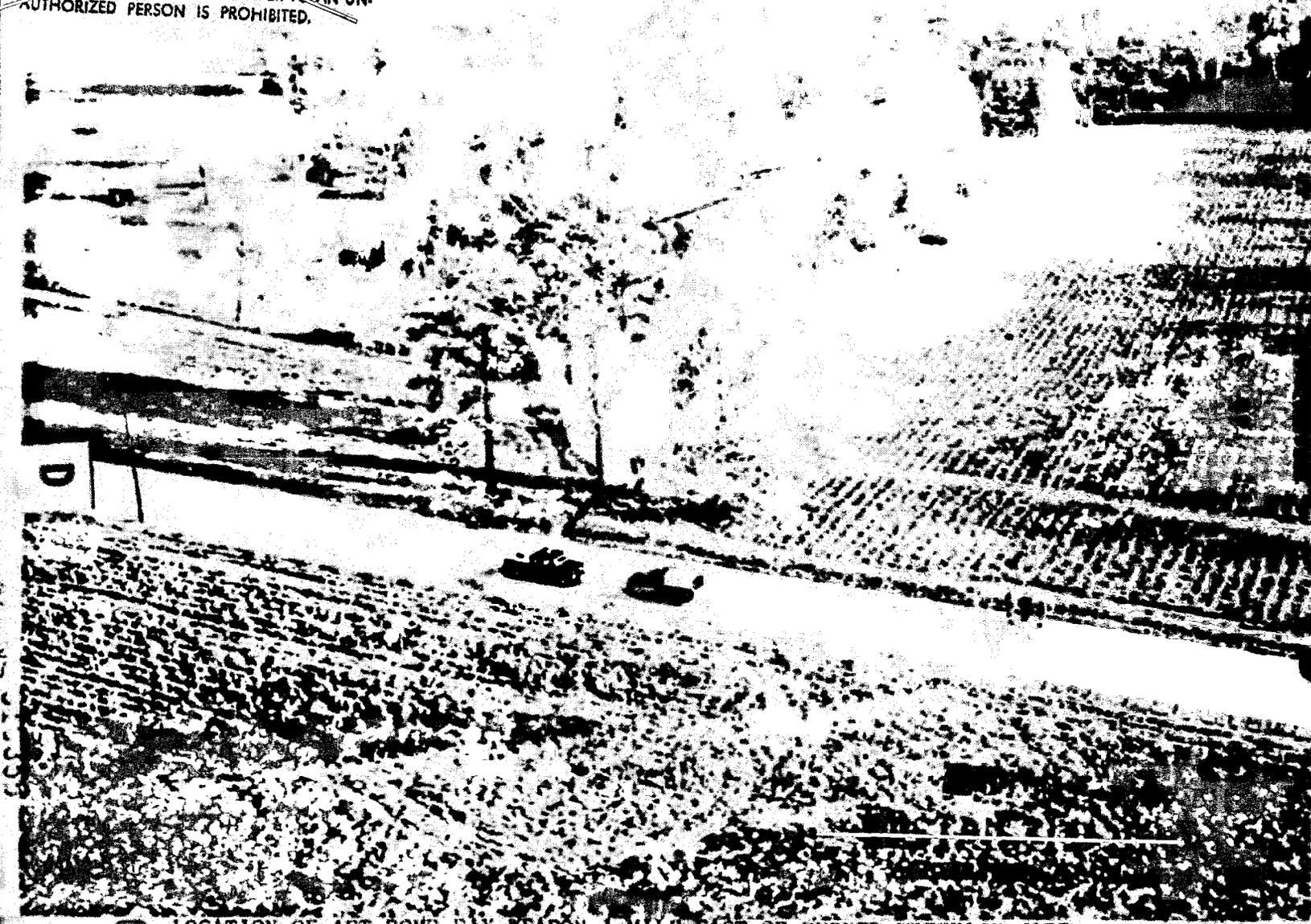
~~UNCLASSIFIED~~

~~SECRET / RD~~

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN THE ATOMIC ENERGY ACT OF  
1954. DISSEMINATION OR THE DISCLOSURE  
OF ITS CONTENTS IN ANY MANNER TO AN UN-  
AUTHORIZED PERSON IS PROHIBITED.~~

~~SECRET~~



LOCATION OF APT BOMB BAY WEAPON 1 MILE EAST OF BURNED WRECKAGE SITE.

~~SECRET / RD~~

~~SECRET / RD~~

~~SECRET / RD~~

~~SECRET~~

INVENTORIED

APR 15 1964

3427-1

INVENTORIED

AUG 3 '66

3428-3

INVENTORIED  
AUG 12 '66  
3427-1

INVENTORIED

DATE AUG 15 1966

FEB 8 1964

INVENTORIED

INVENTORIED  
DATE SEP 22 1964

PRINT NO. 5324

RECEIVED

2470/mo  
MAR 2 1961

RS 3466 104772

7162 ~~SECRET~~

S-119 Moldalima

~~SECRET / RD~~

~~SECRET / RD~~

~~SECRET  
SECRET~~

~~RESTRICTED~~

~~THIS DOCUMENT IS UNCLASSIFIED  
AS DEFINED IN EXECUTIVE ORDER 11652  
OF 1954. ITS DECLASSIFICATION  
AUTHORITY IS 50 USC 1702.~~

*RESTRICTED*  
*SECRET*

**E**

~~SECRET / RD~~

~~SECRET / RD~~

~~SECRET~~

INVENTORIED  
99.21.50V  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3428-3

INVENTORIED

APR 1 1964

3427-1

1-724

FEB 24 1964

INVENTORIED

DATE AUG 15 1961

INVENTORIED  
DATE SEP 22 1964

RECEIVED  
MAR 2 1964  
2470/120

INVENTORIED

7162

*S. H. Robinson*

PRINT NO. 5925

RS 3465 104773

~~SECRET~~

~~SECRET / RD~~

DOE  
b(3)

Deleted

~~SECRET / RD~~

SECRET

~~SECRET~~

INVENTORIED  
AUG 18 1965  
3427-1

INVENTORIED

AUG 3 1966

3427-3

INVENTORIED  
FEB 9 4 1964  
3427-1

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
DATE AUG 15 1961

INVENTORIED  
DATE SEP 22 1964

PRINT NO. 5026

S-114  
RS 3466 104774

RECEIVED  
MAR 2 2 47 1961  
7162

~~SECRET~~

~~SECRET / RD~~

DOE  
b(3)

Deleted

~~SECRET~~

INVENTORIED  
AUG 12 1965  
8422-3

INVENTORIED  
AUG 3 1965  
8422-3

INVENTORIED  
FEB 24 1964  
3427-1

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
SEP 22 1964

INVENTORIED  
DATE AUG 15 1965

RECEIVED  
24701120  
AUG 2 1965

PRINT NO. 5027

7182

RS 3466 104775

~~SECRET~~

DOE  
b(3)

Deleted

~~SECRET~~

INVENTORIED  
FEB 24 1964  
3427-1

INVENTORIED  
APR 15 1964  
3427-1

RECEIVED  
2470 h  
MAR 2 1961  
7162

INVENTORIED  
AUG 12 1965  
INVENTORIED  
DATE SEP 22 1964

INVENTORIED  
DATE AUG 15 1961

INVENTORIED  
AUG 3 1966  
3428-3

PRINT NO. 5928 ~~SECRET~~ RG 3466 104776

T



~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.~~

CLASSIFIED BY 4488

~~SECRET~~

RS 3466  
104779

PRINT NO. 5929

INVENTORIED  
DATE AUG 15 1961

INVENTORIED  
AUG 3 '66  
3428-3

INVENTORIED  
AUG 12 '65

INVENTORIED  
FEB 24 1964  
3427-1

INVENTORIED  
DATE SEP 22 1964

INVENTORIED

APR 15 1964

3427-1

RECEIVED  
MAR 2 1961  
7470/20

7162

S-11F Goldstone

~~SECRET~~

~~SECRET / RD~~

~~SECRET~~



~~RESTRICTED DATA~~

THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN EXECUTIVE ORDER 11652 OF  
OCTOBER 6, 1956, WHICH AUTHORITY DERIVES FROM  
AN ACT OF CONGRESS IN APRIL, 1950, AND AN  
ADMINISTRATIVE PERSON IS PROHIBITED.

~~RESTRICTED DATA~~

~~SECRET~~

J

ARMY'S OFFICE

~~SECRET / RD~~

~~SECRET / RD~~

~~SECRET~~

INVENTORIED

AUG 3 '66

3428-3

AUG 12 '66

INVENTORIED

3427-1

FEB 9 '66

INVENTORIED

INVENTORIED

FEB 14 1966

3441-1

INVENTORIED

APR 15 1966

3427-1

INVENTORIED

DATE AUG 25 '66

INVENTORIED

DATE SEP 22 1964

RECEIVED  
2470/120  
MAR 2 1967

7162

PRINT NO.

5930

~~SECRET~~

RS 3466

104778

~~SECRET / RD~~

Deleted

SECRET

INVENTORIED

AUG 3 '66

3428-3

SECRET

3428-3

AUG 12 '65

INVENTORIED

INVENTORIED

DATE AUG 15 1965

3427-1  
FEB 9 1964  
INVENTORIED

INVENTORIED

RECEIVED

2470/12

APP 15 1964

MAR 2 1961

3427-3

INVENTORIED

DATE SEP 22 1964

7162

PRINT NO. 5931

Deleted

~~SECRET / RD~~

~~SECRET~~

1-27-6  
FEB 2 1961  
INVENTORIED

INVENTORIED  
FEB 14 1963  
3441-1

8275  
AUG 12 1966  
INVENTORIED

INVENTORIED  
AUG 3 1966  
3428-1

RECEIVED  
AUG 2 1961  
1162

INVENTORIED  
APR 15 1964  
8427-1

INVENTORIED  
DATE AUG 15 1961

INVENTORIED  
DATE SEP 22 1964

S. H. F. Holcomb

PRINT NO. 5932 ~~SECRET~~

RS 3456 104780

~~SECRET / RD~~

~~SECRET / RD~~

DOE  
b(3)

Deleted

~~SECRET / RD~~

SECRET

3427-1  
FEB 24 1964  
INVENTORIED

3427-1  
AUG 12 '66  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3427-3

INVENTORIED  
DATE AUG 15 1964

RECEIVED  
MAR 2 1961  
2470/124

INVENTORIED

APR 1 1964

3427-1

INVENTORIED  
DATE SEP 22 1964

7162

*S-W Goldenberg*

PRINT NO. 5933

RS 3466 104781

~~SECRET / RD~~

~~SECRET / RD~~

N

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN EXECUTIVE ORDER 11652 OF 1964. ITS DISSEMINATION  
OR ITS CONTENTS IN ANY MANNER IS RESTRICTED TO  
AUTHORIZED PERSONNEL ONLY.~~

Forward bomb bay U-2 rack with pin still in lock position and chain supporting lug engaged.

III-b

~~SECRET~~

~~SECRET~~

INVENTORIED  
AUG 3 '66  
3428-3

INVENTORIED

3427-1

INVENTORIED

FEB 14 1964

FEB 24 1964

APP 15 1964

3441-1

INVENTORIED

INVENTORIED

3427-1

DATE AUG 15 1964

RECEIVED

MAR 2

2470/21

8428-3

AUG 12 65

INVENTORIED  
DATE SEP 22 1964

INVENTORIED

PRINT NO.

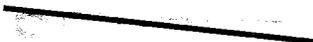
5934

~~SECRET~~

RS 3466 104782

Deleted

~~SECRET / RD~~



INVENTORIED  
FEB 24 1964  
3427-1

INVENTORIED  
AUG 12 1965  
18422-3

INVENTORIED

APR 15 1964

3427-1

INVENTORIED  
DATE SEP 22 1964

INVENTORIED  
DATE AUG 15 1964

INVENTORIED

3 '66

RECEIVED  
MAR 2 1961  
2470/171

7162

PRINT NO. 5935

RS 3466 104783

~~SECRET~~

~~SECRET / RD~~

Deleted

~~SECRET / RD~~

~~SECRET~~

3427-1  
FEB 24 1964  
INVENTORIED

INVENTORIED  
APR 15 1964  
1-1726  
AUG 12 1965  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3428-1

INVENTORIED  
DATE AUG 15 1967

RECEIVED  
MAR 2 1961  
*24 201 21*

7162

T  
C

INVENTORIED  
DATE SEP 22 1964

PRINT NO. 5936 -

*S-11-2*

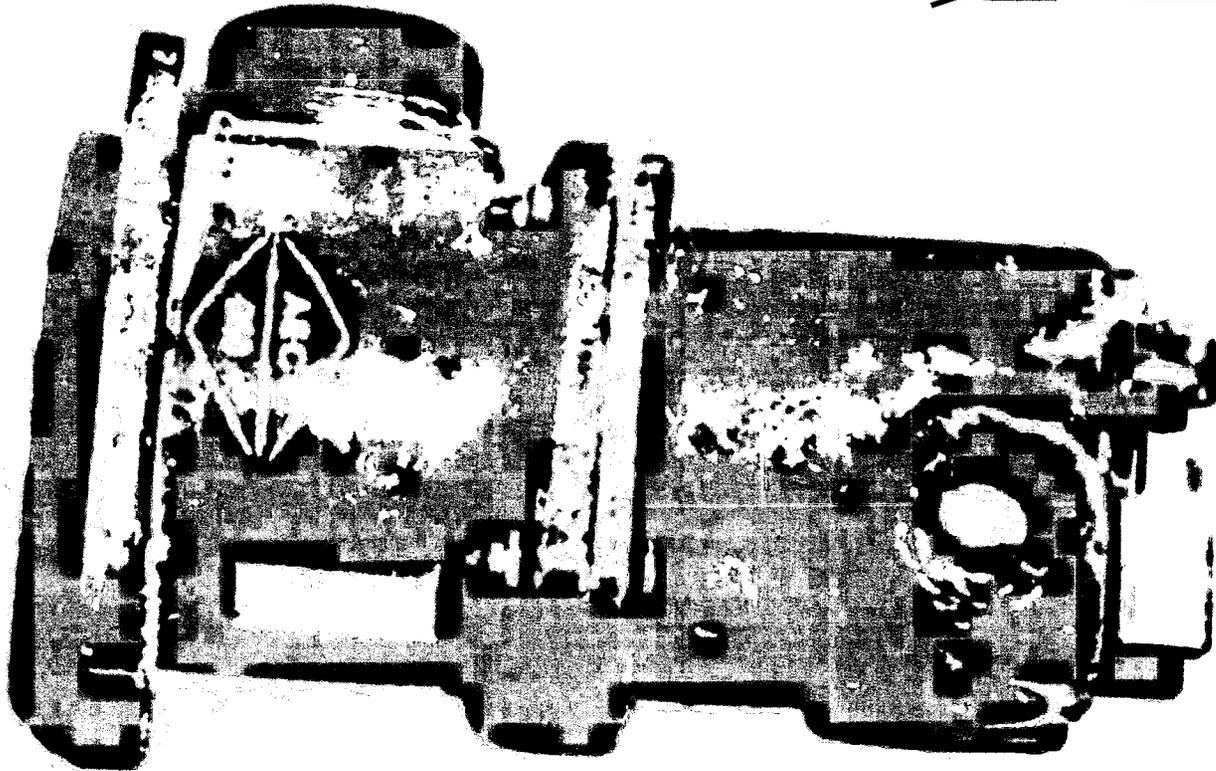
~~SECRET~~ RS 3466 104784

~~SECRET / RD~~

~~SECRET~~

~~OFFICIAL USE ONLY  
May be exempt from public release under the Freedom  
of Information Act (5 U.S.C. 552), exemption number 1 and  
Category: Exemption 3 Statutory Exemption, ITAR  
Department of Energy, review required before public release.  
Name/Date: Bobbie Kernan, Classification Analyst, On: 4/25, SNI/NM  
Date: 1/9/2012, Guidance: N/A~~

0003  
ECI/  
ITAR



~~SECRET / RD~~

~~SECRET / RD~~

Q

~~RESTRICTED DATA~~  
THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DETERMINED IN EXECUTIVE ORDER BY ACT OF  
PRESIDENT JOHN F. KENNEDY ON 9/8/62. DISCLOSURE  
OF THIS INFORMATION IN ANY MANNER TO  
UNAUTHORIZED PERSON IS PROHIBITED.

~~SECRET~~

MC-772 LOW VOLTAGE SAFETY SWITCH IV-m

~~SECRET~~

3427-1  
FEB 24 1964  
INVENTORIED

INVENTORIED  
AUG 3 1966  
3428-3

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
DATE SEP 22 1964

RECEIVED  
MAR 2 1961  
2470/21

3428-3  
AUG 12 1965  
INVENTORIED

INVENTORIED  
DATE AUG 15 1967

7162

T  
C

PRINT NO. 5937

RS 3466 104785

~~SECRET~~

Deleted

~~SECRET / RD~~

~~SECRET~~

3427-1  
FEB 24 1964  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3428-3

INVENTORIED  
APR 15 1964

3428-3  
AUG 12 '65  
INVENTORIED

INVENTORIED  
DATE SEP 22 1964  
AUG 15 1967

RECEIVED  
MAR 2 1961  
2470/121

7162

PRINT NO. 5938 ~~SECRET~~ RS 3466 104786

~~SECRET / RD~~

DOE  
b(3)

Deleted

\_\_\_\_\_

3427-1

FEB 2 1964

INVENTORIED

INVENTORIED

AUG 3 '66

3428-1

INVENTORIED

APR 1 5 1964

3427-1

3428-1

AUG 12 '65

INVENTORIED

DATE SEP 22 1964

INVENTORIED

DATE AUG 1 5 1967

RECEIVED

MAR 2 1961

2470/121

7162

INVENTORIED

PRINT NO. 5939

RS 3466 104787

~~SECRET / RD~~

DOE  
b(3)

Deleted

~~SECRET / RD~~

~~SECRET~~

3427-1

FEB 24 1964

INVENTORIED

INVENTORIED

APR 15 1964

3427-1

INVENTORIED

AUG 3 1964

3427-1

RECEIVED

MAR 2 1964

7162

PRINT NO. 5940

84283

AUG 12 1965

INVENTORIED

INVENTORIED

INVENTORIED

DATE AUG 15 1964

DATE SEP 22 1964

~~SECRET~~

RS 3456 104788

Deleted

~~SECRET~~

3427-1  
FEB 2 4 1964  
INVENTORIED

INVENTORIED  
AUG 3 1966  
3428-2

INVENTORIED  
DATE SEP 22 1964

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
DATE AUG 15 1964

RECEIVED  
7470121  
1961 2 8  
7162

INVENTORIED  
AUG 2 1965  
3428-2

*W. M. ...*

~~SECRET~~

PRINT NO. 5941

RS 3466 104789

Deleted

~~SECRET / RD~~

~~SECRET~~

3427-1  
FEB 24 1964  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3428-3

INVENTORIED  
DATE SEP 22 1964

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
DATE AUG 15 1964

RECEIVED  
MAR 2 1961  
2470/2/

7162

AUG 12 65

S-11 F. Kollman

PRINT NO.

5942

~~SECRET~~

INVENTORIED

RS 3466

10490

~~SECRET / RD~~

~~SECRET / RL~~

OFFICIAL USE ONLY

May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and Category: ~~Exemption 3 Statute: exemption, ITAR~~

Department of Energy review required before public release.  
Name/Office: ~~Abbie Kerman, Classification Analyst, Org. Code: SNL/NM~~  
Date: ~~7/9/2012~~ Guidance: ~~N/A~~

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.~~



MC-845 IGNITING PULSE GENERATOR. SAFETY PINS AND ARMING RODS EXTRACTED. IV-F

W

2052

~~SECRET / RD~~

3427-1

FEB 24 1964

INVENTORIED

INVENTORIED

AUG 3 '66

3428-3

INVENTORIED

APR 15 1964

3427-1

INVENTORIED

DATE AUG 15 1966

RECEIVED

MAR 2 1961

3427-1

7302

AUG 12 1965

INVENTORIED

DATE SEP 22 1964

S-11F

PRINT NO. 5943

~~SECRET~~

RS 3466

104791

~~OFFICIAL USE ONLY~~

~~SECRET~~

D000339207

D00033914

SANDIA CORPORATION  
SANDIA BASE A., ALBUQUERQUE, N. M.

MEMORANDUM FOR THE DIRECTOR, SANDIA CORPORATION  
SUBJECT: [Illegible]

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: 07/14/2014	DETERMINATION/CIRCLE NUMBER(S)
Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DD	1 CLASSIFICATION RETAINED
Name: David Hamrin DRL4 AU-63	2 CLASSIFICATION CHANGED TO:
2 <sup>nd</sup> Review Date: 7/17/14	3 CONTAINS NO DOE CLASSIFIED INFO
Authority: DD	4 COORDINATES WITH: DoD
Name: R.L. Shankle	5 CLASSIFICATION CANCELED
	6 CLASSIFIED INFO BRACKETED
	7 OTHER (SPECIFY):

100-443887-1000  
Albuquerque, N. M.

Re: Initial Report and Analysis of the Safety Aspects of the  
MK 19 and 2 Bombs Involved in the 692G Crash Near Salisbury,  
North Carolina

We have completed our analysis of the safety aspects of the  
MK 19 and 2 bombs involved in this crash. By this memorandum we are  
transmitting eleven (11) copies each of the reports of the  
incident and subsequent safety analysis for your retention  
and/or further distribution.

Please retain the copies of our internal Technical Memoranda  
TOMM 59-01(71) which were forwarded earlier pending the comple-  
tion of the analysis.

W.H. 7162-1-50

Enc. RS 3423/503, Copies 1-11  
RS 3423/506, Copies 1-11

Copy to:  
S. W. Henderson, 100, Attn: U. M. Olson, 7162, wo/enc.

~~RESTRICTED DATA~~

~~This document contains Restricted Data as defined in the  
Atomic Energy Act of 1954. Unauthorized disclosure subject  
to Administrative and Criminal Sanctions.~~

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

D.C. Hix, AU-63 DATE 9/30/14

~~OFFICIAL USE ONLY~~  
 May be exempt from public release under the Freedom  
 of Information Act (5 U.S.C. 552), exemption number  
 and Category: Exemption 6, Personal Privacy

Department of Energy review required before public release.  
 Name/Off: Patricia Korman, Classification Analyst, Ory 4275, 505-824-4000  
 Date: 7/3/2012 Guidance: N/A

~~SECRET~~

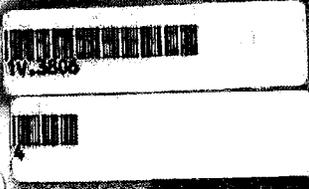
~~OFFICIAL USE ONLY~~

375  
7162  
20140005759

~~OFFICIAL USE ONLY~~

~~SECRET / RD~~

SANDIA CORPORATION  
SANDIA BASE, ALBUQUERQUE, N. M.



Dr. John S. Porter  
Associate Director  
University of California  
Department of Energy Radiation Laboratory  
7450 SOX DR  
Livermore, California

Re: Initial report and analysis of the Safety Aspects of  
the use of Mod 2 Bombs Involved in the B52G Crash Near  
Goldboro, North Carolina

Re the forwarding through Air Force Operations Office copy  
of the initial report and subsequent safety analysis of the  
B52G crash near Goldboro, North Carolina.

Please return the copy of the internal technical and random  
copy of this report which was forwarded to you earlier pending the  
completion of the analysis.

John S. Porter

Dr. John S. Porter, 7450 Sox Dr., Attn: J. S. Porter, 7162, W-7162

7162	2/7/72
7162-1	6/18/72

~~OFFICIAL USE ONLY~~  
 May be exempt from public release under the Freedom  
 of Information Act (5 U.S.C. 552), exemption number  
 and Category: Exemption 6, Personal Privacy  
 Department of Energy review required before public release.  
 Name/Off: Paula Korman, Classification Analyst, OHS-275, SNL/NM  
 Date: 7/9/2012, Guidance: N/A

~~SECRET / RD~~

~~OFFICIAL USE ONLY~~

RECEIVED  
367  
OCT 17 1961

7162

~~OFFICIAL USE ONLY~~

~~SECRET / RD~~

SANDIA CORPORATION  
SANDIA BASE, ALBUQUERQUE, N. M.

R. W. HENDERSON  
DIRECTOR, OPERATIONS DIVISION

Attn: Gen. Austin W. Belts  
Director

Division of Military Applications  
U. S. Atomic Energy Commission  
Washington 25, D. C.

Re: Initial Report and Analysis of the Safety Aspects of  
the M52 Mod 2 Bombs Involved in the B52 Crash Near  
Goldboro, North Carolina

We are forwarding through Albuquerque Operations Office copies  
of the initial report and subsequent safety analysis of the  
M52 Mod 2 weapons involved in the B52 crash near Goldboro,  
North Carolina.

We are returning the copies of our internal technical memorandum  
SA-59-61(71) which were forwarded to you earlier pending the  
completion of the analysis.

SAO 7152-1,70

Copy to:

Mr. R. Henderson, 100, Albuquerque, N. M. 87102, w/h/enc

~~OFFICIAL USE ONLY~~  
May be exempt from public release under the Freedom  
of Information Act (5 U.S.C. 552), exemption number  
and Category: Exemption B, Privacy  
Department of Energy review required before public release.  
Name/Off: Robbie Kernan, Classification Analyst, Org: ENR, SNL/NM  
Date: 7/9/2012 Guidance: N/A

~~SECRET / RD~~

~~OFFICIAL USE ONLY~~

RECEIVED  
368  
FEB 2 1961

7102

~~OFFICIAL USE ONLY~~

~~SECRET / RD~~

~~ANALYSIS CORPORATION  
1000 WASHINGTON AVENUE, SUITE 1000  
WASHINGTON, DC 20004~~

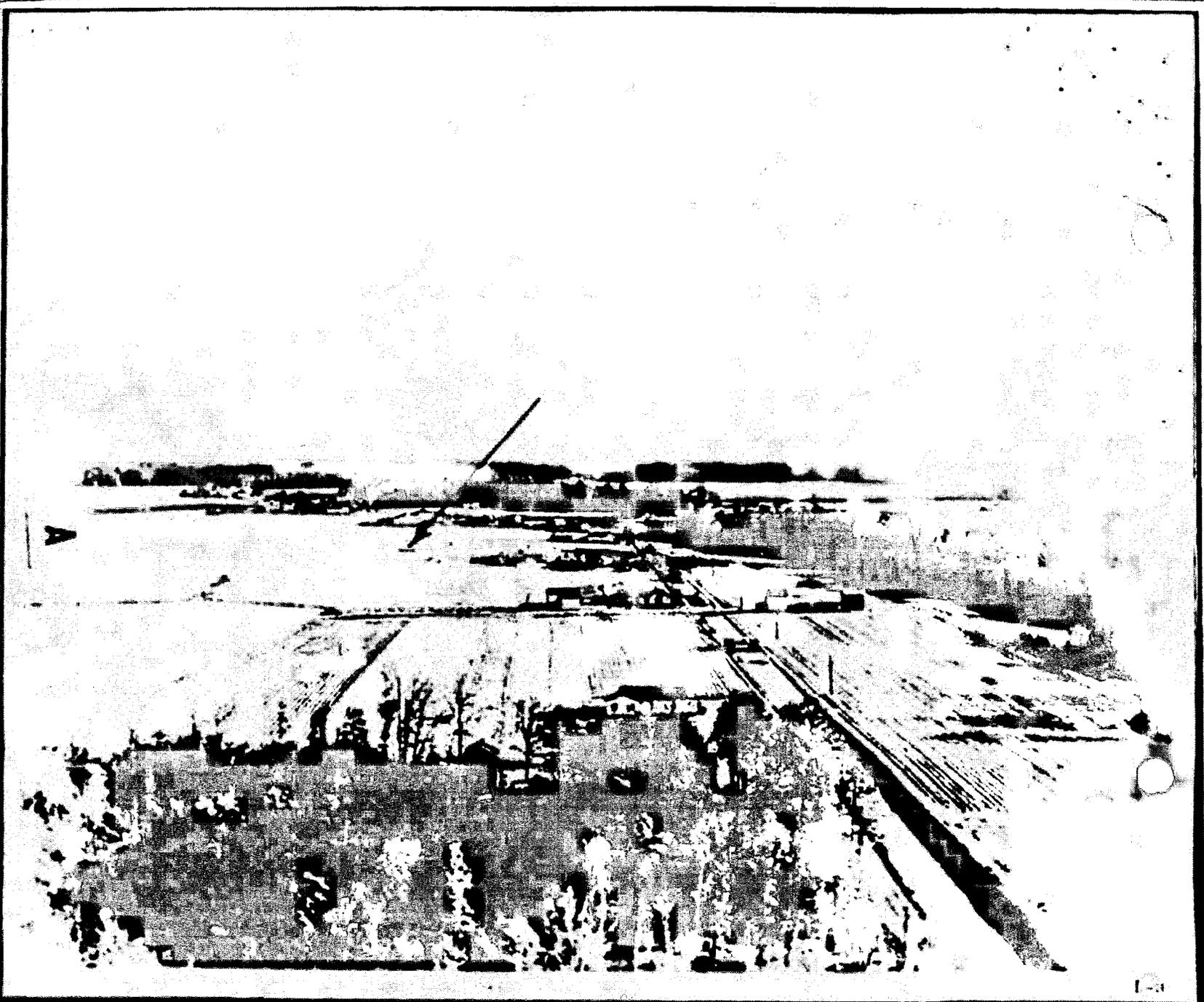
~~SECRET~~

~~SECRET~~

~~OFFICIAL USE ONLY  
May be exempt from public release under the Freedom  
of Information Act (5 U.S.C. 552), exemption number  
and Category: Exemption 6, Personal Privacy  
Department of Energy review required before public release.  
Name/Date: Debbie Kernan, Classification Analyst, OD 6025, SNI/NM  
Date: 7/9/2012 Guidance: N/A~~

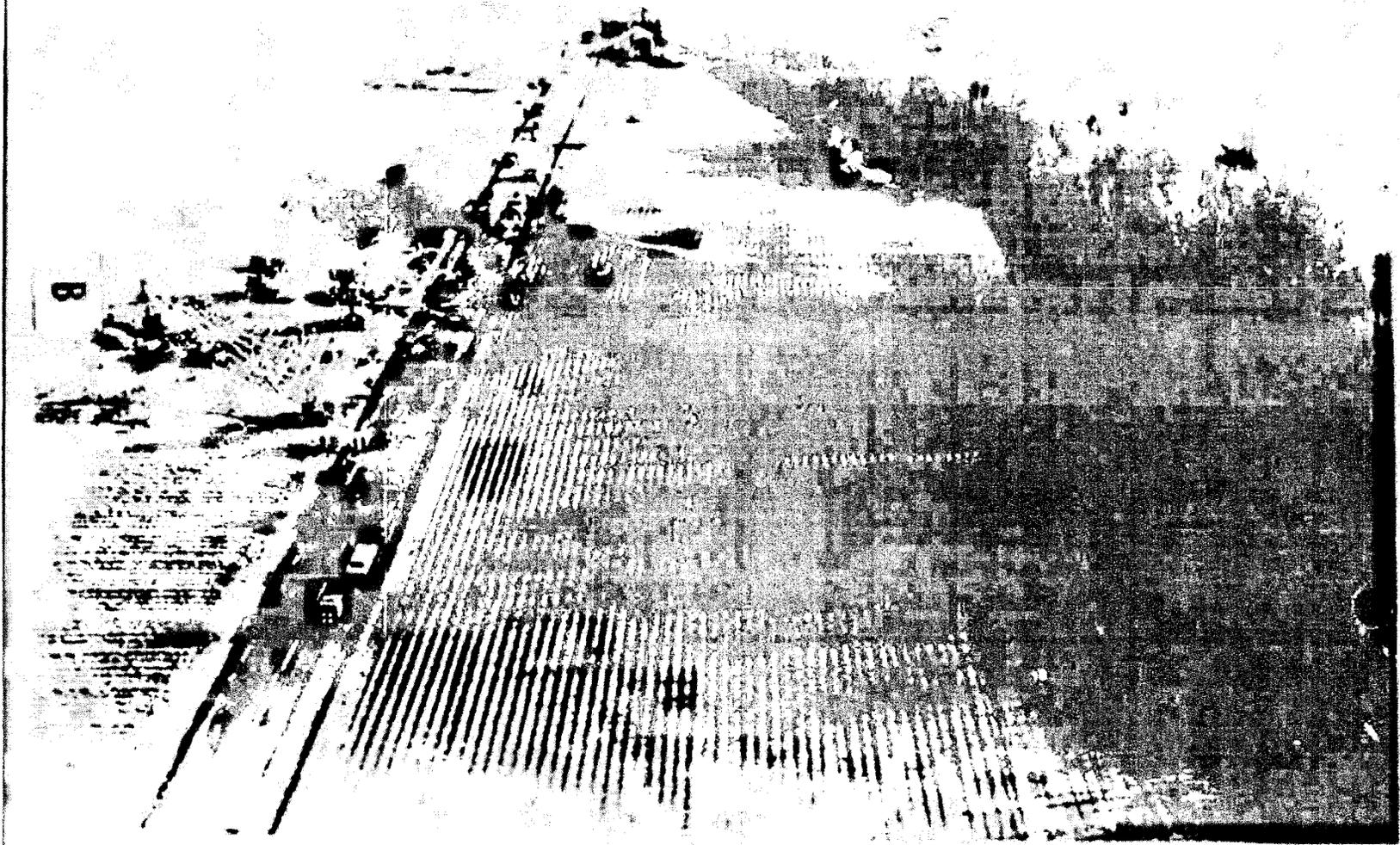
~~SECRET / RD  
OFFICIAL USE ONLY~~

~~UNCLASSIFIED~~ — ~~SECRET~~ / RD —

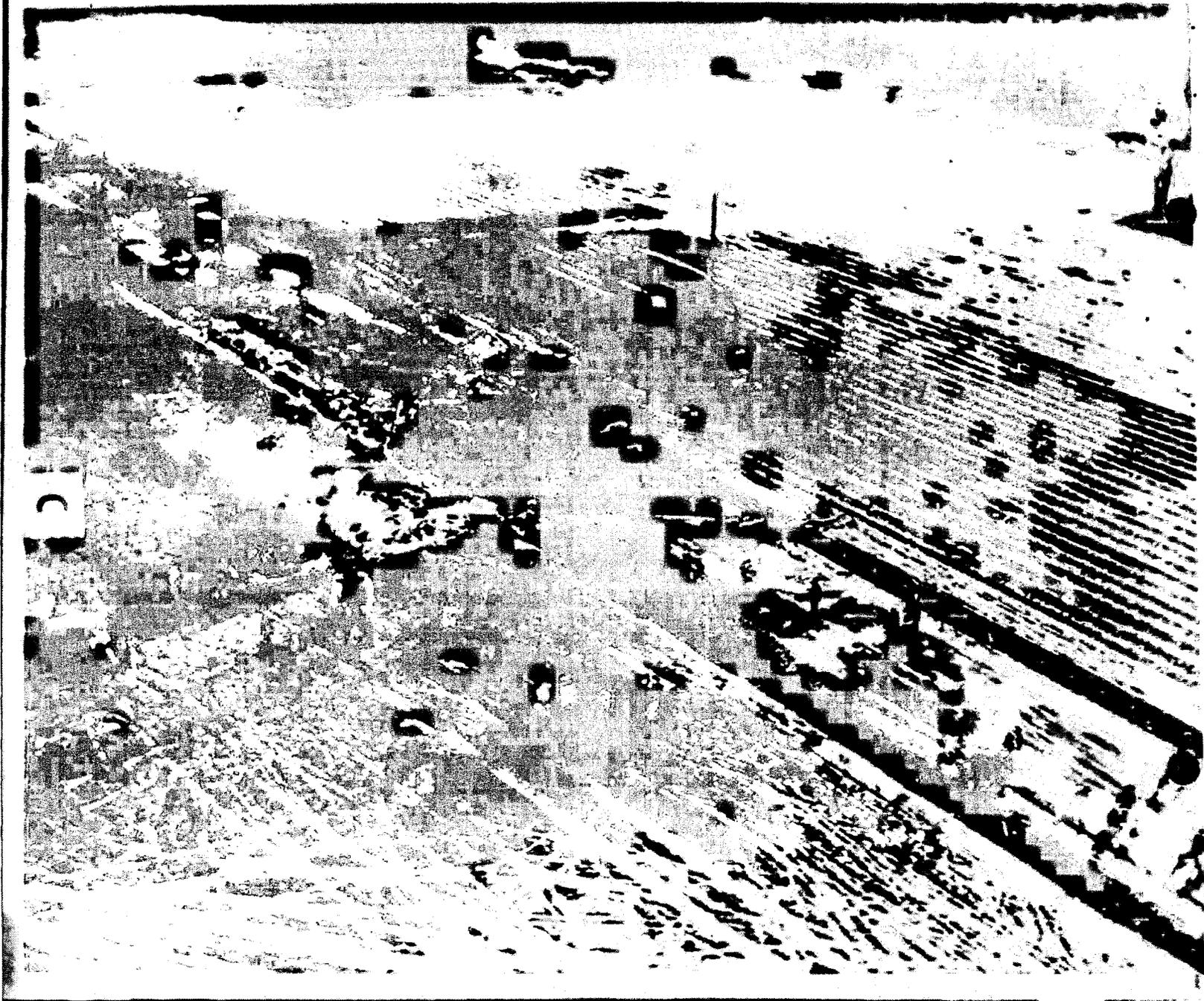


~~UNCLASSIFIED~~ — ~~SECRET~~ / RD —

~~UNCLASSIFIED SECRET / PD~~



~~UNCLASSIFIED SECRET / PD~~



~~UNCLASSIFIED~~

~~SECRET / RD~~

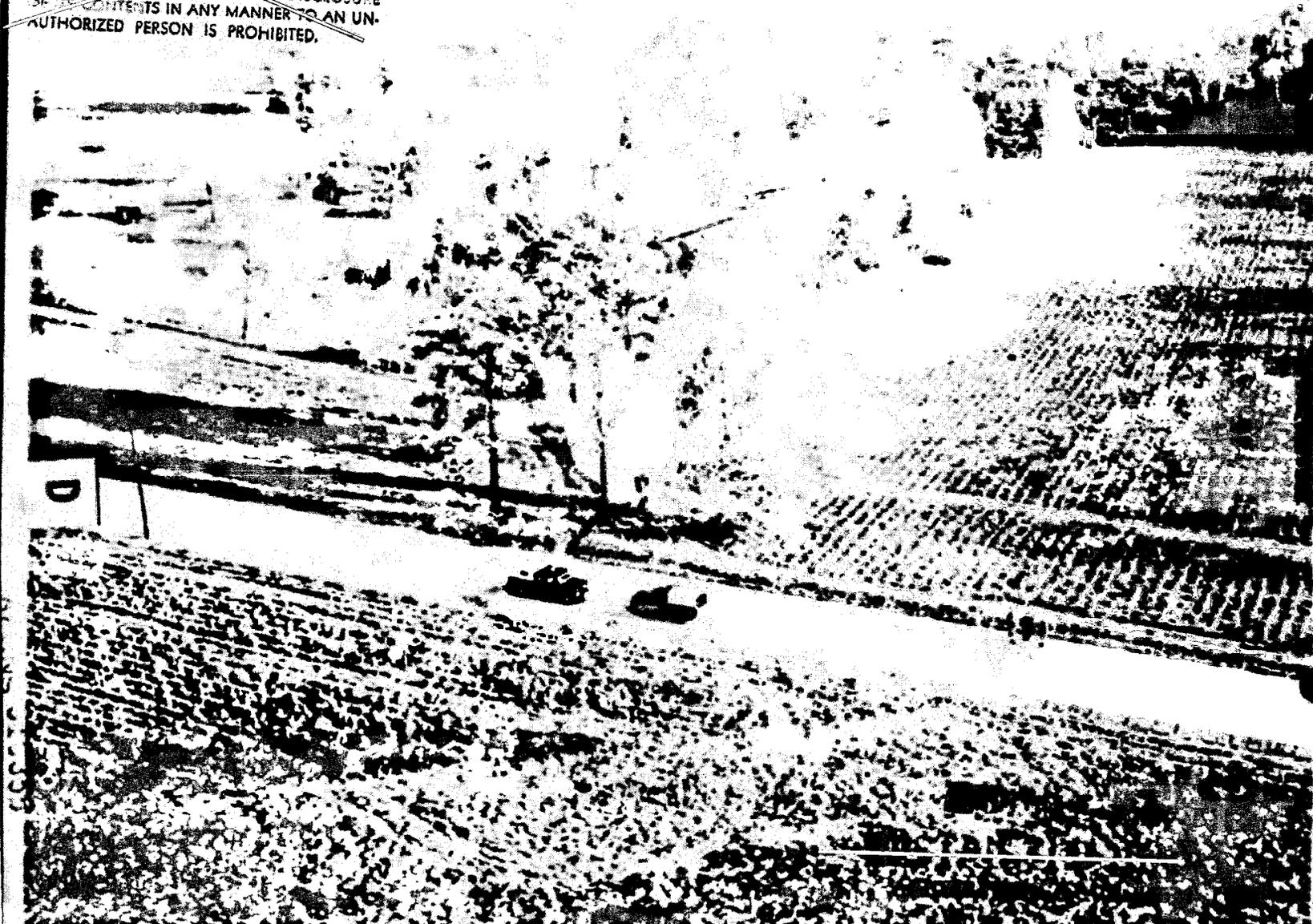
~~UNCLASSIFIED~~

~~SECRET / RD~~

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN THE ATOMIC ENERGY ACT OF  
1954. DISCLOSURE OF THE CONTENTS IN ANY MANNER TO AN UN-  
AUTHORIZED PERSON IS PROHIBITED.~~

~~SECRET~~



LOCATION OF APT BOMB BAY WEAPON 1 MILE EAST OF BURNED WRECKAGE SITE.

~~SECRET / RD~~

~~SECRET / RD~~

~~SECRET / RD~~

~~SECRET~~

INVENTORIED

APR 15 1964

3427-1

INVENTORIED

AUG 3 '66

3428-3

INVENTORIED  
AUG 12 '66  
3427-1

INVENTORIED

DATE AUG 15 1966

FEB 8 1964

INVENTORIED

INVENTORIED  
DATE SEP 22 1964

PRINT NO. 5324

RECEIVED

2470/mo  
MAR 2 1961

RS 3466 104772

7162 ~~SECRET~~

~~SECRET / RD~~

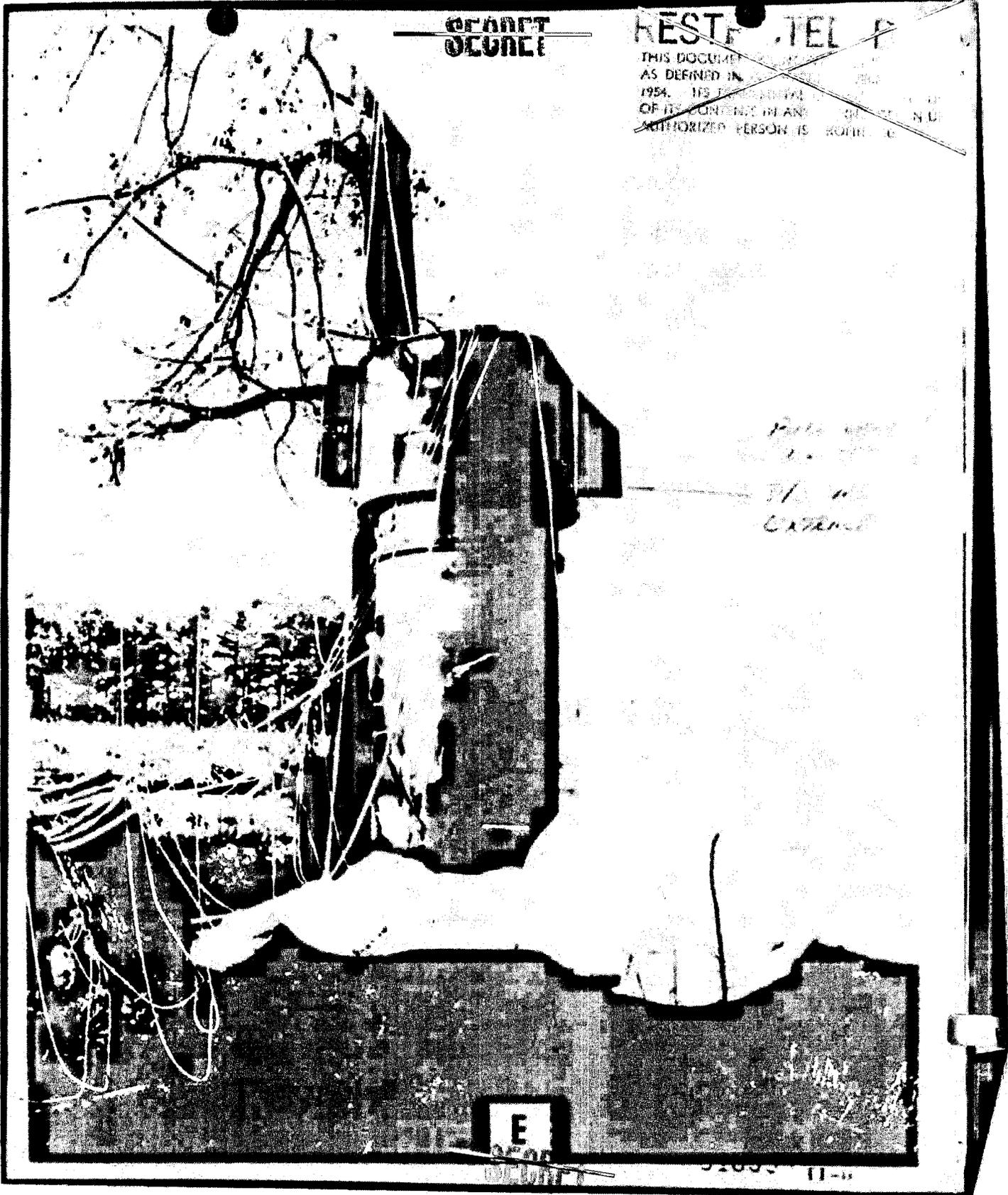
~~SECRET / RD~~

~~SECRET  
SECRET~~

~~RESTRICTED~~

~~THIS DOCUMENT IS UNCLASSIFIED  
AS DEFINED IN EXECUTIVE ORDER 11652  
OF 1954. ITS DECLASSIFICATION  
AUTHORITY IS 50 USC 1702.~~

*RESTRICTED*  
*SECRET*



E

~~SECRET / RD~~

~~SECRET / RD~~

~~SECRET~~

INVENTORIED  
99.21.50V  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3428-3

INVENTORIED

APR 1 1964

3427-1

1-724

FEB 24 1964

INVENTORIED

DATE AUG 15 1961

INVENTORIED  
DATE SEP 22 1964

RECEIVED  
MAR 2 1964  
2470/120

INVENTORIED

7152

*S. H. H. H. H. H.*

PRINT NO. 5925

RS 3465 104773

~~SECRET~~

~~SECRET / RD~~

DOE  
b(3)

Deleted

~~SECRET / RD~~

SECRET

~~SECRET~~

INVENTORIED  
AUG 18 1965  
3427-1

INVENTORIED

AUG 3 1966

3427-3

INVENTORIED  
FEB 9 4 1964  
3427-1

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
DATE AUG 15 1961

INVENTORIED  
DATE SEP 22 1964

PRINT NO. 5026

S-114  
RS 3466 104774

RECEIVED  
MAR 2 2 47 1961  
7162

~~SECRET~~

~~SECRET / RD~~

DOE  
b(3)

Deleted

~~SECRET~~

INVENTORIED  
AUG 12 1965  
8422-3

INVENTORIED  
AUG 3 1965  
8422-3

INVENTORIED  
FEB 24 1964  
3427-1

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
DATE SEP 22 1964

INVENTORIED  
DATE AUG 15 1965

INVENTORIED  
AUG 2 1965  
2470/120

PRINT NO. 5027

7182

RS 3466 104775

~~SECRET~~

DOE  
b(3)

Deleted

~~SECRET~~

INVENTORIED  
FEB 24 1964  
3427-1

INVENTORIED  
APR 15 1964  
3427-1

RECEIVED  
2470 h  
MAR 2 1961  
7162

INVENTORIED  
AUG 12 1965  
INVENTORIED  
DATE SEP 22 1964

INVENTORIED  
DATE AUG 15 1961

INVENTORIED  
AUG 3 1966  
3428-3

PRINT NO. 5928 ~~SECRET~~ RG 3466 104776

T



~~SECRET~~

RS 3466  
104779

PRINT NO. 5929

INVENTORIED  
DATE AUG 15 1961

INVENTORIED  
AUG 3 '66  
3428-3

INVENTORIED  
AUG 12 '65

INVENTORIED  
FEB 24 1964  
3427-1

INVENTORIED  
DATE SEP 22 1964

INVENTORIED

APR 15 1964

3427-1

RECEIVED  
MAR 2 1961  
7470/20

7162

S-11F Goldstone

~~SECRET~~

~~SECRET / RD~~

~~SECRET~~



~~RESTRICTED DATA~~  
THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN EXECUTIVE ORDER 11652 OF  
FEBRUARY 22, 1954, WHICH PROHIBITS  
DISSEMINATION IN ANY MANNER TO AN  
UNAUTHORIZED PERSON IS PROHIBITED.

~~SECRET~~

~~SECRET~~

~~SECRET / RD~~

~~SECRET / RD~~

~~SECRET~~

INVENTORIED

AUG 3 '66

3428-3

AUG 12 '66

INVENTORIED

3427-1

FEB 9 '66

INVENTORIED

INVENTORIED

FEB 14 1966

3441-1

INVENTORIED

APR 15 1966

3427-1

INVENTORIED

DATE AUG 25 '66

INVENTORIED

DATE SEP 22 1964

RECEIVED  
2470/120  
MAR 2 1967

7162

PRINT NO.

5930

~~SECRET~~

RS 3466

104778

~~SECRET / RD~~

Deleted

SECRET

INVENTORIED

AUG 3 '66

3428-3

SECRET

3428-3

AUG 12 '65

INVENTORIED

INVENTORIED

DATE AUG 15 1965

3427-1  
FEB 9 1964  
INVENTORIED

INVENTORIED

RECEIVED  
2470/12  
MAR 2 1961

APP 15 1964

3427-3

INVENTORIED

DATE SEP 22 1964

7162

PRINT NO. 5931

Deleted

~~SECRET / RD~~

~~SECRET~~

1-27-6  
FEB 2 1961  
INVENTORIED

INVENTORIED  
FEB 14 1963  
3441-1

3427-1  
AUG 12 1966  
INVENTORIED

INVENTORIED  
AUG 3 1966  
3428-1

RECEIVED  
AUG 2 1961  
1162

INVENTORIED  
APR 15 1964  
8427-1

INVENTORIED  
DATE AUG 15 1961

INVENTORIED  
DATE SEP 22 1964

S. H. F. Holcomb

PRINT NO. 5932 ~~SECRET~~

RS 3456 104780

~~SECRET / RD~~

~~SECRET / RD~~

DOE  
b(3)

Deleted

~~SECRET / RD~~

SECRET

3427-1  
FEB 24 1964  
INVENTORIED

3427-1  
AUG 12 '66  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3427-3

INVENTORIED  
DATE AUG 15 1964

RECEIVED  
MAR 2 1961  
2470/124

INVENTORIED

APR 1 1964

3427-1

INVENTORIED  
DATE SEP 22 1964

7162

*S-W Goldenberg*

PRINT NO. 5933

RS 3466 104781

~~SECRET / RD~~

~~SECRET / RD~~

N

~~RESTRICTED DATA~~  
THIS DOCUMENT CONTAINS  
AS DEFINED IN  
1954. ITS DISSEMINATION  
OF ITS CONTENTS IN ANY MANNER  
AUTHORIZED PERSONNEL ONLY

Forward bomb bay U-2 rack with pin still in lock position and chain supporting lug engaged.

~~SECRET~~

III-b

~~SECRET~~

INVENTORIED

AUG 3 '66

3428-3

INVENTORIED

3427-1

FEB 14 1968

FEB 24 1964

INVENTORIED

INVENTORIED

APP 15 1964

3441-1

INVENTORIED

3427-1

DATE

AUG 15 1969

RECEIVED

MAR 2

7162

8428-3

AUG 12 65

INVENTORIED

INVENTORIED

DATE SEP 22 1964

PRINT NO.

5934

~~SECRET~~

RS 3466

104782

*S. Caldwell*

Deleted

~~SECRET / RD~~

INVENTORIED  
FEB 24 1964  
3427-1

INVENTORIED  
AUG 12 1965  
18422-3

INVENTORIED  
APR 15 1964

3427-1

INVENTORIED  
DATE SEP 22 1964

INVENTORIED  
DATE AUG 15 1964

RECEIVED  
MAR 2 1961  
2470/171

7162

INVENTORIED

3 '66

PRINT NO. 5935

RS 3466 104783

~~SECRET~~

~~SECRET / RD~~

Deleted

~~SECRET / RD~~

~~SECRET~~

3427-1  
FEB 24 1964  
INVENTORIED

INVENTORIED  
APR 15 1964  
1-1726  
AUG 12 1965  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3428-1

INVENTORIED  
DATE AUG 15 1967

RECEIVED  
MAR 2 1961  
*24 201 21*

7162

T  
C

INVENTORIED  
DATE SEP 22 1964

PRINT NO. 5936 -

*S-11-2*

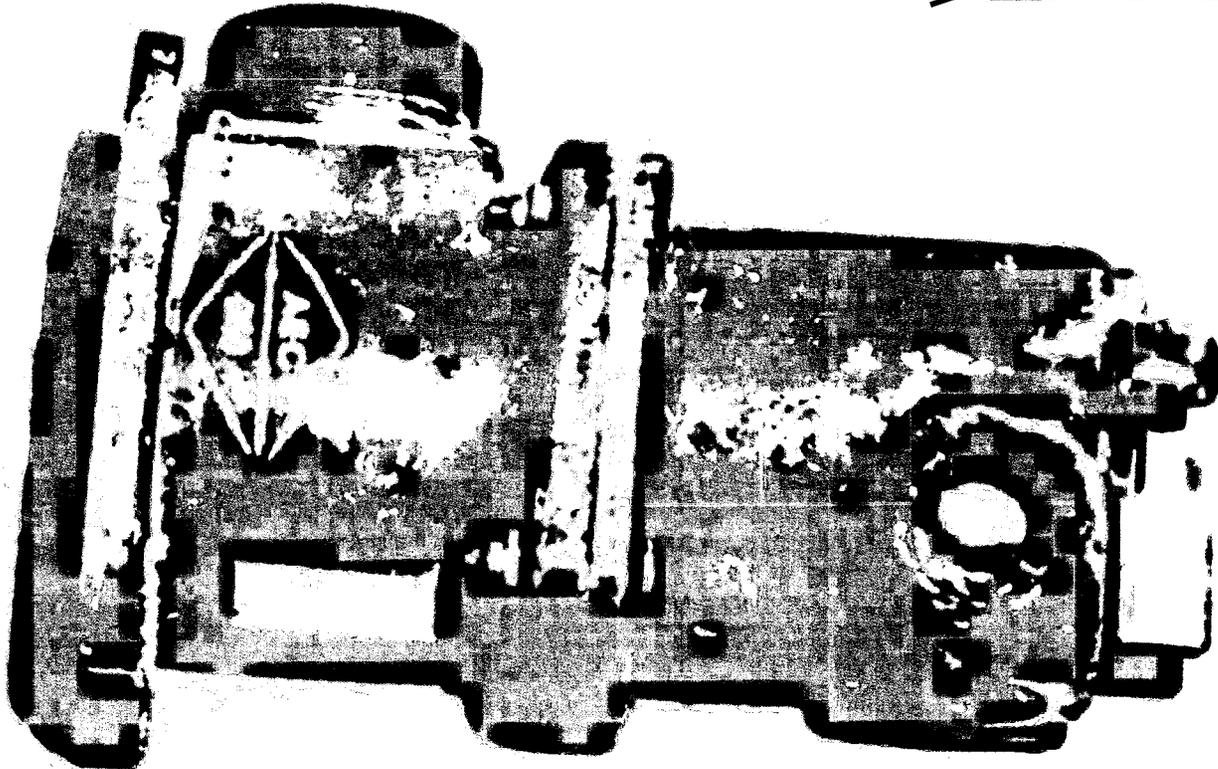
~~SECRET~~ RS 3466 104784

~~SECRET / RD~~

~~SECRET~~

~~OFFICIAL USE ONLY  
May be exempt from public release under the Freedom  
of Information Act (5 U.S.C. 552), exemption number 1  
and Category: Exemption 3 Statutory Exemption, ITAR  
Department of Energy review required before public release.  
Name/Orn: Bobbie Kernan, Classification Analyst, ORN-4225, SNL/NM  
Date: 1/9/2012, Guidance: N/A~~

0003  
ECE/  
ITAR



~~SECRET / RD~~

~~SECRET / RD~~

Q

~~RESTRICTED DATA~~  
THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN EXECUTIVE ORDER BY ACT OF  
CONGRESS AND DISCLOSURE OF  
THIS INFORMATION IN ANY MANNER TO  
ANY UNAUTHORIZED PERSON IS PROHIBITED.

~~SECRET~~

MC-772 LOW VOLTAGE SAFETY SWITCH IV-m

~~SECRET~~

3427-1  
FEB 24 1964  
INVENTORIED

INVENTORIED  
AUG 3 1966  
3428-3

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
DATE SEP 22 1964

RECEIVED  
MAR 2 1961  
2470/21

INVENTORIED  
AUG 12 1965  
3428-3

INVENTORIED  
DATE AUG 15 1967

7162

T  
C

PRINT NO. 5937

RS 3466 104785

~~SECRET~~

Deleted

~~SECRET / RD~~

~~SECRET~~

3427-1  
FEB 24 1964  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3428-3

INVENTORIED  
APR 15 1964  
3427-1  
AUG 12 '65  
INVENTORIED  
3428-3

INVENTORIED  
DATE SEP 22 1964  
INVENTORIED  
DATE AUG 15 1967

RECEIVED  
MAR 2 1961  
2470/121

7162

PRINT NO. 5938 ~~SECRET~~ RS 3466 104786

~~SECRET / RD~~

DOE  
b(3)

Deleted

\_\_\_\_\_

3427-1

FEB 2 1964

INVENTORIED

INVENTORIED

AUG 3 '66

3428-1

INVENTORIED

APR 1 5 1964

3427-1

3428-1

AUG 12 '65

INVENTORIED

DATE SEP 22 1964

INVENTORIED

DATE AUG 1 5 1967

RECEIVED

MAR 2 1961

2470/121

7162

INVENTORIED

PRINT NO. 5939

RS 3466 104787

~~SECRET / RD~~

DOE  
b(3)

Deleted

~~SECRET / RD~~

~~SECRET~~

3427-1

FEB 24 1964

INVENTORIED

INVENTORIED

APR 15 1964

3427-1

INVENTORIED

AUG 3 1964

3427-1

RECEIVED

MAR 2 1964

7162

PRINT NO. 5940

84283

AUG 12 1965

INVENTORIED

INVENTORIED

INVENTORIED

DATE AUG 15 1964

DATE SEP 22 1964

~~SECRET~~

RS 3456 104788

Deleted

~~SECRET~~

3427-1  
FEB 2 4 1964  
INVENTORIED

INVENTORIED  
AUG 3 1966  
3428-2

INVENTORIED  
DATE SEP 22 1964

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
DATE AUG 15 1964

RECEIVED  
7470121  
1961 2 8 1961  
7162

INVENTORIED  
AUG 2 1965  
3428-2

*W. M. ...*

~~SECRET~~

PRINT NO. 5941

RS 3466 104789

Deleted

~~SECRET / RD~~

~~SECRET~~

3427-1  
FEB 24 1964  
INVENTORIED

INVENTORIED  
AUG 3 '66  
3428-3

INVENTORIED  
DATE SEP 22 1964

INVENTORIED  
APR 15 1964  
3427-1

INVENTORIED  
DATE AUG 15 1964

RECEIVED  
MAR 2 1961  
2470/2/

7162

AUG 12 65

S-11 F. Kollman

PRINT NO. 5942 ~~SECRET~~ INVENTORIED RS 3466 10490

~~SECRET / RD~~

~~SECRET / RL~~

OFFICIAL USE ONLY

May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and Category: ~~Exemption 3 Statute: exemption, ITAR~~

Department of Energy review required before public release.  
Name/Office: ~~Abbie Kerman, Classification Analyst, Org. Code: SNL/NM~~  
Date: ~~7/9/2012~~ Guidance: ~~N/A~~

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.~~



MC-845 IGNITING PULSE GENERATOR. SAFETY PINS AND ARMING RODS EXTRACTED. IV-F

W

2052

~~SECRET / RD~~

3427-1

FEB 24 1964

INVENTORIED

INVENTORIED

AUG 3 '66

3428-3

INVENTORIED

APR 15 1964

3427-1

INVENTORIED

DATE AUG 15 1966

RECEIVED

MAR 2 1961

3427-1

INVENTORIED  
DATE SEP 22 1964

7302

AUG 2 1965

S-11F

PRINT NO. 5943

~~SECRET~~

RS 3466

104791

~~D00033208~~

~~SECRET~~

D00033915

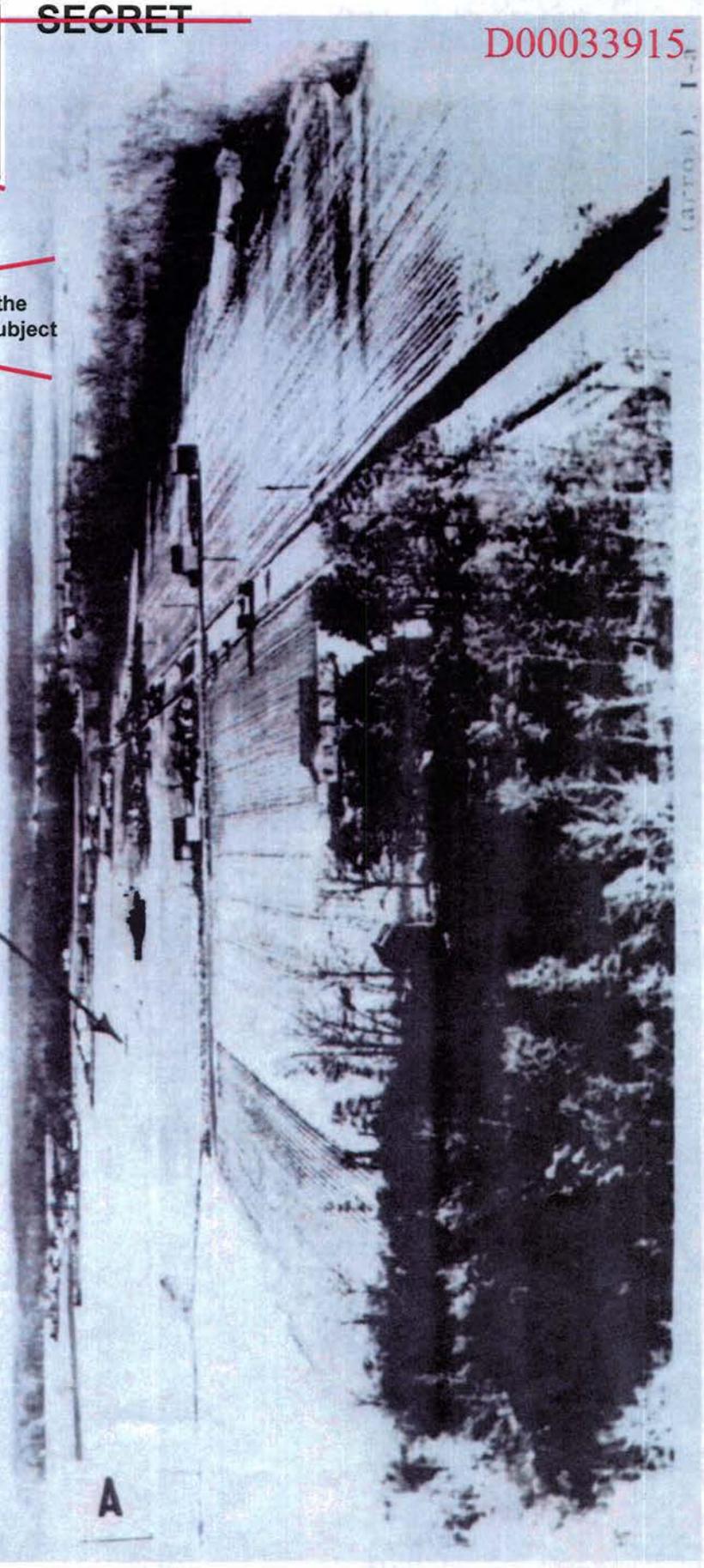
DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: 9/14/2014	DETERMINATION (CIRCLE NUMBER(S))
Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DD	1 CLASSIFICATION RETAINED
Name: David Hamrin DRL4 AU-63	2 CLASSIFICATION CHANGED TO:
2 <sup>nd</sup> Review Date: 7/17/14	3 CONTAINS NO DOE CLASSIFIED INFO
Authority: DD	4 COORDINATE WITH: DoD
Name: R.L. Shankle	5 CLASSIFICATION CANCELED
	6 CLASSIFIED INFO BRACKETED
	7 OTHER (SPECIFY):

~~RESTRICTED DATA~~

~~This document contains Restricted Data as defined in the Atomic Energy Act of 1954. Unauthorized disclosure subject to Administrative and Criminal Sanctions.~~

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

DC Hix, AU-63      DATE 9/30/2014

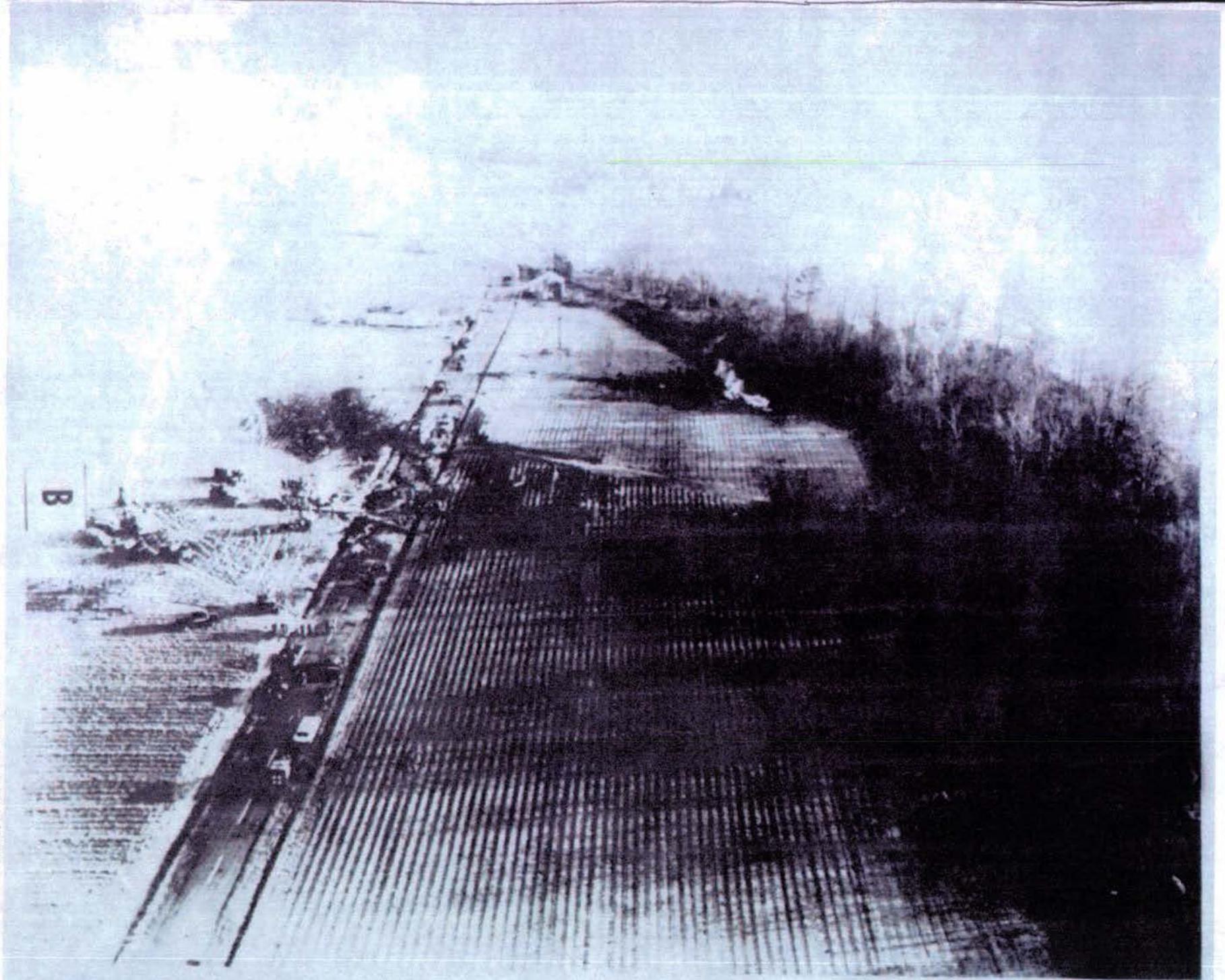


A

~~SECRET~~

20140007759

~~SECRET / RD~~



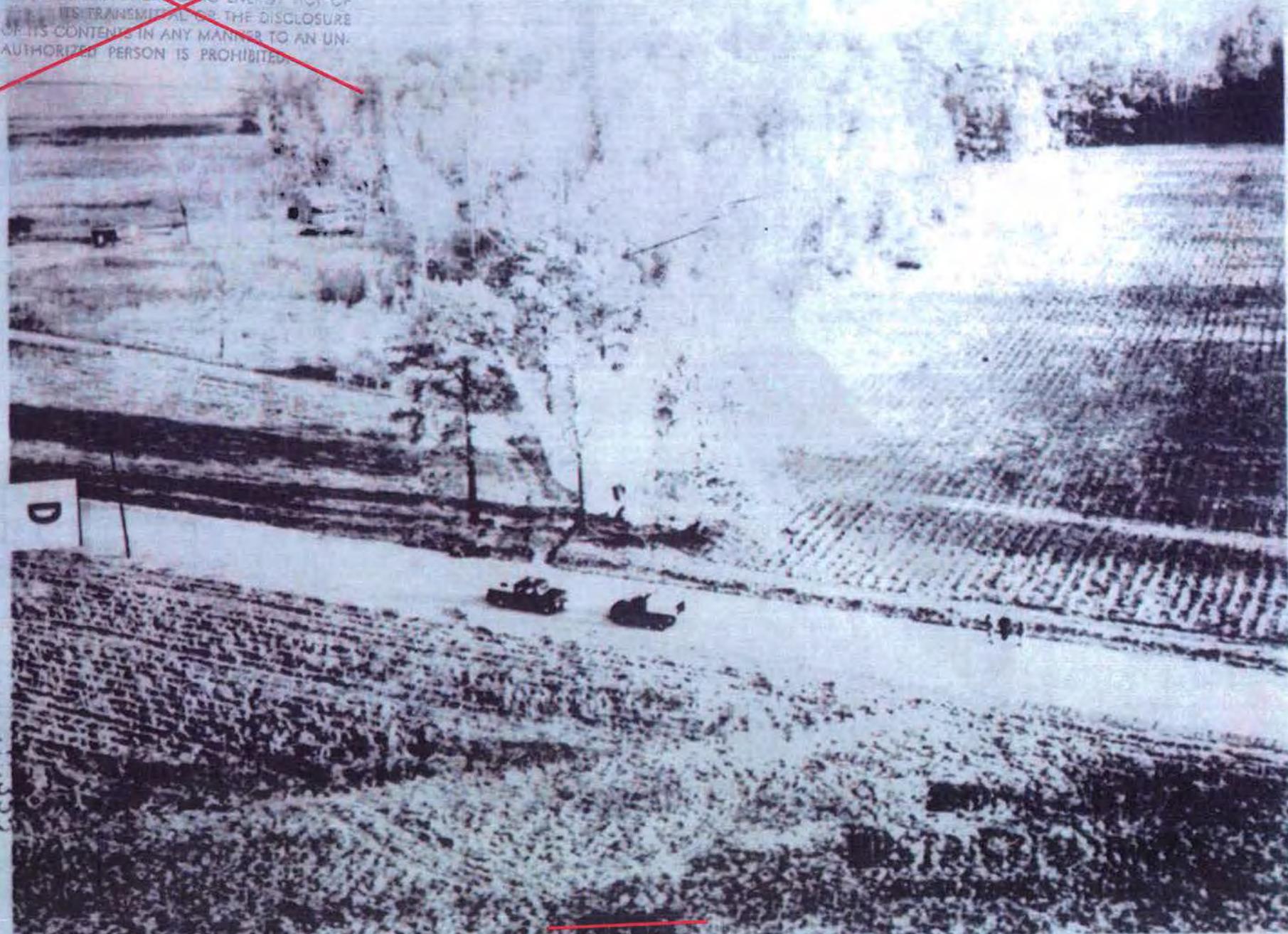
~~SECRET / RD~~

Deleted

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN THE ATOMIC ENERGY ACT OF  
1954. ITS TRANSMISSION OR THE DISCLOSURE  
OF ITS CONTENTS IN ANY MANNER TO AN UN-  
AUTHORIZED PERSON IS PROHIBITED.~~

~~SECRET~~



~~SECRET / RD~~

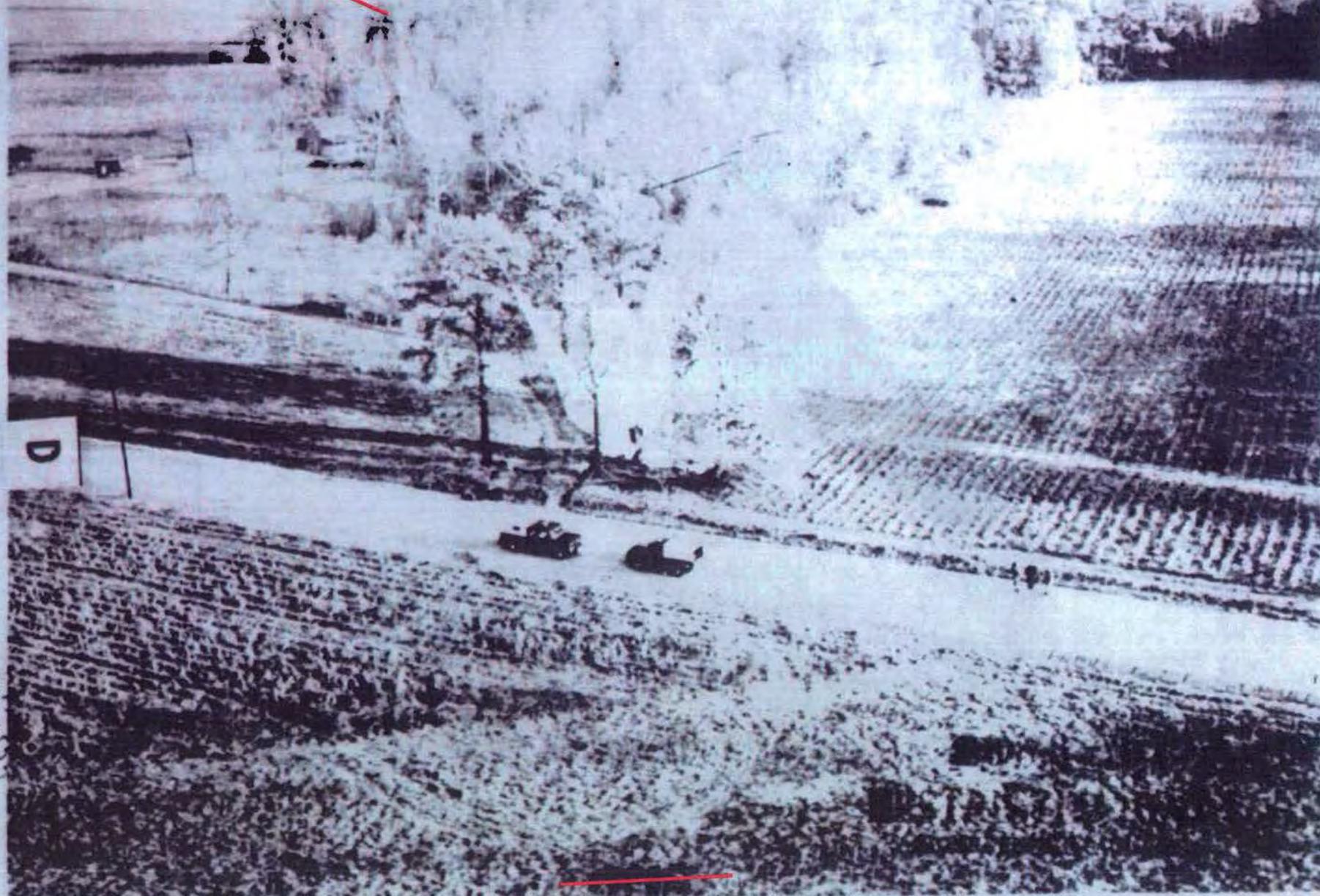
~~SECRET / RD~~

LOCATION OF APT BOMB BAY WEAPON 1 MILE EAST OF BURNED WRECKAGE SITE.

~~RESTRICTED DATA~~

~~SECRET~~

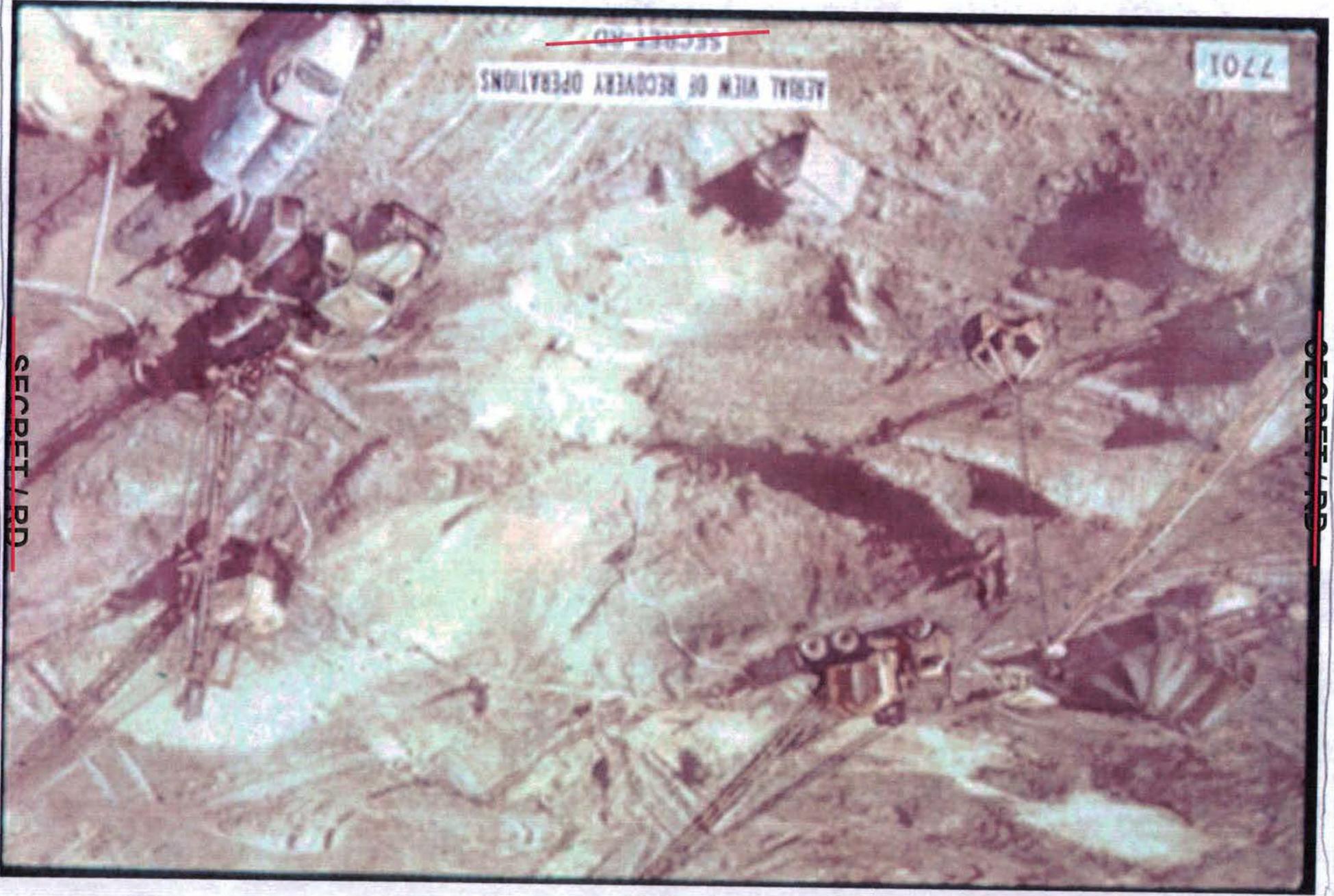
~~THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN THE ATOMIC ENERGY ACT OF  
1954. ITS TRANSMITTAL OR THE DISCLOSURE  
OF ITS CONTENTS IN ANY MANNER TO AN UN-  
AUTHORIZED PERSON IS PROHIBITED.~~



~~SECRET / RD~~

~~SECRET / RD~~

LOCATION OF AFT BOMB BAY WEAPON 1 MILE EAST OF BURNED WRECKAGE SITE.



AERIAL VIEW OF RECOVERY OPERATIONS

~~SECRET NO~~

7701

~~SECRET / PD~~

~~SECRET / PD~~

~~SECRET / RD~~

~~SECRET / RD~~



7704

AERIAL VIEW OF RECOVERY OPERATIONS

~~SECRET / RD~~

An aerial photograph showing a large, orange, conical parachute fully deployed from a red-tipped object, likely a weapon, in a field. The parachute is the central focus, with its canopy spread wide. The surrounding terrain is a mix of brown and green, suggesting a rural or agricultural area. In the lower foreground, there are some dark, indistinct shapes that could be vehicles or structures. The entire scene is captured from a high angle, providing a clear view of the parachute's structure and its position relative to the ground.

INCIDENT SITE (AERIAL VIEW) OF 1st WEAPON  
MK 39 MOD 2 SER. 1434909. NOTE 100 FT.  
PARACHUTE FULLY DEVELOPED

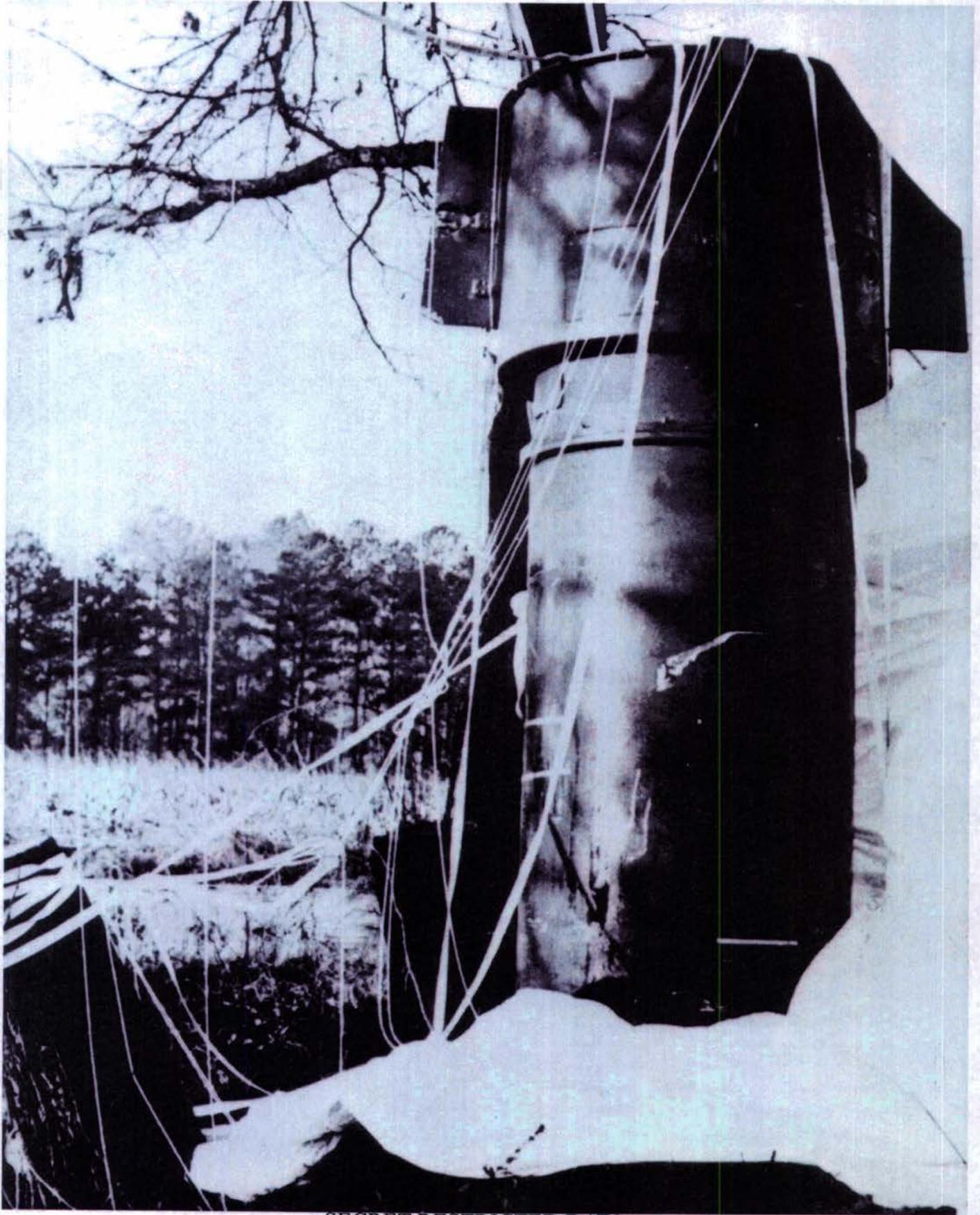
7707

~~SECRET RO~~

~~SECRET~~

~~SECRET~~

~~SECRET RESTRICTED DATA~~



~~SECRET RESTRICTED DATA~~

~~D00033208~~

~~SECRET~~

D00033915

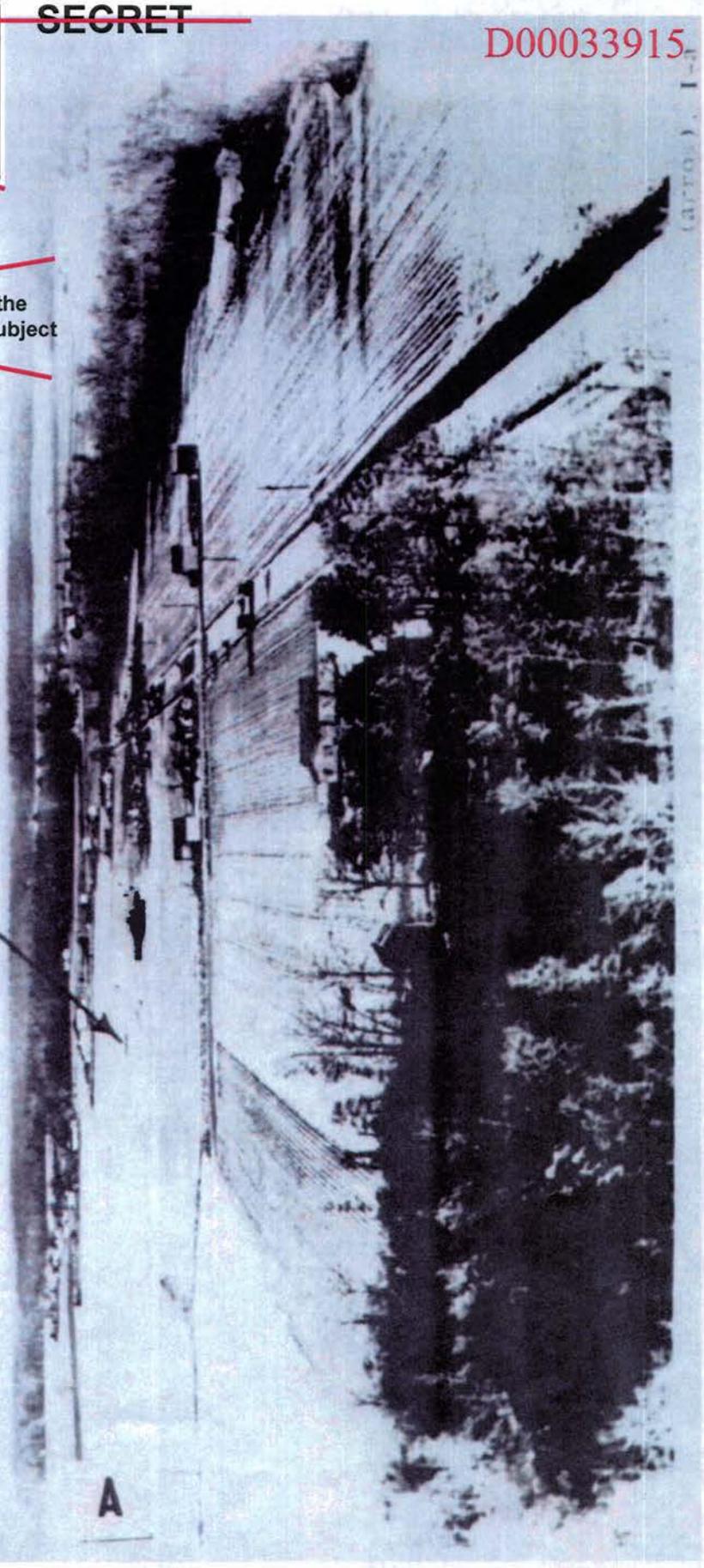
DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: 9/14/2014	DETERMINATION (CIRCLE NUMBER(S))
Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DD	1. CLASSIFICATION RETAINED
Name: David Hamrin DRL4 AU-63	2. CLASSIFICATION CHANGED TO:
2 <sup>nd</sup> Review Date: 7/17/14	3. CONTAINS NO DOE CLASSIFIED INFO
Authority: DD	4. COORDINATE WITH: DoD
Name: R.L. Shankle	5. CLASSIFICATION CANCELED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY):

~~RESTRICTED DATA~~

~~This document contains Restricted Data as defined in the Atomic Energy Act of 1954. Unauthorized disclosure subject to Administrative and Criminal Sanctions.~~

**CONFIRMED TO BE UNCLASSIFIED**  
DOE OFFICE OF CLASSIFICATION

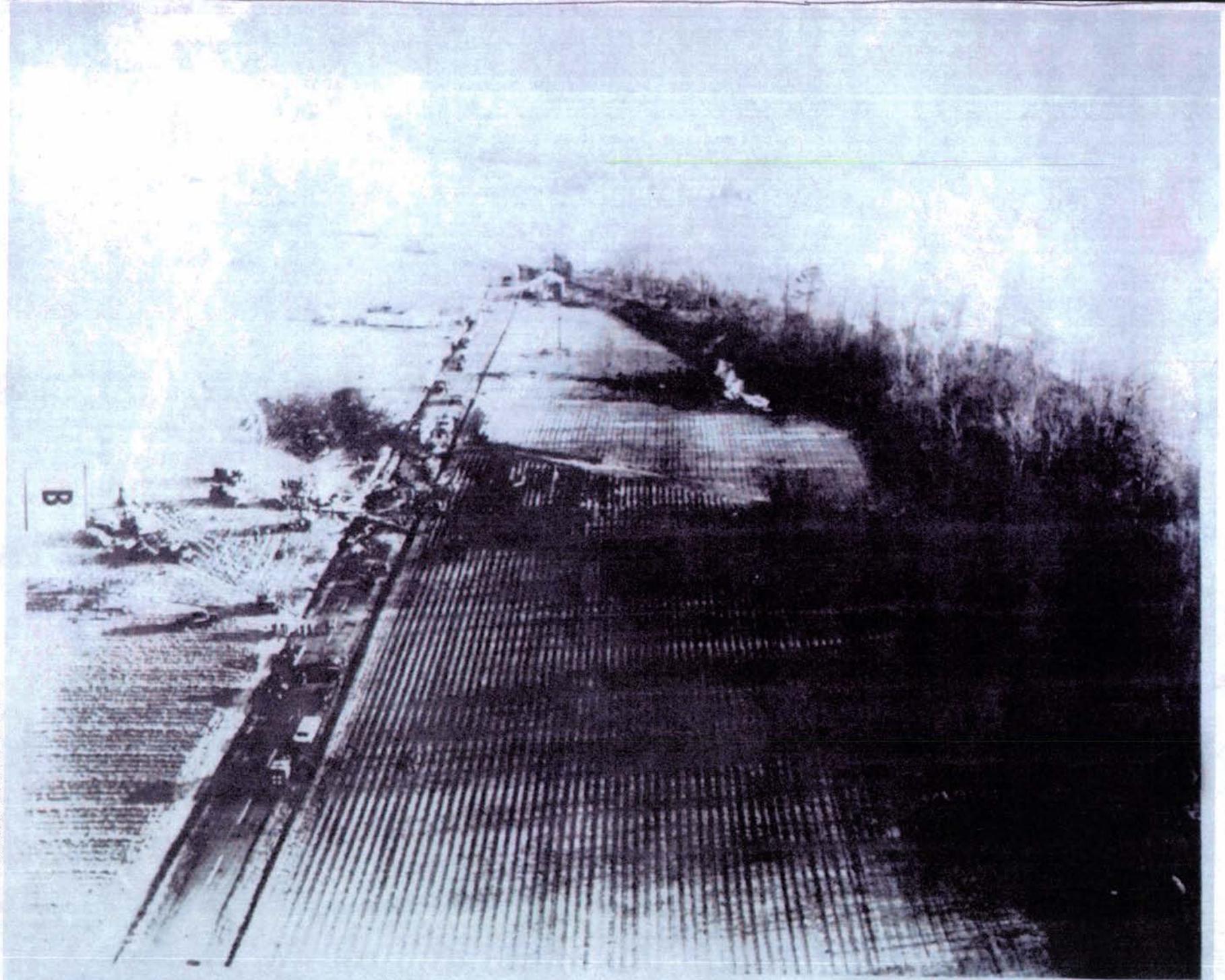
DC Hix, AU-63      DATE 9/30/2014



~~SECRET~~

20140007759

~~SECRET / RD~~



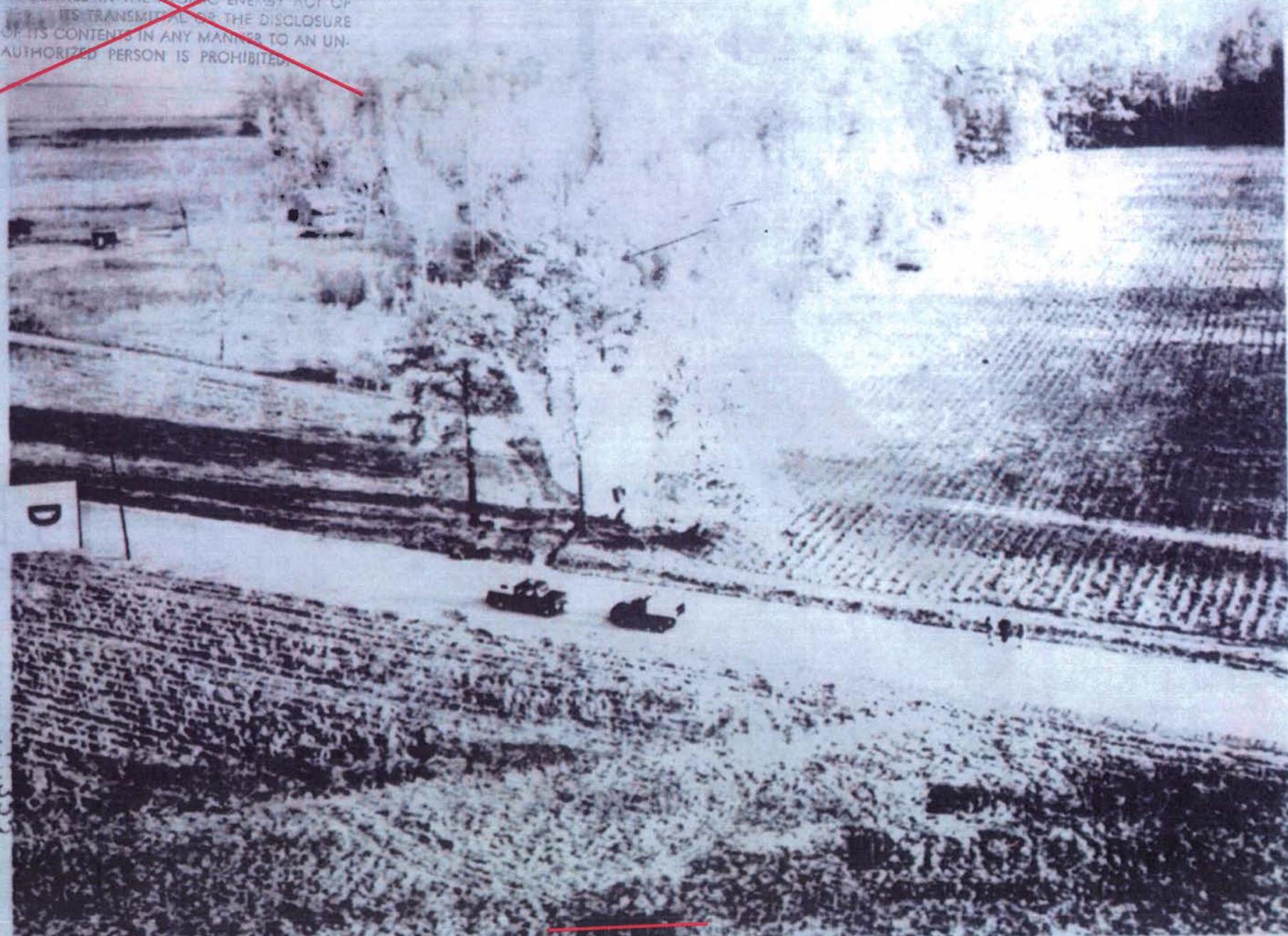
~~SECRET / RD~~

Deleted

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN THE ATOMIC ENERGY ACT OF  
1954. ITS TRANSMISSION OR THE DISCLOSURE  
OF ITS CONTENTS IN ANY MANNER TO AN UN-  
AUTHORIZED PERSON IS PROHIBITED.~~

~~SECRET~~



~~SECRET / RD~~

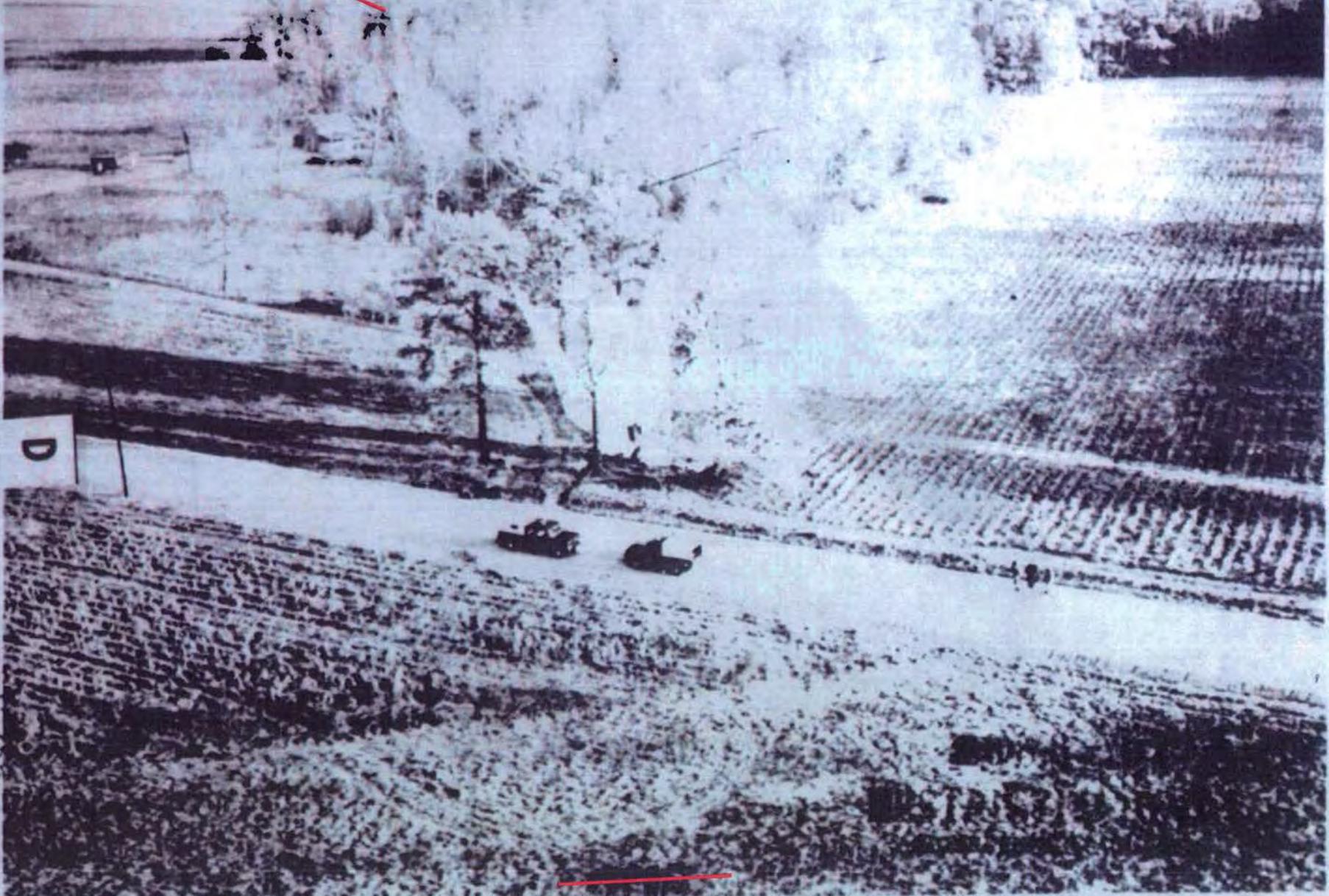
~~SECRET / RD~~

LOCATION OF APT BOMB BAY WEAPON 1 MILE EAST OF BURNED WRECKAGE SITE.

~~RESTRICTED DATA~~

~~SECRET~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA  
AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954  
AND ITS TRANSMITTAL OR THE DISCLOSURE  
OF ITS CONTENTS IN ANY MANNER TO AN UN-  
AUTHORIZED PERSON IS PROHIBITED.~~



~~SECRET / RD~~

~~SECRET / RD~~

LOCATION OF AFT BOMB BAY WEAPON 1 MILE EAST OF BURNED WRECKAGE SITE.



7701

AERIAL VIEW OF RECOVERY OPERATIONS

~~SECRET~~

~~SECRET~~ / PD

~~SECRET~~ / PD

~~SECRET / RD~~

~~SECRET / RD~~



7704

AERIAL VIEW OF RECOVERY OPERATIONS

~~SECRET / RD~~

An aerial photograph showing a large, fully developed parachute in a field. The parachute is light-colored with a red tip. In the foreground, there are several vehicles parked on a dirt road. The background shows a line of trees and a field.

INCIDENT SITE (AERIAL VIEW) OF 1st WEAPON  
MK 39 MOD 2 SER. 1434909. NOTE 100 FT.  
PARACHUTE FULLY DEVELOPED

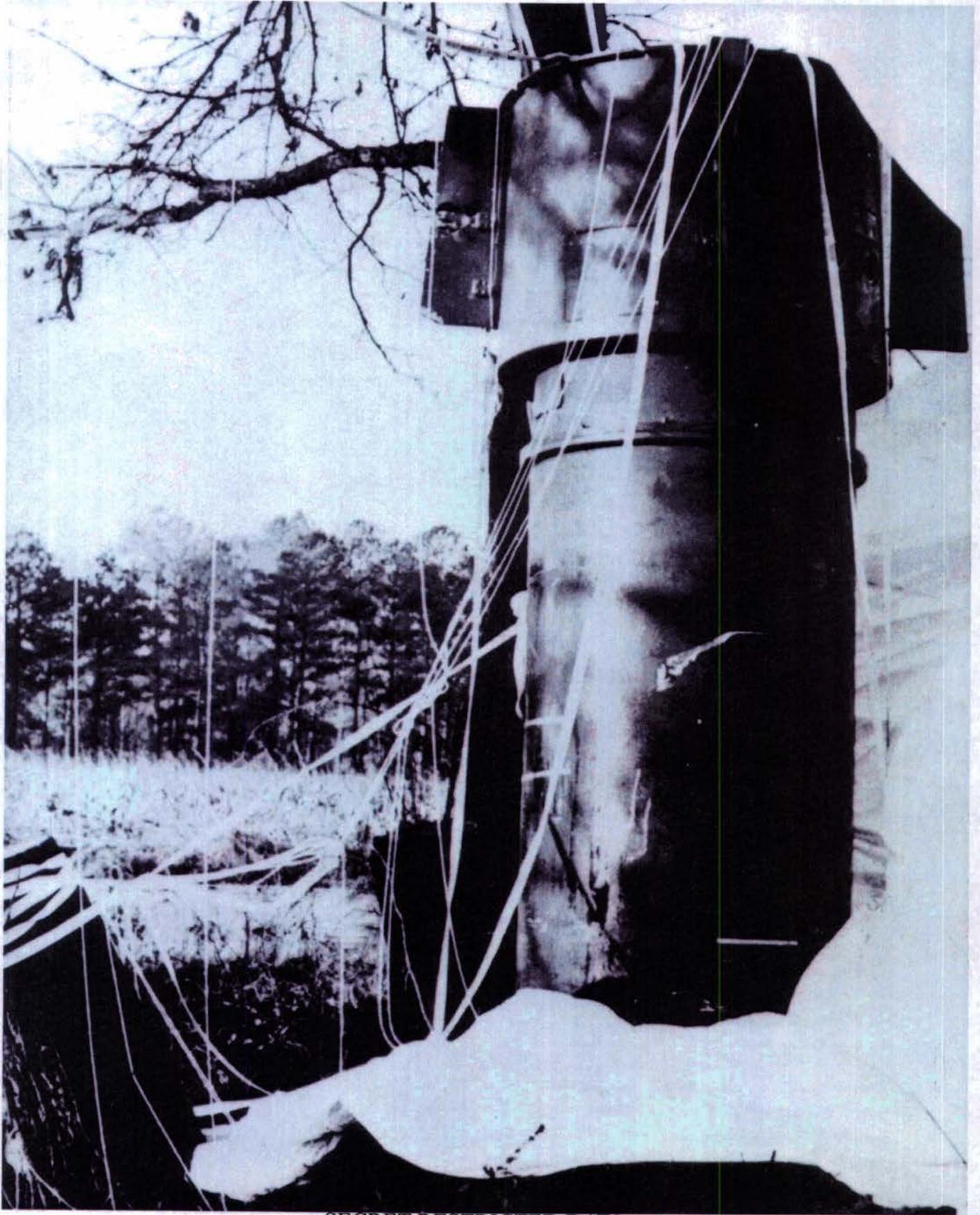
7707

~~SECRET RD~~

~~SECRET RD~~

~~SECRET RD~~

~~SECRET RESTRICTED DATA~~



~~SECRET RESTRICTED DATA~~

~~CONFIDENTIAL  
RESTRICTED DATA~~

~~D00033222~~

D00033916

**United States  
Nuclear Weapons  
Accidents (U)**

**A list of 32 accidents  
from  
1950 to 1996  
(The last accident was in September 1980)**

~~Unclassified  
Updated February 1998~~

CONFIRMED TO BE UNCLASSIFIED  
DOE OFFICE OF CLASSIFICATION

DC Hix, AU-63 DATE 9/30/2014

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: <u>07/15/2014</u>	1. DETERMINATION (CIRCLE NUMBER(S))
Authority: <input checked="" type="checkbox"/> DC <input type="checkbox"/> DD	1. CLASSIFICATION RETAINED
Name: <u>David Hamrin DRL4 AU-63</u>	2. CLASSIFICATION CHANGED TO:
2 <sup>nd</sup> Review Date: <u>7/1/2014</u>	3. CONTAINS NO DOE CLASSIFIED INFO
Authority: <u>DD</u>	4. COORDINATED WITH: <u>DoD</u>
Name: <u>R.L. Shankle</u>	5. CLASSIFICATION CANCELED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY):

Prepared by  
WILLCO Consultants, Inc.  
for Sandia National Laboratories  
Under Contract No. AR -2845

~~RESTRICTED DATA  
This document contains Restricted Data as defined  
in the Atomic Energy Act of 1954, as amended.  
Unauthorized disclosure is subject to Administrative  
and Criminal Sanctions.~~

~~Classified By: John A. Lewis, SNL/nm  
Title/Org: Classification Analyst, SNL/4225  
Date: 6/11/2009  
Derived from: JCG-WPMU-2, 1/26/2009, DOE-DC~~

~~CONFIDENTIAL  
RESTRICTED DATA~~

20140007759

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

### Unclassified list of Accidents Involving Nuclear Weapons

02/50	Puget Sound, WA
04/50	Manzano Base, NM
07/50	Lebanon, OH
11/50	Over Water, Outside U.S.
01/68	Thule, Greenland
07/57	At Sea (Atlantic)
10/57	Homestead AFB, FL
01/58	Sac Base (Overseas)
02/58	Savannah, GA
03/58	Florence, SC
11/58	Chenault AFB, LA
01/59	U.S. Base (Pacific)
07/59	Barksdale AFB, LA
09/59	Off Whidbey Island, WA
10/59	Hardinsburg, KY
06/60	Mcguire AFB, NJ
01/61	Goldsboro, NC
03/61	Yuba City, CA
11/63	Medina Base, TX
01/64	Cumberland, MD
12/64	Ellsworth AFB, SD
08/50	Fairfield-Suisan AFB, CA
12/64	Bunker Hill AFB, IN
10/65	Wright-Patterson AFB, OH
03/56	At Sea (Mediterranean)
12/65	At Sea (Pacific)
07/56	Sac Base
01/66	Palomares, Spain
Spg'68	At Sea (Atlantic)
09/80	Damascus, AK

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

DEPARTMENT OF DEFENSE  
NARRATIVE SUMMARIES OF ACCIDENTS  
INVOLVING U.S. NUCLEAR WEAPONS  
1950-1980

Attached are unclassified summaries describing the circumstances surrounding 32 accidents involving nuclear weapons. Also attached is the Department of Defense (DoD) /Department of Energy (DOE) definition of "accident" used in researching this project.

Twenty-six of these summaries were first released by the Air Force in 1977; another was prepared following the Titan II explosion in Arkansas in September 1980. Those previously-released summaries are marked with a figure "1"; in some cases they include new material made available as a result of more recent research.\*

There never has been even a partial inadvertent U.S. nuclear detonation despite the very severe stresses imposed upon the weapons involved in these accidents. All "detonations" reported in the summaries involved conventional high explosives (HE) only. Only two accidents, those at Palomares and Thule, resulted in a widespread dispersal of nuclear materials.

Nuclear weapons are never carried on train flights. Most of the aircraft accidents represented here occurred during logistic ferry missions or airborne alert flights by Strategic Air Command (SAC) aircraft. Airborne alert was terminated in 1968 because of:

- Accidents, particularly those at Palomares and Thule
- The rising cost of maintaining a portion of the SAC bomber force constantly on airborne alert and,
- The advent of a responsive and survivable intercontinental ballistic missile force which relieved the manned bomber force of a part of its more time-sensitive responsibilities. (A portion of the SAC force remains on nuclear ground alert.

Since the location of a nuclear weapon is classified defense information, it is Department of Defense policy normally neither to confirm nor deny the presence of nuclear weapons at any specific place. In the case of an accident involving nuclear weapons, their presence may or may not be divulged at the time depending upon the possibility of public hazard or alarm. Therefore, in some of the events summarized here, the fact of the presence of nuclear weapons or materials may not have been confirmed at the time. Furthermore, due to diplomatic considerations, it is not possible to specify the location of the accidents that occurred overseas except for Palomares and Thule.

Most of the weapon systems involved in these accidents are no longer in the active inventory. Those include the B-29, B-36, B-47, B-50, B-58, C-124, F-100 and F-5m aircraft, and the Minuteman I missile.

With some early models of nuclear weapons, it was standard procedure during most operations to keep a capsule of nuclear material separate from the weapon for safety purposes. While a weapon with the capsule removed did contain a quantity of natural (not enriched) uranium with an extremely low level of radioactivity, accidental detonation of the HE element would not cause a nuclear detonation or contamination.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL  
RESTRICTED DATA~~

## Accidents

More modern designs incorporate improved redundant safety features to insure that a nuclear explosion does not occur as the result of an accident.

This list of accidents was compiled by DoD/DOE researchers during December 1980-January 1981. The researchers reviewed all available records of the military services and DOE, applying current definitions to determine if an event warranted categorization as an accident.

For example, one event not covered by these narratives was included in a "Chronology of Nuclear Accident Statements," released by DoD in 1968:

"March 18, 1963, titan (I) Missile Burned in Silo near Moses Lake, Washington."

The researchers found, however, that only a small retrorocket on the missile has accidentally fired. The missile and its warhead were not damaged. that event does not warrant inclusion in a list of accidents involving nuclear weapons.

Another event from the 1968 list, involving a U.S. Navy Terrier missile (January 20, 1966; NAS Mayport, Florida) was not considered to be an accident, but has been categorized as a significant incident. In that incident, a nuclear warhead separated from the missile, and fell about eight feet. The warhead was dented; no other damage occurred.

The other events in this list that were also cited in the 1968 "Chronology...." are identified with a figure "2".\*\*

The events outlined in the attached narratives involved operational weapons, nuclear materials, aircraft and/or missiles under control of the U.S. Air Force, U.S. Navy, or a DOE predecessor agency, the Atomic Energy Commission. The U.S. Army has never experienced an event serious enough to warrant inclusion in a list of accidents involving nuclear weapons. The U.S. Marine Corps does not have custody of nuclear weapons in peacetime and has experienced no accidents or significant incidents involving them.

To the best of our knowledge, this list is complete. Reporting requirements varied among the Services, particularly in the earlier period covered by these narratives, so it is possible but not likely that an earlier accident has gone unreported here. All later events, however, have been evaluated and are included if they fall within the established definition of an accident.

Current as of April, 1981

~~CONFIDENTIAL  
RESTRICTED DATA~~

**DEFINITION OF AN ACCIDENT**

An "accident involving nuclear weapons" is defined as

- An unexpected event involving nuclear weapons or nuclear weapons components that results in any of the following:
  - Accidental or unauthorized launching, firing, or use, by U.S. forces or supported allied forces, of a nuclear-capable weapon system which could create the risk of an outbreak of war.
  - Nuclear detonation.
  - Non-nuclear detonation or burning of a nuclear weapon or radioactive weapon component, including a fully assembled nuclear weapon, an unassembled nuclear weapon, or a radioactive nuclear weapon component.
  - Radioactive contamination.
  - Seizure, theft, or loss of a nuclear weapon or radioactive nuclear weapon component, including jettisoning.
- Public hazard, actual or implied.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### February 13, 1950 / B-36 / Pacific Ocean, off Coast of British Columbia

The B-36 was enroute from Eielson AFB to Carswell AFB on a simulated combat profile mission. The weapon aboard the aircraft had a dummy pasule installed. After six hours of flight, the aircraft developed serious mechanical difficulties, making it necessary to shut down three engines. The aircraft was at 12,000 feet altitude. Icing conditions complicated the emergency and level flight could not be maintained. The aircraft headed out over the Pacific Ocean and dropped the weapon from 8,000 feet. A bright flash occurred on impact, followed by a sound and shock wave. Only the weapon's high explosive material detonated. The aircraft was then flown over Princess Royal Island where the crew bailed out. The aircraft wreckage was later found on Vancouver Island.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### April 11, 1950 / B-29 Manzano Base New Mexico

Aircraft departed Kirtland AFB at 9:38 p.m. and crashed into a mountain on Manzano Base approximately three minutes later killing the crew. Detonators were installed in the bomb on board the aircraft. The bomb case was demolished and some high explosive (HE) material burned in the gasoline fire. Other pieces of unburned HE were scattered throughout the wreckage. Four spare detonators in their carrying case were recovered undamaged. There were no contamination or recovery problems. The recovered components of the weapon were returned to the Atomic Energy Commission. Both the weapon and the capsule of nuclear material were on board the aircraft but the capsule was not inserted for safety reasons. A nuclear detonation was not possible.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### July 13, 1950 / B-50 / Lebanon, Ohio

The B-50 was on a training mission from Biggs AFB, Texas. The aircraft was flying at 7,000 feet on a clear day. Aircraft nosed down and flew into the ground killing four officers and twelve airmen. The high explosive portion of the weapon aboard detonated on impact. There was no nuclear capsule aboard the aircraft.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### August 5, 1950 / B-29 / Fairfield Suisun-AFB, California

A B-29 carrying a weapon, but no capsule, experienced two runaway propellers and landing gear retraction difficulties on takeoff from Fairfield-Suisun AFB (now Travis AFB). The aircraft attempted an emergency landing and crashed and burned. The fire was fought for 12-15 minutes before the weapon's high explosive material detonated. Nineteen crew members and rescue personnel were killed in the crash and/or the resulting detonation, including General Travis.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

### November 10, 1950 / B-50 / Over Water, outside United States

Because of an in-flight aircraft emergency, a weapon containing no capsule of nuclear material was jettisoned over water from an altitude of 10,500 feet. A high-explosive detonation was observed.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### March 10, 1956 / B-47 / Mediterranean Sea

The aircraft was one of a flight of four scheduled for non-stop deployment from MacDill AFB to an overseas air base. Take-off from MacDill and first refueling were normal. The second refueling point was over the Mediterranean Sea. In preparation for this, the flight penetrated solid cloud formation to descend to the refueling level of 14,000 feet. Base of the clouds was 14,500 feet and visibility was poor. The aircraft, carrying two nuclear capsules in carrying cases, never made contact with the tanker.

An extensive search failed to locate any traces of the missing aircraft or crew. No weapons were aboard the aircraft, only two capsules of nuclear weapons material in carrying cases. A nuclear detonation was not possible.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### July 27, 1956 / B-47 / Overseas Base

A B-47 aircraft with no weapons aboard was on a routine training mission making a touch and go landing when the aircraft suddenly went out of control and slid off the runway, crashing into a storage igloo containing several nuclear weapons. The bombs did not burn or detonate. There were no contamination or cleanup problems. The damaged weapons and components were returned to the Atomic Energy Commission. The weapons that were involved were in storage configuration. No capsules of nuclear materials were in the weapons or present in the building.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

### May 22, 1957 / B-36 / Kirtland AFB, New Mexico

The aircraft was ferrying a weapon from Biggs AFB, Texas, to Kirtland AFB. At 11:50 a.m. MST, while approaching Kirtland at an altitude of 1,700 feet, the weapon dropped from the bomb bay taking the bomb bay doors with it. Weapon parachutes were deployed but apparently did not fully retard the fall because of altitude. The impact point was approximately 4.5 miles south of the Kirtland control tower and .3 miles west of the Sandia Base reservation. The high explosive material detonated, completely destroying the weapon and making a crater approximately 25 feet in diameter and 12 feet deep. Fragments and debris were scattered as far as one mile from the impact point. The release mechanism locking pin was being removed at the time of release. (It was standard procedure at that time that the locking pin be removed during takeoff and landing to allow for emergency jettison of the weapon if necessary.) Recovery and cleanup operations were conducted by Field Command, Armed Forces Special Weapons Project. Radiological survey of the area disclosed no radioactivity beyond the lip of the crater at which point the level was 0.5 milliroentgens. There were no health or safety problems. Both the weapon and capsule were on board the aircraft but the capsule was not inserted for safety reasons. A nuclear detonation was not possible.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### July 28, 1957 / C-124 / Atlantic Ocean

Two weapons were jettisoned from a C-124 aircraft on July 28 off the east coast of the United States. There were three weapons and one nuclear capsule aboard the aircraft at the time. Nuclear components were not installed in the weapons. The C-124 aircraft was enroute from Dover AFB, Delaware when a loss of power from number one and two engines was experienced. maximum power was applied to the remaining engines; however, level flight could not be maintained. At this point, the decision was made to jettison cargo in the interest of safety of the aircraft and crew. The first weapon was jettisoned at 4,500 feet altitude. The second weapon was jettisoned at approximately 2,500 feet altitude. No detonation occurred from either weapon. Both weapons are presumed to have submerged almost instantly. The ocean varies in depth in the area of the jettisoning. The C-124 landed at an airfield in the vicinity of Atlantic City, New Jersey, with the remaining weapon and the nuclear capsule aboard. A search for the weapons or debris had negative results.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### October 11, 1957 / B-47 / Homestead AFB, Florida

The B-47 departed Homestead AFB shortly after midnight on a deployment mission. Shortly after liftoff one of aircraft's outrigger tires exploded. The aircraft crashed in an uninhabited area approximately 3,800 feet from the end of the runway. The aircraft was carrying one weapon in ferry configuration in the bomb bay and one nuclear capsule in a carrying case in the crew compartment. The weapon was enveloped in flames which burned and smoldered for approximately four hours after which time it was cooled with water. Two low order high explosive detonations occurred during the burning. The nuclear capsule and its carrying case were recovered intact and only slightly damaged by heat. Approximately one-half of the weapon remained. All major components were damaged but were identifiable and accounted for.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### January 31, 1958 / B-47 / Overseas Base

A B-47 with one weapon in strike configuration was making a simulated take off during an exercise alert. When the aircraft reached approximately 30 knots on the runway, the left rear wheel casting failed. The tail struck the runway and a fuel tank ruptured. The aircraft caught fire and burned for seven hours. Firemen fought the fire for the allotted ten minutes fire fighting time for high explosive contents of that weapon, then evacuated the area. The high explosive contents of that weapon, then evacuated the area. The high explosive did not detonate, but there was some contamination in the immediate area of the crash. After the wreckage and the asphalt beneath it were removed and the runway washed down, no contamination was detached. One fire truck and one fireman's clothing showed slight alpha contamination until washed. Following the accident, exercise alerts were temporarily suspended and B-47 wheels were checked for defects.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

### February 5, 1958 / B-47 / Savannah River, Georgia

The B-47 was on a simulated combat mission that originated at Homestead AFB, Florida. While near Savannah, Georgia, the B-47 had a mid-air collision at 3:30 a.m. with an F-86 aircraft. Following the collision, the B-47 attempted three times to land at Hunter AFB, Georgia, with a weapon aboard. Because of the condition of the aircraft, its airspeed could not be reduced enough to insure a safe landing. Therefore, the decision was made to jettison the weapon rather than expose Hunter AFB to the possibility of a high explosive detonation. A nuclear detonation was not possible since the nuclear capsule was not aboard the aircraft. The weapon was jettisoned into the water several miles from the mouth of the Savannah River (Georgia) in Wassaw Sound off Tybee Beach. The precise weapon impact point is unknown. The weapon was dropped from an altitude of approximately 7,200 feet at an aircraft speed of 180-190 knots. No detonation occurred. After jettison the B-47 landed safely. A three square mile area was searched using a ship with divers and underwater demolition team technicians using Galvanic drag and hand-held sonar devices. The weapon was not found. The search was terminated April 16, 1958. The weapon was considered to be irretrievably lost.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

### March 11, 1958 / B-47 / Florence, South Carolina

On March 11, 1958 at 3:53 p.m. EST, a B-47E departed Hunter AFB, Georgia as number three aircraft in a flight of four enroute to an overseas base. After level off at 15,000 feet, the aircraft accidentally jettisoned an unarmed nuclear weapon which impacted in a sparsely populated area 6 1/2 miles east of Florence, South Carolina. The bomb's high explosive material exploded on impact. The detonation caused property damage and several injuries on the ground. The aircraft returned to base without further incident. No capsule of nuclear materials was aboard the B-47 or installed in the weapon.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

November 4, 1958 / B-47 / Dyess AFB, TX

A B-47 caught fire on take-off. Three crew members successfully ejected; one was killed when the aircraft crashed from an altitude of 1,500 feet. One nuclear weapon was on board when the aircraft crashed. The resultant detonation of the high explosive made a crater 35 feet in diameter and six feet deep. Nuclear materials were recovered near the crash site.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

November 26, 1958 / B-47 / Chennault AFB, Louisiana

A B-47 caught fire on the ground. The single nuclear weapon on board was destroyed by the fire. Contamination was limited to the immediate vicinity of the weapon residue within the aircraft wreckage.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### January 18, 1959 / F 100 / Pacific Base

The aircraft was parked on a reveted hardstand in ground alert configuration. The external load consisted of a weapon on the left intermediate station and three fuel tanks (both inboard stations and the right intermediate station). When the starter button was depressed during a practice alert, an explosion and fire occurred when the external fuel tanks inadvertently jettisoned. Fire trucks at the scene put out the fire in about seven minutes. The capsule was not in the vicinity of the aircraft and was not involved in the accident. There were no contamination or cleanup problems.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### July 6, 1959 / C-124 / Barksdale AFB, Louisiana

A C-124 on a nuclear logistics movement mission crashed on take-off. The aircraft was destroyed by fire which also destroyed one weapon. No nuclear or high explosive detonation occurred - safety devices functioned as designed. Limited contamination was present over a very small area immediately below the destroyed weapon. This contamination did not hamper rescue or fire fighting operations.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

September 25, 1959 / P-5M / Off Whidbey Island, Washington

A U.S. Navy P-5M aircraft ditched in Puget Sound off Whidbey Island, Washington. It was carrying an unarmed nuclear antisubmarine weapon containing no nuclear material. The weapon was not recovered.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### October 15, 1959 / B-52 / KC-135 / Hardinsberg, Kentucky

The B-52 departed Columbus Air Force Base, Mississippi at 2:30 p.m. CST, October 15, 1959. This aircraft assumed the #2 position in a flight of two. The KC-135 departed Columbus Air Force Base at 5:33 p.m. CST as the #2 tanker aircraft in a flight of two scheduled to refuel the B-52's. Rendezvous for refueling was accomplished in the vicinity of Hardinsberg, Kentucky at 32,000 feet. It was night, weather was clear, and there was not turbulence. Shortly after the B-52 ejected, followed by the electronic warfare officer and the radar navigator. The co-pilot, navigator, instructor navigator, and tail gunner failed to leave the B-52. All four crewmembers in the KC-135 were fatally injured. The B-52's two unarmed nuclear weapons were recovered intact. One had been partially burned but this did not result in the dispersion of any nuclear material or other contamination.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### June 7, 1960 / BOMARC / McGuire AFB, New Jersey

A BOMARC air defense missile in ready storage condition (permitting launch in two minutes) was destroyed by explosion and fire after a high pressure helium tank exploded and ruptured the missile's fuel tanks. The warhead was also destroyed by the fire although the high explosive did not detonate. Nuclear safety devices acted as designated. Contamination was restricted to an area immediately beneath the weapon and an adjacent elongated area approximately 100 feet long, caused by drain-off of the firefighting water.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### January 24, 1961 / B-52 / Goldsboro, North Carolina

During a B-52 airborne alert mission structural failure of the right wing resulted in two weapons separating from the aircraft during aircraft breakup at 2,000 - 10,000 feet altitude. One bomb parachute deployed and the weapon received little impact damage. The other bomb fell free and broke apart upon impact. No explosion occurred. Five of the eight crew members survived. A portion of one weapon, containing uranium, could not be recovered despite excavation in the waterlogged farmland to a depth of 50 feet. The Air Force subsequently purchased an easement requiring permission for anyone to dig there. There is no detectable radiation and no hazard in the area.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### March 14, 1961 / B-52 / Yuba City, California

A B-52 experienced failure of the crew compartment pressurization system forcing descent to 10,000 feet altitude. Increased fuel consumption caused fuel exhaustion before rendezvous with a tanker aircraft. The crew bailed out at 10,000 feet except for the aircraft commander who stayed with the aircraft to 4,000 feet steering the plane away from a populated area. The two nuclear weapons on board were torn from the aircraft on ground impact. The high explosive did not detonate. Safety devices worked as designed and there was no nuclear contamination.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### November 13, 1963 / Atomic Energy Commission Storage Igloo / Medina Base, TX

An explosion involving 123,000 pounds of high explosive components of nuclear weapons caused minor injuries to three Atomic Energy Commission Employees. There was little contamination from the nuclear components stored elsewhere in the building. The components were from obsolete weapons being disassembled.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### January 13, 1964 / B-52 / Cumberland, Maryland

A B-52D was enroute from Westover Air Force Base, Massachusetts, to its home base at Turner Air Force Base, Georgia. The crash occurred approximately 17 miles SW of Cumberland, Maryland. The aircraft was carrying two weapons. Both weapons were in a tactical ferry configuration (no mechanical or electrical connections had been made to the aircraft and the safing switches were in the "SAFE" position.) Prior to the crash, the pilot had requested a change of altitude because of sever air turbulence aft 29,500 feet. The aircraft was cleared to climb to 33,000 feet. During the climb, the aircraft encountered violent air turbulence and aircraft structural failure subsequently occurred. Of the five aircrew members, only the pilot and co-pilot survived. The gunner and navigator did not eject and died upon aircraft impact. The crash site was an isolated mountainous and wooded area. The site had 14 inches of new snow covering the aircraft wreckage which was scattered over an area of approximately 100 yards square. The weather during the recovery and cleanup operation involved extreme cold and gusty winds. Both weapons remained in the aircraft until it crashed and were relatively intact in the approximate center of the wreckage area.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### December 5, 1964 / LGM 30B (Minuteman ICBM) / Ellsworth AFB, South Dakota

The LGM 30B Minuteman I missile was on strategic alert at Launch Facility (LF) L-02, Ellsworth AFB, South Dakota. Two airmen were dispatched to repair the inner zone (IZ) security system. In the midst of their checkout of the IZ system, one retrorocket in the spacer below the Reentry Vehicle (RV) fired, causing the RV to fall about 75 feet to the floor of the silo. When the RV struck the bottom of the silo, the arming and fusing/altitude control subsystem containing the batteries was torn loose, thus removing all sources of power from the RV. The RV structure received considerable damage. All safety devices operated properly in that they did not sense the proper sequence of events to allow arming the warhead.

There was no detonation or radioactive contamination.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

December 8, 1964 / B-58 / Bunker hill (Now Grissom)  
AFB, Indiana

SAC aircraft were taxiing during an exercise alert. As one B-58 reached a position directly behind the aircraft on the runway ahead of it, the aircraft ahead brought advanced power. As a result of the combination of the jet blast from the aircraft ahead, the icy runway surface conditions, and the power applied to the aircraft while attempting to turn onto the runway, control was lost and the aircraft slid off the left hand side of the taxiway. The left main landing gear passed over a flush mounted taxiway light fixture and the 10 feet further along in its travel, grazed the left edge of a concrete light base. Ten feet further, the left main landing gear struck a concrete electrical manhole box, and the aircraft caught on fire. When the aircraft came to rest, all three crew members aboard began abandoning the aircraft. The aircraft commander and defensive systems operator egressed with only minor injuries. The navigator ejected in his escape capsule, which impacted 548 feet from the aircraft. he did not survive. Portions of the five nuclear weapons on-board burned; contamination was limited to the immediate area of the crash and was subsequently removed.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### January 17, 1966 / B-52 / KC-135 / Palomares, Spain

The B-52 and the KC-135 collided during a routine high altitude air refueling operation. Both aircrafts crashed near Palomares, Spain. Four of the eleven crew-members survived. The B-52 carried four nuclear weapons. one was recovered on the ground, and one was recovered from the sea, on April 7, after extensive search and recovery efforts. Two of the weapons' high explosive materials exploded on impact with the ground, releasing some radioactive materials. Approximately 1400 tons of slightly contaminated soil and vegetation were removed to the United States for storage at an approved site.

Representatives of the Spanish government monitored the cleanup operation.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## Accidents

---

### January 21, 1968 / B-52 / Thule, Greenland

A B-52 from Plattsburgh AFB, New York, crashed and burned some seven miles southwest of the runway at Thule AB, Greenland while approaching the base to land. Six of the seven crewmembers survived. The bomber carried four nuclear weapons, all of which were destroyed by fire. Some radioactive contamination occurred in the area of the crash, which was on the sea ice. Some 237,000 cubic feet of contaminated ice, snow and water, with crash debris, were removed to an approved storage site in the United States over the course of a four-month operation. Although an unknown amount of contamination was dispersed by the crash, environmental sampling showed normal readings in the area after the cleanup was completed. Representatives of the Danish government monitored the cleanup operations.

~~CONFIDENTIAL~~  
Page A-32 ~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**DEPARTMENT OF DEFENSE/DEPARTMENT OF ENERGY**

**Narrative Summaries of Accidents  
Involving U.S. Nuclear Weapons  
1950-1996  
(The last accident was in 1980)**

This book contains unclassified summaries describing the circumstances of 32 accidents involving United State nuclear weapons. This list of accidents was updated in February 1998 to include the type of nuclear weapon involved in the accident which had previously been classified, and some additional details of the accident.

A summary of twenty-six of these accidents was first released by the U.S. Air Force in 1977. A new list was prepared following the Titan II explosion near Damascus, Arkansas in September 1980. That list contained new summaries of the information in the previously released list plus new information that had been declassified over the years or that resulted from additional research of records, both classified and unclassified. Some information concerning several of the accidents is still classified. The final unclassified summary of the 32 accidents was released in the late Spring of 1981 at a news conference held at the start of a major nuclear weapon accident exercise. There have been no accidents added or deleted since that time

The Joint Chiefs of Staff Publication Number 6 (JCS-Pub.6), which specifically defined a nuclear weapon accident (Broken Arrow), was used to evaluate the available records and determine which reported accidents and incidents were accidents and not a nuclear incident (Bent Spear) or minor nuclear occurrence (Dull Sword).

A nuclear weapons accident is described as an unexpected event involving nuclear weapons or components that result in any of the following categories:

1. An unexpected or unauthorized launching, firing, or use, by U.S. forces or supported allied forces, of a nuclear-capable weapon system which could create the risk of an outbreak of war.
2. Nuclear detonation.
3. Non-nuclear detonation or burning of a nuclear weapon, an unassembled nuclear weapon, or a radioactive component.
4. Radioactive contamination.
5. Seizure, theft, or loss of a nuclear weapon or radioactive component, including jettisoning.
6. Public hazard: actual or implied.

There has never been an occurrence of Category 1 or 2 despite the very severe stresses imposed upon the weapons involved in these accidents. All "detonations" reported in these accidents involved conventional high explosives (HE). Only two accidents, those at Palomares, Spain and Thule, Greenland resulted in a widespread dispersal of radioactive materials.

Most of the accidents listed occurred during logistic/ferry missions or airborne alert flights by Strategic Air Command (SAC) aircraft. Airborne alert was ended in 1968 because of accidents, particularly those at Palomares, Spain and Thule, Greenland; the increasing cost of maintaining a portion of the SAC bomber force constantly on airborne

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

alert; and the advent of a responsive and survivable intercontinental ballistic missile force which relieved the manned bomber force of its more time-sensitive responsibilities.

The location of nuclear weapons in the custody of the Department of Defense is classified. It is DoD policy to neither confirm nor deny the presence of nuclear weapons at a specific location. In the case of an accident involving nuclear weapons, their presence may or may not have been divulged at the time, depending on the possibility of public damage or alarm. In some of the events listed here, the presence of nuclear weapons was not confirmed at the time. Furthermore, due to other security considerations, the location of accidents that occurred overseas are not identified, except for the accidents at Palomares and Thule.

The weapons delivery systems involved in these accidents are no longer in the active inventory, including the B-29, B-36, B-47, B-50, B-58, C-124, F-100, A4E and P5M-2 aircraft, and Minuteman I and Titan II missiles. Only the B-52 remains active. The nuclear weapon types involved in these accidents are no longer in the stockpile.

The accidents outlined in this list involved operational weapons, nuclear materials, aircraft and/or missiles under control of the U.S. Air Force, U.S. Navy or a Department of Energy predecessor agency, the Atomic Energy Commission. The U.S. Army and Marine Corps have never experienced an event serious enough to warrant inclusion in this list of nuclear weapons accidents.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**United States Accidents  
Involving Nuclear Weapons**

<u>Number</u>	<u>Date</u>	<u>Type</u>	<u>Location</u>
1.	02/13/50	CA	At sea --Pacific, off the Coast of British Columbia
2.	04/11/50	CA	Manzano Base, New Mexico
3.	7/13/50	CA	Lebanon, Ohio
4.	8/5/50	CA	Fairfield-Suisun AFB, California
5.	11/10/50	CA	Over water outside U.S.
6.	3/10/56	CA	At sea -- Mediterranean
7.	7/27/56	CA	SAC overseas base
8.	5/22/57	CA	Kirtland AFB, New Mexico
9.	7/28/57	CA	At sea -- Atlantic
10.	10/11/57	CA	Homestead AFB, Florida
11.	1/31/58	CA	SAC overseas base
12.	2/5/58	CA	Savannah River, Georgia
13.	3/11/58	CA	Florence, South Carolina
14.	11/4/58	SP	Dyess AFB, Texas
15.	11/26/58	SP	Chennault AFB, Louisiana
16.	1/18/59	CA	Pacific Base
17.	7/6/59	SP	Barksdale AFB, Louisiana
18.	9/25/59	CA	Off Whidbey Island, Washington
19.	10/15/59	SP	Hardinsburg, Kentucky
20.	6/7/60	SP	McGuire AFB, New Jersey
21.	1/24/61	SP	Goldsboro, North Carolina
22.	3/14/61	SP	Yuba City, California
23.	11/13/63	CP	Medina Base, Texas
24.	1/13/64	SP	Cumberland, Maryland
25.	12/5/64	SP	Ellsworth AFB, South Dakota
26.	12/8/64	SP	Bunker Hill (now Grissom) AFB, Indiana
27.	10/11/65	CP	Wright-Patterson AFB, Ohio
28.	12/5/65	SP	At sea -- Pacific
29.	1/17/66	SP	Palomares, Spain
30.	1/21/68	SP	Thule, Greenland
31.	5/22/68	SP	At sea -- Atlantic
32.	9/19/80	SP	Damascus, Arkansas

CA - Capsule; SP - Sealed Pit; CP - Components

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**TYPES OF ACCIDENTS**

**Aircraft Crashes**

2, 3, 4, 10, 14, 17, 21,  
22, 24, 30

**Ground Accidents**

7, 11, 15, 16, 23, 26,  
27

**Midair Collisions**

19, 29

**Missile Accidents**

20, 25, 32

**Jettison Over Water**

1, 5, 9, 12, 18

**Accidental Release  
Over Land**

8, 13

**Lost At Sea**

6, 28, 31

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #1 - B-36, Off the coast of British Columbia, Canada**

**DATE: February 13, 1950**

**ACCIDENT TYPE: Jettison Over Water**

**WEAPON TYPE: MK (with dummy capsule)**

**DESCRIPTION: A B-36 was enroute from Eielson AFB, Alaska to Carswell AFB, Texas on a simulated combat profile mission. The aircraft was carrying a nuclear weapon with a dummy capsule installed. After six hours of flight, the aircraft developed serious mechanical problems making it necessary to shut down three of the six engines. The aircraft was flying at 12,000 feet altitude. An engine fire and icing conditions complicated the situation and the altitude could not be maintained. The crew flew the aircraft out over the Pacific Ocean off Princess Royal Island, set the weapon for a surface detonation and dropped it from an altitude of 8,000 feet. The aircraft was then flown over Princess Royal Island where the crew bailed out and were recovered. The aircraft wreckage was found over a year later on Vancouver Island.**

**A bright flash appeared when the weapon contacted the water, followed by a sound and shock wave caused by the detonation of the conventional high explosive. A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield. A dummy capsule is a training device containing no nuclear material, which precludes a nuclear yield.**

**DoD/DOE RESPONSE: Search for and rescue of the crew.**

**MEDIA COVERAGE: The loss of the aircraft was reported in American and Canadian media, but there was no mention of the jettisoned weapon. A book by a Canadian author published in 1996 mentioned the incident, which resulted in an inquiry from the Canadian government. Details of the accident were provided to the Canadian government.**

**###**

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #2 - B-29, Manzano Base (now Kirtland AFB) New Mexico**

**DATE: April 11, 1950**

**ACCIDENT TYPE: Aircraft Crash**

**WEAPON : MK (without capsule)**

**DESCRIPTION: A B-29 was flown from Walker AFB near Roswell, New Mexico as part of an exercise to pick up a nuclear weapon at Kirtland AFB. The bomb, with a dummy capsule in a separate container, was loaded aboard the aircraft, and it took off on the main runway heading east. At 9:38 p.m., three minutes after takeoff, the plane began a turn to the left and flew into Manzanito Peak, about 100 feet below the summit, on what was then Manzano Base. The aircraft was carrying 6,000 gallons of fuel which exploded upon contact, destroying the aircraft and nuclear weapon, and killing all 13 aboard. The explosion could be seen from all areas of Albuquerque, then a city of about 50,000 population. Small pieces of the aircraft can still be seen on the mountain.**

**The crash and fuel explosion demolished the bomb case and some of the high explosives in the case burned. Parts of the weapon were scattered over the mountain. A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield. A dummy capsule is a training device containing no nuclear material, which precludes a nuclear yield. In this case a training capsule that contained no nuclear material was carried and was found still in its birdcage outside of the aircraft. The dummy capsule was not seriously damaged.**

**DoD/DOE ACCIDENT RESPONSE: A military team responded to recover weapons components. Since this was the first weapon accident that had occurred as a result of an aircraft crash, there were no established procedures for response. The actions taken were determined at the time and set a precedent for the response to future weapons accidents -- some of the procedures are still in use today.**

**MEDIA COVERAGE: The explosion and burning aircraft could be seen from anywhere in Albuquerque and the accident was reported in local media. The story did not include reference to a nuclear weapon.**

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #3 - B-50, Lebanon, Ohio

**DATE:** July 13, 1950

**ACCIDENT TYPE:** Aircraft Crash

**WEAPON TYPE:** MK (without capsule)

**DESCRIPTION:** A B-50, on a training mission from Biggs AFB, Texas was flying at 7,000 feet altitude on a clear day near Lebanon, Ohio. The aircraft, carrying a nuclear weapon with the capsule in a separate container, suddenly nosed down and flew into the ground killing all 16 aboard the aircraft. The high explosives in the weapon detonated on impact. A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.

**DoD/DOE RESPONSE:** Weapons components were recovered by an Air Force team from Wright-Patterson AFB, Ohio.

**MEDIA COVERAGE:** The loss of the aircraft was reported, but there was no mention of the weapon.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #4 - B-29, Fairfield-Suisun AFB, (now Travis AFB) California

**DATE:** August 5, 1950

**ACCIDENT TYPE:** Aircraft Crash

**WEAPON TYPE:** MK (without capsule)

**DESCRIPTION:** A B-29 carrying a nuclear weapon with the capsule in a separate carrying case, took off from Fairfield-Suisun AFB, California. Just after lift off, the aircraft experienced two runaway propellers and landing gear retraction difficulties, and attempted to return to the field. The crash occurred a little more than a mile from the end of the runway — about 100 yards from a base trailer park.

Following the crash, the trailer park was evacuated. Within 10 to 20 minutes the wreckage started to burn. The aircraft, carrying 8,000 gallons of fuel, was engulfed by fire that eventually detonated the high explosives in the nuclear weapon. The resulting crater was reported to be six feet deep and 20 yards across. Nineteen people were killed, including Brigadier General Robert F. Travis for whom the base was later named, and 60 persons were injured by the explosion. Several trailers were flattened and seven fire trucks were destroyed. Ten members of the 20 man crew survived the crash.

A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.

**DoD/DOE ACCIDENT RESPONSE:** Air Force teams conducted the search for weapons components.

**MEDIA COVERAGE:** The media coverage was fairly extensive due to the death of Gen. Travis. The Air Force released information that the aircraft had been carrying conventional 500 pound bombs.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #5 - B-50, Over water outside the United States

**DATE:** November 10, 1950

**ACCIDENT TYPE:** Jettisoned Over Water

**WEAPON TYPE:** MK (without capsule)

**DESCRIPTION:** During a training mission a B-50 developed an in-flight emergency. [Redacted]

DOE  
b(3)

Deleted [Redacted] A high explosive detonation was observed as the casing hit the water. The aircraft landed safely. A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.

**DoD/DOE ACCIDENT RESPONSE:** Search for weapons debris by Air Force. None found.

**MEDIA COVERAGE:** No media report of the incident was found. [Redacted]

DOE  
b(3)

Deleted

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #6 - B-47, Mediterranean Sea

**DATE:** March 10, 1956

**ACCIDENT TYPE:** Lost at Sea

**WEAPON TYPE:** Two capsules in cases

**DESCRIPTION:** The B-47, carrying two nuclear capsules in carrying cases, was one of a flight of four scheduled for a non-stop flight from McDill AFB, Florida to an overseas base. Take-off and first refueling were normal. The second refueling point was over the Mediterranean Sea. In preparation for the refueling, the flight penetrated a cloud formation to descend to the refueling altitude of 14,000 feet. The cloud base was 14,500 feet and visibility was poor. The B-47 failed to make contact with the tanker. An extensive search failed to locate any trace of the aircraft or crew. A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.

**DoD/DOE ACCIDENT RESPONSE:** Extensive air search for downed aircraft.

**MEDIA COVERAGE:** The aircraft was listed as missing. No public notice was made of the cargo.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #7 - B-47, Overseas Base

**DATE:** July 27, 1956

**TYPE:** Ground Accident

**WEAPON TYPE:** Three MK weapons (without capsules)

**DESCRIPTION:** A B-47 with no weapons aboard was on a routine training mission making a touch and go landing when the aircraft suddenly went out of control and slid off the runway, crashing into a storage igloo containing several nuclear weapons. The bombs did not burn or detonate. There were no contamination or cleanup problems. The damaged weapons and components were returned to the Atomic Energy Commission. The weapons involved were in storage configuration and there were no capsules in the building. A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.

**DoD/DOE ACCIDENT RESPONSE:** Air Force personnel performed actions necessary to prepare damaged weapons for shipment to the Atomic Energy Condition.

DOE  
b(3)

Deleted

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #8 - B-36, Kirtland AFB, New Mexico**

**DATE: May 22, 1957**

**ACCIDENT TYPE: Accidental Weapon Release**

**WEAPON TYPE: MK (without capsule)**

**DESCRIPTION: A B-36 was ferrying a nuclear weapon from Biggs AFB, Texas to Kirtland AFB, New Mexico. While approaching Kirtland at an altitude of 1,700 feet, the weapon inadvertently released from the bomb bay, taking the bomb bay doors with it. The release mechanism locking pin was being removed at the time of release. (It was standard procedure at that time to remove the locking pin during takeoff and landing to allow for emergency jettison of the weapon if necessary.) A capsule was also on board the aircraft, but was in a separate location and was not involved in the incident. A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.**

**Weapon parachutes were deployed but apparently did not fully retard the fall because of the low altitude. The impact point was approximately 4.5 miles south of the Kirtland control tower and 0.3 miles west of the Sandia Base reservation. The high explosives in the weapon detonated, destroying the weapon and making a crater approximately 25 feet in diameter and 12 feet deep. Fragments and debris were scattered as far as one mile from the impact point.**

**DoD/DOE ACCIDENT RESPONSE: Recovery and cleanup operations were conducted by Field Command, Armed Forces Special Weapon Project. A radiological survey of the area disclosed no radioactivity beyond the lip of the crater at which point the level was 0.5 milliroentgens. There were no health or safety problems with the recovery. Recovered weapons debris was returned to the Atomic Energy Commission .**

**MEDIA COVERAGE: The accident identifying the dropping of the inert weapon was reported in local news media. A number of stories have been printed in various publications over the years, the last in the Albuquerque Journal in the late 80s. A number of other publications picked up on the story about "The Bomb that Almost Got Albuquerque!"**

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #9 - C-124, Atlantic Ocean

**DATE:** July 28, 1957

**ACCIDENT TYPE:** Jettisoned Over Water

**WEAPON TYPE:** Two MK (without capsules)

**DESCRIPTION:** A C-124 was enroute from Dover AFB, Delaware, carrying three nuclear weapons and one capsule in a separate carrying case, when a loss of power from the number one and two engines was experienced. Maximum power was applied to the remaining two engines, but level flight could not be maintained. A decision was made to jettison two weapons over the ocean to save the aircraft and crew. The first weapon was jettisoned at 4,500 feet altitude; the second at 2,500 feet altitude. No detonation occurred from either weapon, and both are presumed to have been damaged by impact with the ocean surface and to have submerged almost immediately. The C-124 safely landed at an airfield near Atlantic City, New Jersey with the third weapon and capsule aboard. A search for the jettisoned weapons was conducted, but no debris was found.

Capsules were not installed in the weapons. A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.

**DoD/DOE ACCIDENT RESPONSE:** The Air Force and Navy conducted a search of the area where the weapons were jettisoned.

**MEDIA COVERAGE:** The incident was reported without mention of the jettisoned weapons.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #10 - B-47, Homestead AFB, Florida**

**DATE: October 11, 1957**

**ACCIDENT TYPE: Aircraft Crash**

**WEAPON TYPE: MK (without capsule)**

**DESCRIPTION: A B-47 departed Homestead AFB, Florida a little after midnight on a deployment mission. Shortly after liftoff, one of the aircraft's outrigger tires exploded causing the aircraft to crash in an uninhabited area approximately 3,000 feet from the end of the runway. The aircraft was carrying one weapon in ferry configuration in the bomb bay and one capsule in a carrying case in the crew compartment. A capsule, which is carried outside the weapon in a container called a "birdcage," contains the nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.**

**The weapon was enveloped in fire which burned and smoldered for approximately four hours after which time it was cooled with water. Two low-order explosions occurred during the burning. The nuclear capsule and carrying case were recovered intact and only slightly damaged by heat. All major weapons components were damaged, but were identified and accounted for.**

**DoD/DOE ACCIDENT RESPONSE: DoD recovered the damaged components which were shipped to a DOE facility for examination.**

**MEDIA COVERAGE: Local and regional coverage of the accident included the fact that a nuclear weapon was involved.**

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #11 - B-47, Base overseas.

**DATE:** January 31, 1958

**ACCIDENT TYPE:** Ground Accident

**WEAPON TYPE:** MK (Sealed Pit)

**DESCRIPTION:** A B-47 carrying one nuclear weapon in strike configuration was making a simulated take-off during an exercise alert. When the aircraft reached approximately 30 knots on the take-off run, the left rear wheel casing failed. The tail struck the runway and a fuel tank ruptured. The aircraft caught fire and burned for seven hours. Firemen fought the fire for the allotted ten minutes and then evacuated the area. The high explosive in the weapon did not detonate, but there was some contamination in the immediate area of the burned aircraft. After the wreckage and the asphalt beneath it were removed and the runway washed down, no additional contamination was detected. One fire truck and one fireman's clothing showed slight alpha contamination until washed. Following the accident, B-47 flights were temporarily suspended until their wheels were checked for defects.

**DoD/DOE ACCIDENT RESPONSE:** DOE/LANL team went to base to help DoD with recovery. Approximately two tons of contaminated slag had to be removed. The DOE/LANL team helped with the recovery and packaging of the burned weapon and components, which was shipped to DoD and AEC facilities.

**MEDIA COVERAGE:** Although the loss of the aircraft was reported at the time, no mention was made of the nuclear weapon.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #12 - B-47, Savannah, Georgia**

**DATE: February 5, 1958**

**ACCIDENT TYPE: Jettisoned Over Water (following mid-air collision)**

**WEAPON TYPE: MK (without capsule)**

**DESCRIPTION: A B-47, carrying a nuclear weapon without a capsule, was on a simulated combat mission that originated at Homestead AFB, Florida. In flight near Savannah, Georgia, the B-47 had a mid-air collision at 3:30 a.m. with an F-86 fighter. Following the collision, the B-47 attempted three times to land at Hunter AFB, Georgia. Because of the damage to the aircraft, its speed could not be reduced enough to insure a safe landing. A decision was made to jettison the nuclear weapon rather than to expose Hunter AFB to the possibility of an high explosive detonation and resulting contamination. The weapon was jettisoned into the sea several miles from the mouth of the Savannah River in Wassaw Sound off Tybee Beach. The precise impact area is unknown. The weapon was dropped from an altitude of 7,000 feet at a speed of 180 to 190 knots. After jettisoning the weapon, the B-47 landed safely.**

**A nuclear detonation was not possible because a capsule was not aboard the aircraft. A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.**

**DoD/DOE ACCIDENT RESPONSE: A three square-mile area was searched using a ship with divers and underwater demolition team technicians using galvanic drag and hand-held sonar devices. The nuclear weapon was not found**

**MEDIA COVERAGE: Extensive coverage at the time, particularly about the search for the weapon.**

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #13 - B-47, Florence, South Carolina

**DATE:** March 11, 1958

**ACCIDENT TYPE:** Accidentally Released Over Land

**WEAPON TYPE:** MK (without capsule)

**DESCRIPTION:** A B-47E departed Hunter AFB, Georgia as the number three aircraft in a flight of four enroute to an overseas base. After leveling off at 15,000 feet, a warning light on the instrument panel indicated that the electrical bomb-locking system was malfunctioning. A nuclear weapon without capsule was in the bomb bay. The capsule, in a birdcage, was in another section of the aircraft.

The navigator left his seat, moved through the crawlway, and entered the floodlighted bomb-bay where the weapon hung from a single shackle. He then attempted to slide a large steel pin through the shackle to hold the weapon in case the electrical lock released its load. While attempting to insert the pin, the weapon began to wobble and then unhooked, dropped through the fragile bomb-bay doors, which flapped open, and out of the B-47. The navigator managed to hang on while the wind whistled through the empty bay. The pilot heard a rumble and the copilot noticed a shock wave radiating from the ground. The pilot closed the bomb bay-doors and reported to the flight leader that he was aborting the mission and reported the reason for return to his home base.

Another B-47 circled the area, taking photographs and logging details. They were able to see ambulances moving toward the small community of Mars Bluff, South Carolina, about ten miles east of Florence, South Carolina, just off U.S. Highway 301.

A capsule, which is carried outside the weapon in a container called a "birdcage," contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.

The unarmed bomb fell into the garden of a railroad conductor, about 50 yards from his garage where he was at the time and 100 yards from his house where his wife was working. His three children and one niece were playing in the yard between the two buildings. The high explosives in the bomb exploded with the force of a 2,000 lb. conventional bomb. The house collapsed around the wife as did the garage about the man. The children were hit by flying debris, none seriously. Six houses and the Mount Mizpah Baptist Church were damaged, and the conductor had more than a dozen hens killed. Children in the area soon spotted jagged chunks of shiny metal and began to carry them away until Air Force police moved in. Most of the debris was retrieved.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**DoD/DOE ACCIDENT RESPONSE:** The explosion area was cordoned off until Air Force technicians checked for contamination and hazardous materials. It was soon announced that there was not a problem with radioactive contamination. The level of contamination was low and the small area affected could easily be cleaned up by a simple washing procedure. Representatives of the Atomic Energy Commission and Los Alamos National Laboratory helped with the cleanup and shipping of the debris to an AEC location.

**MEDIA COVERAGE:** Extensive at time. The accident was included in a *Saturday Evening Post* article on nuclear weapons safety.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

### NUCLEAR WEAPON ACCIDENT SUMMARY

**NAME: #14 - B-47, Dyess AFB, Texas**

**DATE: November 4, 1958**

**ACCIDENT TYPE: Aircraft Crash**

**WEAPON TYPE: MK (Sealed Pit)**

**DESCRIPTION: A B-47 aircraft carrying a nuclear weapon crashed in a wheat field southwest of Dyess AFB near Abilene, Texas. The plane, carrying a crew of three and a passenger, was on a training mission. During takeoff a defective Jet Assisted Takeoff (JATO) bottle ignited the aft section of the fuselage while the plane was still on the runway. Since the plane was committed to flight, the pilot put it into a steep climb. At approximately 1,500 feet altitude the pilot, copilot and bombardier-navigator ejected and parachuted to safety. The passenger remained in the aircraft and was killed.**

**The B-47 subsequently rolled over on one side and dove into the ground at a steep angle on approximately a southern bearing. The plane was heavily loaded with fuel and exploded on impact. Apparently the high explosives contained in the nuclear weapon exploded and dispersed the fuel, causing it to burn out quite rapidly since there were no reports of large fires at the accident scene.**

**Military personnel arrived at the crash site soon after the accident, dispersed civilian spectators and secured the area. A recovery team was sent from the base Air Depot Squadron which immediately started a search for weapons components.**

**The crash occurred in a wheat field in a thinly populated area. In general, the terrain was flat with a small ravine located about 1,000 feet to the north of the impact site. In the downwind area, the land was flat and cultivated for a distance of more than 8,000 feet, with no dwellings lying in the cloud path for at least 10,000 feet.**

**The impact crater was 35 feet in diameter and 6 feet deep, with a lip approximately 1-1/2 feet high extending three quarters of the way around the crater. There was little or no lip on the north side. The soil in the area was seared only to the south. It was evident that there had not been a prolonged general fire because the low-lying growing wheat was scorched and not charred. Aircraft debris was widely scattered and in small pieces -- much of it lay towards the south. The site was 4-1/2 miles southwest of Dyess AFB, approximately one mile southwest of the intersection of U.S. Highway 277 and Farm Road 707.**

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

The cloud from the explosion, estimated to be 400 to 1,500 feet high, moved away from the site in a north-northeast direction. Aircraft and weapon debris was found as far away as 800 feet from the point of impact. Nine hours after the crash there was an underground fire in the bottom of the impact crater as evidenced by heat, fumes and periodic rumblings from cracks at the bottom of the crater, occurring at one to three minute intervals. This fire delayed the recovery of weapons components, but all were ultimately accounted for.

**DoD/DOE ACCIDENT RESPONSE:** The Air Depot Squadron gathered about 500 pounds of weapon case fragments and other parts, removing the material to a staging area on the base. The area was monitored for radioactive contamination and alpha activity was found in the immediate vicinity of the crash. The radioactive debris measured from less than 100 up to 200,000 counts per minute alpha. Radioactivity in soil samples taken in the vicinity of the crash measured from zero to as high as 400 counts per minute. Despite the fact that the impact explosion caused the debris to be dispersed over a large area, there was no major contamination problem.

To assist DoD with response to the accident, the Atomic Energy Commission sent a team of two scientists from Los Alamos Scientific Laboratory and Sandia National Laboratories, who assisted in monitoring, locating and identifying weapon components. They arrived at Dyess AFB on November 4. Some parts of the weapon had not been located, and the Los Alamos representative recommended digging in the crater, where the parts were ultimately found. The scientists assisted Air Force personnel in packaging the weapons debris and preparing it for shipment to AEC facilities at Oak Ridge, Tennessee and Los Alamos, New Mexico.

**MEDIA COVERAGE:** Extensive. The accident was mentioned in an article in the Saturday Evening Post article on nuclear weapons safety.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #15 - B-47, Chennault AFB, Louisiana

**DATE:** November 26, 1958

**ACCIDENT TYPE:** Ground Accident

**WEAPON TYPE:** MK (Sealed Pit)

**DESCRIPTION:** A B-47, on alert at Chennault AFB, Louisiana, with a nuclear weapon on board, caught fire because of a Jet Assisted Takeoff (JATO) malfunction and burned for more than an hour before the fire was extinguished. The weapon was severely damaged in the fire, but contamination was limited to the immediate vicinity of the weapon.

Fear of a nuclear explosion caused concern in the nearby community of Lake Charles, Louisiana until local police and fire departments gave assurance that the aircraft fire was under control.

**DoD/DOE ACCIDENT RESPONSE:** A Los Alamos Scientific Laboratory representative was sent to assist the Air Force response team in identifying and recovering weapon components from the wreckage for shipment to an Atomic Energy Commission facility.

**MEDIA COVERAGE:** Local media coverage was extensive and the presence of the weapon was reported.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #16 - F-100, Pacific Base**

**DATE: January 18, 1959**

**ACCIDENT TYPE: Ground Accident**

**WEAPON TYPE: MK (without capsule)**

**DESCRIPTION:** An F-100 fighter-bomber was parked in a revetted hardstand in ground alert configuration with an external load of one nuclear weapon without capsule. The bomb was located on the left intermediate station, and three fuel tanks were on both inboard stations and the right intermediate station. When the starter button was depressed during a practice alert, the three fuel tanks were jettisoned. One fuel tank exploded, resulting in a fire which melted the forward section of the weapon, allowing internal components to be damaged. Fire fighters at the scene were able to extinguish the fire with foam in approximately seven minutes. A capsule, which is carried outside the weapon, contains nuclear material and must be inserted into the weapon prior to release in order to obtain a nuclear yield.

**There was no radioactive contamination from this accident.**

**DoD/DOE ACCIDENT RESPONSE:** An Air Force EOD team recovered the nuclear weapon, performed the necessary render-safe operations, and prepared it for shipment. It was airlifted back to the United States where it was returned to an Atomic Energy Commission facility for examination.

**MEDIA COVERAGE: None**

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #17 - C-124, Barksdale AFB, Louisiana**

**DATE: July 6, 1959**

**ACCIDENT TYPE: Aircraft Crash**

**WEAPON TYPE: Three MK (Sealed Pit)**

**DESCRIPTION: A U.S. Air Force C-124 Globemaster transport carrying three nuclear weapons crashed and burned on take off from Barksdale AFB, Louisiana.**

The accident site was in Bossier Parish in a privately owned cotton field, approximately 3,500 feet south of the end of the runway. Engines 3 and 4 quit as the plane lifted off the runway; the plane rose about 50 feet and the pilot veered into a cotton field to avoid hitting a construction crew working at the end of the runway. The seven aircraft crew members escaped serious injury and safely exited the aircraft.

The fire, which gutted all but the tail assembly of the C-124, was extinguished by fire fighting units from the base, through the use of foam. [REDACTED]

[REDACTED] Deleted [REDACTED]

[REDACTED] There was no detonation of the conventional high explosives in the weapons.

DOE  
b(3)

**DoD/DOE ACCIDENT RESPONSE:** The Nuclear Monitoring Team from Barksdale AFB arrived at the crash site and completed a survey of the site as soon as the fire was extinguished and reported no detectable contamination.

An Accident Response Team from SAC Headquarters in Offutt AFB, Nebraska arrived and took numerous samples of soil, vegetation and air, including air samples from the smoke from the second fire. These samples were processed upon return to SAC Headquarters and no detectable contamination was found.

The Austin, Texas office of the U.S. Public Health Service (PHS) was notified of the accident on July 6, and sent a representative to the scene on the first available airline flight. He was met at the Shreveport, Louisiana airport by a staff member of the Cadde-Shreveport Health Unit who took him to the Barksdale AFB Health Unit.

The Medical Services Engineer from Barksdale, AFB and Executive officer to the Second Air Force Surgeon escorted the PHS representative to the crash site where they were joined by the Medical Service Engineer for the Second Air Force Headquarters, also located at Barksdale, AFB. The group conducted an Alpha meter survey of the area up to

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

within six feet of the severely damaged weapon, which showed no evidence of radioactive contamination. They could proceed no closer until the wreckage cooled.

The following morning, the PHS representative and the Base Surgeon joined the Base Radiological Monitoring Team and again surveyed the area. A team member found one spot on the damaged weapon case that read 750 counts per minute Alpha. A count of greater than 100,000 counts per minute on an area of about 12 square inches was found on the ground under the weapon. A number of soil and vegetation samples were collected from the vicinity of the crash, as were bioassay samples from all personnel who were in the area. All counting results of these samples were negative.

Also contacted was the Louisiana State Health Officer, who was advised of all results. It was agreed that even though negative results were expected, it would be advisable to take independent soil, water and vegetation samples in the Shady Grove residential area, the nearest population concentration to the crash site, which had been evacuated as a precaution immediately after the accident. The Director of the Bossier Parish Health Unit, a sanitarian on his staff, and the PHS representative collected six soil samples and four vegetation samples. No sources of open water were found in the area. These samples were sent to the Robert A. Taft Sanitary Engineering Center for analysis and showed no contamination.

The Director of the Shreveport Civil Defense Office visited the crash site on July 6, accompanied by a Sandia Corporation employee who served as his radiological advisor. The Civil Defense official later contacted base officials expressing concern about some contaminated material which they found on a road leading from the site. The small amount of debris appeared to be aircraft wreckage and burned material or ash. The maximum reading from the material was 160 counts per minute Alpha. The debris was in an area controlled by the Air Force and was removed.

An AEC team consisting of two Los Alamos Scientific Laboratory scientists, a Sandia Laboratory scientist and a representative of the Atomic Energy Commission was dispatched from Albuquerque, New Mexico on July 7. The AEC team assisted the Air Force response staff in the collection and packaging of the weapons and weapon debris. The debris material, weighing in excess of 32,000 pounds, was shipped to Medina Base, Texas. The debris was eventually sent to AEC facilities at Oak Ridge, Tennessee and Los Alamos, New Mexico.

**MEDIA COVERAGE:** The accident was well reported at the time. A major controversy developed between local civil defense authorities and the Air Force regarding the fact that civil authorities found it difficult to obtain information from the military regarding the possible spread of radioactive contamination from the burning weapon. Versions of the story have been published several times.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #18 - P5M-2 off the coast of Washington

**DATE:** September 25, 1959

**ACCIDENT TYPE:** Jettison Over Water

**WEAPON TYPE:** MK (without capsule)

**DESCRIPTION:** A U. S. Navy P5M-2 Marlin flying boat patrol plane developed an engine fire. The aircraft was flying about 200 miles west of the Oregon-Washington border. In an attempt to reach shore, the crew jettisoned a nuclear weapon which did not contain a capsule. No surface explosion was noted. The seaplane then ditched in the Pacific Ocean where the aircraft sank in high seas. The crew was rescued. A capsule, which is carried outside the weapon, contains nuclear material and must be inserted into a weapon prior to release in order to obtain a nuclear yield.

**DoD/DOE ACCIDENT RESPONSE:** The Navy conducted a search for the weapon which was never found.

**MEDIA COVERAGE:** The crash and subsequent search for the weapon were reported in an article in the *Saturday Evening Post* that explained the safety of nuclear weapons in detail.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## NUCLEAR WEAPON ACCIDENT SUMMARY

**NAME:** #19 - B-52, Hardinsburg, Kentucky

**DATE:** October 15, 1959

**ACCIDENT TYPE:** Mid Air Collision

**WEAPON TYPE:** Two MK (Sealed Pit)

**DESCRIPTION:** Two Air Force B-52s left Columbus AFB, Mississippi on a Strategic Air Command (SAC) airborne alert operation. Later, two KC-135 aerial tankers were launched from Columbus AFB to refuel the B-52 aircraft. While flying at 27,000 feet, the number two B-52 in the formation, which had a crew of eight and carried two nuclear weapons, lined up with the number two KC-135 to commence refueling near the city of Hardinsburg, Kentucky about 65 miles south-east of Louisville. The tanker carried a crew of four.

The two aircraft collided, resulting in a mid-air explosion that was visible for over 100 miles. The KC-135 broke into two pieces that crashed to the earth nearly a mile apart. The B-52 crashed about three miles from the KC-135 crash site on the side of a small hill in a heavily wooded area in a near normal flight attitude. The tail section broke off and was the largest section to remain intact. The wreckage burned all evening and smoldered into the next morning, burning the trees for about 100 yards surrounding the crash site. All four crewmen on the KC-135 perished. Only four of the B-52 crewmen were able to escape the aircraft by parachute.

The weapons were found to have survived the crash in good condition. The weapons cases were cracked, but the high explosives had not burned or detonated, although it was badly shattered. The weapons were recovered without incident.

**DoD/DOE ACCIDENT RESPONSE:** The DoD Joint Nuclear Accident Coordinating Center (JNACC) was notified and the Atomic Energy Commission (AEC) was notified when assistance and advice was requested. A Kirtland AFB, New Mexico Nuclear Safety Team, headed by the Director of the Nuclear Safety Research Division, a section of the Inspector General's Office, including a Sandia Laboratory Technical Observer and an AEC Administrative Observer, departed Albuquerque in a military C-47. They arrived at Goodman Army Air Field, near Fort Knox and were immediately flown to the accident site by helicopter.

The weapons were found to have survived the crash in remarkably good condition, there having been little burning at their location in the accident. The weapons were cracked, but the high explosive (HE) had not burned or detonated, although it was badly shattered. They were lying horizontally in train, partially buried in the moist and spongy clay soil. When the Kirtland AFB Team arrived, the weapons were covered with blankets and the Military Police guarding

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

the area were allowing the press and members of the public in the area with the restrictions of not to pick up anything and to not go near the blankets.

The AEC recovery responsibilities were turned over to a team from the AEC's Clarksville, Tennessee facility. The Explosive Ordnance Disposal team from Wright-Patterson AFB, Ohio did a partial disassembly of the weapons. It was found that the HE had to be removed by spooning it out of the cases. The HE was taken to Fort Campbell, Kentucky and burned. It was necessary to build a road to the crash site to remove the weapons and the debris. This part of the recovery took three days to complete. On the 19th, the weapons were loaded on a lowboy trailer and trucked to the Clarksville facility where they were returned to the custody of the AEC. Disassembly was completed and the components were shipped to AEC Facilities at Oak Ridge, Tennessee; Rocky Flats, Colorado and Savannah River, South Carolina for disposal.

**MEDIA COVERAGE:** The accident was covered by national media. Accurate press coverage was received and the local perception of the recovery was most favorable.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

### NUCLEAR WEAPON ACCIDENT SUMMARY

**NAME: #20 - BOMARK Missile, McGuire AFB, New Jersey**

**DATE: June 7, 1960**

**ACCIDENT TYPE: Missile Accident**

**WEAPON TYPE: W Warhead (Sealed Pit)**

**DESCRIPTION:** An explosion and fire occurred in a missile launch facility which contained a BOMARC with a nuclear weapon at the 46th Air Defense Missile Squadron Base, about eight miles east of the main McGuire AFB and about twenty miles south-east of Trenton, New Jersey.

The high explosive in the nuclear weapon burned but did not explode. The fire was out in about 45 minutes. Flames were reported to have reached a height of seventy five feet with a smoke cloud reaching as high as four hundred feet. At the time of the explosion, the wind at McGuire AFB was reported as north-northeast at three knots. The initial radiation survey report indicated radioactivity readings of 400 to 500 REM per hour (r/h). It was later determined that the report should have read counts per minute (c/m), not r/h.

The weapon was recovered, along with contaminated debris. A small area near the site was contaminated with plutonium, and was either plowed under or covered with paving material.

**DoD/DOE ACCIDENT RESPONSE:** Fire fighters from nearby Ft. Dix, New Jersey responded and fought the fire with hoses until an evacuation alarm was sounded. They then left the area and allowed the fire to burn undisturbed and unattended until the fuel and high explosives (HE) were consumed. A report was received that the State Police had been initially notified that a nuclear weapon had exploded, causing some immediate alarm. This was soon corrected.

An Army Explosive Ordnance Disposal (EOD) Team from nearby Ft. Dix was on the scene in approximately 30 minutes and remained until relieved by Air Force EOD teams from Stony Brook AFB, New York and Wright-Patterson AFB, Ohio hours later. Render Safe Procedures were not performed because of the damaged condition of the weapon.

The Albuquerque Operations Office (ALO) notified the Los Alamos Scientific Laboratory (LASL) and two LASL representatives, weapons and criticality specialists, joined an ALO representative in Albuquerque. They joined a Field Command/Defense Atomic Support Agency (FC/DASA) team and arrived at McGuire AFB on a C-47. The Sandia Laboratories (SL) was also notified of the accident on the 7th and sent a weapon specialist by commercial air.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

After the fire had burned out, EOD and fire fighting personnel entered the damaged shelter to assess the situation. They were accompanied by photographers. Photos of the debris and facility were available by the time the AEC/DASA team arrived at McGuire. The photographs were reviewed and the situation explained prior to the team's departure for the accident scene. They were informed that water from the fire fighting efforts had flowed out past the nose of the missile, under the door, down a macadam roadway and into a gravel field at the end of the pavement, a distance of about one hundred feet from the structure. Alpha contamination of 2 million c/m were detected in the vicinity of the warhead on the shelter floor with levels of 200 c/m to 500 c/m elsewhere except where the water had flowed. Soil sample readings of 17,000 c/m/meter squared were later obtained where the water flowed out of the shelter. The fact that contamination did not spread from the immediate area was later confirmed by the U.S. Public Health Service.

The AEC and LASL personnel entered the accident site after the initial entry by the EOD, fire fighters and photographers. They found that the weapon had been destroyed and the high level of contamination was restricted to an area about the size of a desk top. The bulk of the fire occurred about twenty feet away from the weapon. The roof above the fuel tanks had disappeared, walls were blackened, the roof above the warhead had sagged downward and gravel from the roof had fallen in on the debris. The warhead debris was packaged in a metal can, bagged, placed in another metal can, and shipped to Oak Ridge National Laboratory. Other components were sent to LASL. Contamination in the area of the water flow was painted over or plowed under and covered with concrete.

An investigation revealed that the cause of the fire and explosion was the rupture of the helium pressure system used to propel fuel into missile motors during start-up. It was believed that the explosion occurred only after the fuel fire was almost over.

**MEDIA COVERAGE:** There were a number of local and national stories, several of which questioned the safety of nuclear weapons. The incident was also included in a *Saturday Evening Post* article on weapons safety.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## NUCLEAR WEAPON ACCIDENT SUMMARY

**NAME:** #21 - B-52, Goldsboro, North Carolina

**DATE:** January 24, 1961

**ACCIDENT TYPE:** Aircraft Crash

**WEAPON TYPE:** Two B (Sealed Pit)

**DESCRIPTION:** Shortly before midnight a B-52G bomber from Seymour-Johnson AFB, North Carolina with two nuclear weapons aboard was flying a airborne alert mission over the continental Atlantic seaboard area. It rendezvoused with an airborne tanker and started taking on fuel in the early hours of the morning. Before the refueling was completed the commander of the tanker advised the pilot of the bomber that there was a fuel leak in a wing tank of the bomber and that he was stopping the refueling. When Seymour-Johnson AFB was notified of the situation, the bomber was ordered to circle over the Atlantic until a major portion of the fuel was gone. The leak soon enlarged and the aircraft started to rapidly lose fuel. Permission was then received to return to Seymour-Johnson AFB. The captain dropped to 10,000 feet and reduced speed. At that point the bomber gyrated into a spin and the pilot started losing control of the aircraft. At 9,000 feet, the pilot ordered the plane evacuated. Five of the eight man crew survived.

The plane broke up in the air and observers on the ground reported two brilliant red flashes, presumably from fuel explosions. The two nuclear weapons separated from the aircraft in the air. The B-52 hit the ground near Faro, North Carolina, twelve miles northeast of the Seymour-Johnson AFB. The debris scattered over two square miles of a cotton and tobacco agricultural area.

The aircraft fuselage broke between the two bomb bays. One weapon came free and the parachute deployed normally. That unit landed upright with it's parachute caught in a tree and it's nose buried six inches in the sandy clay soil, suffering only minor damage. The second unit broke free with a portion of the bomb rack still attached. This caused it to tumble and free fall without the parachute deploying. It landed about 3,000 feet from the major portion of the debris. Although high explosives in the weapon did not detonate, the impact caused it to breakup and create a crater eight feet wide and six feet deep. An attempt was made to recover weapons components from the pit, but recovery was not possible because of the high water table which prohibited digging. The site was sealed and signs posted to prohibit digging or drilling.

**DoD/DOE ACCIDENT RESPONSE:** The Albuquerque Operations Office (ALO) of the Atomic Energy Commission (AEC) was notified the morning of January 24 that a bomber had crashed, and later confirmation was given that it was a B-52, two nuclear weapons had been aboard and the location was near Goldsboro, North Carolina. Representatives from ALO,

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

Sandia Laboratories (SL) and Los Alamos Scientific Laboratories (LASL) assembled at Kirtland AFB, New Mexico and joined representatives from the Department of Defense Nuclear Safety Research Directorate. They departed Kirtland AFB on a C-47 cargo plane and flew to Seymour-Johnson AFB.

After a briefing on the situation the next morning, the AEC Team went to the accident site. At this time, the second weapon and its crater had not been located. While touring the area, the LASL and the SL representatives discovered a fragment they identified as a part of a weapon case. Although it was later determined that it was from the first weapon which had only been slightly damaged, this led to the discovery of the second weapon and its associated crater. To add to the problem, the weather was freezing cold and the area was extremely muddy. The DoD teams started excavating the crater. Digging was complicated by the fact that there was a high water table in that area and water kept filling the crater. Pumps were employed while the sides of the crater were reinforced with plywood. On February 16, a major portion of the weapon was found at the 20 foot level. Due to the high water table and the inability of the pumps to keep the water out, it was decided to terminate excavation at the 42 foot level. Not all components were recovered but those not found were determined not to be a major hazard. After the aircraft debris was removed, the crater was refilled with dirt, the impact area was purchased, a concrete slab poured over the area, and the area fenced. Notices were posted prohibiting digging.

**MEDIA COVERAGE:** Extensive at the time and for many years since the accident. Publications after the accident claimed that Goldsboro narrowly missed being removed from the map by a nuclear detonation because all but one of the safety devices in the slightly damaged weapon failed.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

## NUCLEAR WEAPON ACCIDENT SUMMARY

**NAME:** #22 - B-52, Yuba City, California

**DATE:** March 14, 1961

**ACCIDENT TYPE:** Aircraft Crash

**WEAPON TYPE:** Two B (Sealed Pit)

**DESCRIPTION:** A B-52F out of Mather AFB, California carrying two nuclear weapons was returning from an alert mission when trouble with the cabin pressurization and temperature forced a descent to 10,000 feet. Increased fuel consumption caused fuel exhaustion before a rendezvous could be made with a tanker aircraft, and the engines quit. The aircraft commander ordered the crew to bail out, but stayed with the aircraft down to 4000 feet to steer the plane away from a populated area before he too bailed out.

The plane continued in a stable descent and struck the ground in a near level flight attitude. One wing struck the ground first and the plane skidded about one-half mile before the main sections of the aircraft came to rest in a barley field, 15 miles west and two miles south of Yuba City, California. The aircraft's speed at the time of the crash was estimated to be between 200 and 250 miles per hour. The aircraft was demolished, but there was little evidence of burning. The aircraft carried a crew of eight and all survived.

The two weapons separated from the aircraft at impact and were both severely damaged. One weapon remained intact, but the high explosive (HE) was crumbled. The second weapon broke apart; the HE was scattered and components were damaged. There was no contamination.

**DoD/DOE ACCIDENT RESPONSE:** Explosive Ordnance Disposal (EOD) teams from Beale and McClelland Air Force Bases in California responded and located some of the components which were moved to a storage location away from the wreckage. They also collected the damaged HE. An Atomic Energy Commission (AEC) representative from Travis AFB, California also responded to the accident site and assisted in the initial evaluation of the situation.

The Albuquerque Operations Office (ALO) of the AEC was notified. A Sandia Laboratory (SL) representative and an ALO representative joined Air Force personnel from the Directorate of Nuclear Safety and the Air Force Special Weapons Command (AFSWC) and departed Albuquerque in a C-47 which flew the team to Mather AFB, California. The Kirtland group met with Air Force personnel and the AEC representative in Marysville, California near the scene of the crash, for an initial briefing. That evening, the AEC Team was joined by two representatives from Los Alamos Scientific Laboratories (LASL) who had traveled

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

commercially to that location. Activity at the accident site had been halted for the night due to rain and darkness.

The AEC Team spent all the next day at the accident scene assisting in the recovery of components and evaluating the condition of the weapons. The entire group, with the exception of the ALO representative, left that evening for return to Albuquerque. The ALO representative remained until the 17th to assist in the weapons packaging and shipping operations. The damaged weapons were returned to an AEC facility for evaluation and disposal.

**MEDIA COVERAGE:** Because of the location of the accident, it was well covered in the media with numerous stories and photographs published around the country. The safety of nuclear weapons was emphasized in most of the stories.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #23 - Medina Base, Texas**

**DATE: November 13, 1963**

**ACCIDENT TYPE: Ground Accident**

Deleted

DOE  
b(3)

He saw a flash and detected smoke. He immediately evacuated the igloo, warned the other two workers, and all ran from that location and sought protection in culverts. In less than a minute, a high order explosion occurred that destroyed Igloo 572. The three workers were rapidly picked up and taken to the base medical facility for examination. They did not experience serious injury.

The explosion caused a large cloud that could be seen for miles. The shock wave caused by the explosion caused tens of thousands of dollars worth of damage to public property which was paid for by the AEC. Damage to Medina Base involved only the igloo, handling equipment and some windows.

DoD/DOE ACCIDENT RESPONSE: An AEC Radiological Team equipped with hand held Alpha and Beta-Gamma Survey Instruments went to the explosion site. A survey of the area revealed that there were no radiation readings above normal background for the area. An Air Force helicopter was used to check downwind of the area and no measurements were found above normal background. An Air Force T-33 was flown through the downwind area and up to a height of 10,000 feet. Upon landing, swipes of the aircraft surface again revealed no radioactive contamination above normal background.

DOE  
b(3)

Deleted

Offsite surveys by the Texas State Health Department supported the above results and their offsite findings were less than those prescribed in Part 10 Code Of Federal Regulations Section 20 (10 CFR 20) - "Standards For Protection Against Radiation". Soil and vegetable samples taken throughout the area showed minute levels of Uranium that were considered insignificant from both a

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

radiological and a toxic standpoint. Although not needed, numerous offers of radiological assistance were received from local, state and federal agencies. Later, visits to the area were made by representatives of several of these agencies.

DOE  
b(3)

The Manager, Albuquerque Operations Office (ALO) of the AEC, appointed an investigating committee that was convened on November 14 at Medina Base.

Deleted

**MEDIA COVERAGE:** There was extensive news coverage of the accident. A news release was made within twenty minutes informing the public of the nature of the explosion and that it was not a threat to their safety. A cloud of dirt and debris was visible for miles and the shock wave had damaged structures in and around the Base and all the way into San Antonio; mostly glass damage. Many claims were made to the AEC to compensate for the damage. It is also interesting to note that an individual flying a single-engine private aircraft in the area took pictures of the explosion cloud which were later made available to the AEC and area news media.

An editorial in the San Antonio Express on November 15 commended the AEC for its swift action in informing the public of the situation surrounding the accident. It went on to emphasize that the chance of an atomic-explosion by accident was so remote as to be considered impossible. It further stated that since only minor injuries occurred, it demonstrated that the installation was built to be as safe as such a facility could be.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #24 - B-52, Cumberland, Maryland**

**DATE: January 13, 1964**

**ACCIDENT TYPE: Aircraft Crash**

**WEAPON TYPE: Two B (Sealed Pit)**

**DESCRIPTION: A B-52D with two nuclear weapons in tactical ferry status was enroute from Westover AFB, Massachusetts to Turner AFB, Georgia after completion of an airborne alert mission. The aircraft encountered turbulence at 29,500 feet. The pilot requested and received clearance to climb to 33,000 feet. At 31,000 feet, the aircraft was hit by violent turbulence, structural failure occurred and control of the aircraft was lost. Of the five crew members, only the pilot and the copilot survived.**

**The aircraft crashed during a snowstorm that already had deposited 18 inches of snow on the ground. The plane hit the western slope of 2,888 feet high Big Savage Mountain, approximately 20 miles west-southwest of Cumberland, Maryland. The aircraft was on a northeast heading when it impacted the rugged and forested area in a wing-down attitude with considerable horizontal velocity. There was no mid-air explosion or fire, and no major fire after the crash. Wreckage was scattered over an approximately 75 by 220 yard area. The two weapons were found along the center-line of the crash debris. Both weapons were damaged, with the forward weapon more severely than the aft weapon. A survey of the area showed no radioactive contamination.**

**DoD/DOE ACCIDENT RESPONSE: Two Army Explosive Ordnance Disposal (EOD) Teams, from Fort Clinton, Ohio and Fort Mead, Maryland, were enroute to their home bases from an exercise at Huntsville, Alabama when they were diverted to respond to the crash. By the time the two teams arrived at the crash site an additional six to eight inches of snow had fallen. The EOD personnel performed Render Safe Procedures, collected debris and components, established security around the area and waited for further support to arrive. The weather continued to be cold and windy.**

**The Atomic Energy Commission (AEC) Albuquerque Operations Office (ALO) was notified of the accident by the Air Force Directorate of Nuclear Surety (DNS) in the early hours of the 13th and were invited to join a DNS response team. Representatives from ALO, Sandia Laboratories (SL) and Field Command Defense Atomic Support Agency (FCDASA) traveled by commercial aircraft to Washington, DC, and joined the DNS team at Andrews AFB, Virginia. That evening the combined team joined investigators and support personnel from the Strategic Air Command (SAC) and Eighth Air Force, Westover AFB, Massachusetts and Turner AFB, Georgia.**

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

Activities at the accident scene continued to be difficult due to the continued bitter cold and wind. EOD personnel directed recovery operations of the weapons. A road to the crash site had to be bulldozed one and one-half miles from the nearest country road. On the 16th, a front-end loader with wooden chocks in the bucket was used to move the damaged weapons to the country road where they were loaded on a lowboy trailer, chocked and secured, and moved to the Cumberland Airport where they were loaded on a waiting Air Force C-124. Assistance for this move was provided by the Maryland Highway Patrol, the Maryland Forest Rangers and the Cumberland City Police. The C-124 moved the damaged weapons to San Antonio, Texas, where they were transferred to the AEC for inspection at Medina Base.

The AEC and SL personnel assisted in the weapons recovery through review of weapon status, packaging and shipping.

**MEDIA COVERAGE:** Extensive. Public Relations were handled by the Air Force and a local newspaper published on the 13th explained that nuclear weapons were on the aircraft and were nuclear safe. Attention had been focused on the status of the airmen.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

### NUCLEAR WEAPON ACCIDENT SUMMARY

**NAME:** #25 - LGM 30B (Minuteman ICBM) Ellsworth AFB, South Dakota.

**DATE:** December 5, 1964

**ACCIDENT TYPE:** Missile Accident

**WEAPON TYPE:** W (Sealed Pit)

**DESCRIPTION:** A Minuteman I Missile of the 44th Strategic Missile Wing was on Strategic Alert at Site Lima on Ellsworth AFB, South Dakota. Two airmen entered the outer and then the inner security zone to investigate a security alarm. Part of the routine check was to remove a fuse to check the security circuitry relay operation and continuity. On the third removal and reinsertion, a violent explosion occurred. The men evacuated the site. One hour later the two, with one additional airman, re-entered the area and checked the launch tube. They reported the Reentry Vehicle missing. It was subsequently determined that the RV and weapon had fallen to the bottom of the silo. It was reported that the RV and the weapon were damaged, and the outer structure of the warhead high explosives appeared to be undamaged.

The weapon was recovered from the bottom of the silo without incident.

**DoD/DOE RESPONSE:** The Albuquerque Operations Office (ALO) of the Atomic Energy Commission (AEC) was notified by the Air Force Director of Nuclear Safety (DNS) on Kirtland Air Force Base (KAFB), New Mexico that they had an electrical problem on a missile. By midnight, it was still not clear what had happened.

On the 6th, representatives from ALO and the Sandia Laboratory (SL) called and informed the Sandia Livermore Laboratory (SLL), Livermore, California, that a Minuteman RV had fallen approximately 75 feet to the bottom of a launch tube and that the Directorate of Nuclear Safety DNS was sending a team of observers from KAFB. An ALO representative was to be included on that team and AEC Headquarters wanted to send an observer. It was arranged that the SLL representative would meet the rest of the team in Denver, Colorado and accompany the team to the accident site.

The DNS observation team, composed of two people from DNS, one from ALO and one from SLL, arrived at Ellsworth AFB and were immediately briefed at the 44th Command Post and learned that the accident occurred when a retro rocket fired. They were also able to watch the base Explosive Ordnance Disposal (EOD) team, via a remote hook-up, inside the silo. The team identified missile components and moved them about on the floor of the silo for easier handling, and reported that they found no contamination.

The observation team joined the Air Force Investigation Board on December 7 for a briefing by the EOD team and the review of slides of the accident scene. The SLL representative did

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

not believe that the HE could be in good shape after falling to the bottom of the silo so he briefed other SLL personnel by telephone. It was decided to send another weapon specialist from Lawrence Livermore National Laboratory. The Air Force representatives wanted to go ahead and disassemble the warhead down in the silo and move it back to storage. After discussion, it was decided to wait for further study of the warhead.

The LLNL representative arrived that same day, was briefed on the situation and shown the slides of the weapon. The next morning, the EOD team and the SNL observer entered the silo and examined the weapon. After discussions, it was decided not to disassemble the weapon in the silo, but to bring the RV out in a cargo net. All participants met again with the Investigation Board to review their plans and receive the Board's approval.

Special arrangements were required to provide electrical grounding during the lifting, and the detailed procedures had to be prepared and forwarded to the AEC in Washington for approval. On December 10, the RV was lifted by mobile crane and placed on a mattress and secured on the back of a truck. It remained at that location until the next day when it was convoyed to Ellsworth, AFB.

After radiography of the weapon, it was decided that it was in good enough condition to ship back to the AEC. The observation team departed Ellsworth on December 11, but the LLNL warhead specialist remained to assist in making the arrangements for packaging and shipping the weapon to the AEC Medina facility in Texas.

**MEDIA COVERAGE:** There were no public news releases made at the time.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #26 - B-58, Bunker Hill (now Grissom) AFB, Indiana**

**DATE: December 8, 1964**

**ACCIDENT TYPE: Ground Accident**

**WEAPON TYPES: Four B (Sealed Pit), One B (Sealed Pit)**

**DESCRIPTION: A B-58A, at Bunker Hill AFB, Indiana, carrying one B and four B nuclear weapons, was one of several aircraft taxiing to an icy runway during an operation readiness exercise. As the bomber reached a position directly behind the aircraft on the runway in front of it, the lead aircraft advanced power. As a result of the combination of the jet blast from the aircraft ahead, the icy runway conditions and the aircraft applying increased power as it turned onto the runway, control was lost and the aircraft slid off the left-hand side of the taxiway.**

**The left main gear passed over a flush mounted taxiway light fixture and ten feet further along grazed the left edge of a concrete light base. Ten feet further, the left main landing gear struck a concrete electrical manhole box and the aircraft caught on fire. When the aircraft stopped moving, all three crew members abandoned the aircraft. The aircraft commander and defensive systems operator escaped with only minor injuries. The navigator ejected in his escape capsule which impacted 548 feet from the aircraft. He did not survive.**

**Portions of the five nuclear weapons on board were partially burned in the fire which consumed the entire aircraft. The firemen fought the fire for a period of time and backed off. As they watched the fire burn, they heard four muffled explosions. The sources of these explosions were never specifically identified. The high explosives in the weapons did not detonate, although some melted and some burned.**

**Recovery presented a number of problems, particularly since the runway had to be cleared as soon as possible to keep the base operational. One weapon was not seriously damaged and was recovered in a short time. The other weapons were in various states of damage due to the fire and were located in portions of the aircraft which were severely damaged. There was no contamination.**

**DoD/DOE ACCIDENT RESPONSE: Explosive Ordnance Disposal (EOD) and Radiological teams were on the scene immediately and performed Render Safe Operations and checked the area for contamination. Only low level contamination was found under the weapons, and the area was monitored continuously during the recovery operation.**

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

A team from the Albuquerque Operations Office consisting of an AEC team leader, scientists and engineers from Los Alamos Scientific Laboratory, Sandia Laboratory and the Pantex Plant assisted the Air Force in all aspects of the recovery operation. The Pantex team was particularly useful in suggesting procedures to handle the burning component, recovery of components, disassembly of weapons, devising procedures for shipment of components and debris, procurement of approved shipping containers and helping to issue certificates necessary for shipment of materials. The materials were sent to AEC facilities in Clarksville, Tennessee; Medina Base, Texas; Rocky Flats, Colorado; Miamisburg, Ohio and Oak Ridge, Tennessee.

**MEDIA COVERAGE:** The accident was covered in local and national media and was mentioned in the *Saturday Evening Post* article on nuclear weapons.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

### NUCLEAR WEAPON ACCIDENT SUMMARY

**NAME:** #27 - C-124, Wright-Patterson AFB, Ohio

**DATE:** October 11, 1965

**ACCIDENT TYPE:** Ground Accident

**WEAPON TYPE:** Tritium filled reservoirs, neutron generators and a MK53 weapon trainer that contained no high explosives or radioactive material

**DESCRIPTION:** A C-124 transport of the Military Air Transport Service was on a 15 stop round-robin flight that included a refueling stop at Wright-Patterson AFB, Ohio. The plane was carrying a cargo of conventional munitions and non-explosive components of nuclear weapons systems. In addition, the cargo contained a dummy nuclear weapon training unit.

The ground-crew initiated refueling at Wright-Patterson AFB. During the refueling process, a broken fuel line connector allowed about 200 gallons of gasoline to spill under the aircraft. A spark from the fueling vehicle ignited the fuel which in turn ignited the magnesium-aluminum alloy skin of the aircraft. Base firemen responded to the scene and fought the fire for almost three hours. The fuselage was gutted, the tail section collapsed, and the fueling unit was heavily damaged. Three million gallons of water and foam were used in fighting the fire. The aircraft was parked over a storm sewer grate that drained into the Mad River, a tributary of the Miami River from which the city of Dayton drew its drinking water. No significant contamination was detected in samples of river water taken after the accident.

The plane was originally reported as carrying a quantity of conventional munitions. Later, after the fire was out, it was discovered the cargo also included nuclear weapon components and what appeared to be a nuclear weapon. It was not clear if it was a nuclear unit or a dummy training unit and the area was evacuated until the determination was made that it was a trainer. The fire fighters, ground crew and area were checked for contamination and none was found. Firemen and authorities in the area of the disaster were given routine physical checks at the base medical facility. There were no injuries as a result of this accident.

**DoD/DOE ACCIDENT RESPONSE:** After learning that the cargo did contain nuclear weapon components, the base Explosive Ordnance Disposal (EOD) team checked the area with their survey equipment and detected only low levels of contamination in the area of the aircraft. The damaged contents of the cargo bay were removed and placed in a bunker on base. The Atomic Energy Commission (AEC) Albuquerque Operations Office was notified of the accident early in the morning hours of the 13th. In turn, they requested the Dayton Area Office (DAO), Miamisburg, Ohio at the Mound Laboratory, to send health physics assistance; the Savannah River Operations Office in Aiken, South Carolina to send a response team; and

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

the Burlington Plant in Burlington, Iowa to ship component containers for return of the cargo to the AEC. One AEC representative, two Monsanto Research Corporation nuclear engineers and two health physicists, along with a vehicle equipped with monitoring equipment, responded from Mound. By the time they arrived, the cargo had already been removed from the gutted aircraft. A check of the disaster site again revealed only low levels of contamination. A check of the bunker in which the damaged cargo was stored did reveal some contamination of insignificant levels. One AEC representative and three DuPont employees from the Savannah River Plant arrived to assist the EOD team and the DAO team package and ship the cargo back to the AEC. The damaged components were sent to the Mound Laboratory in Miamisburg, Ohio, the Savannah River Plant in Aiken, South Carolina and the Pantex Plant near Amarillo, Texas.

Checks of all DoD and AEC personnel that responded to the accident showed that no one received significant contamination from this accident. Observations from the response teams recommended that in the future, aircraft cargoes should be labeled to identify the radioactive components and the AEC and neighboring DoD installations should maintain better liaison.

**MEDIA COVERAGE:** The accident was reported by local area news media, and mention was made of the radioactive content of the shipment.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME:** #28 - A-4, At Sea (Pacific)

**DATE:** December 5, 1965

**ACCIDENT TYPE:** Lost at Sea

**WEAPON TYPE:** B (Scaled Pit)

**DESCRIPTION:**

Deleted

During an exercise, an A4E aircraft carrying one nuclear weapon rolled off the deck edge elevator and fell into the sea. The aircraft, pilot and weapon were lost.

DOE  
b(3)

The A4E aircraft was parked on the hanger deck. The aircraft was moved with the pilot in the cockpit, tail first, to the Number 2 aircraft elevator on the port side of the ship that forms the forward end of the angle deck when in top position.

As the aircraft was pushed out onto the elevator, the pilot was given a "brake" signal — both by hand signal and by whistle. The pilot was apparently in the process of putting on his helmet and failed to heed the directions of the plane director. Some alert plane pushers threw chocks under the wheels; however the aircraft had enough momentum that it jumped the chocks and rolled tail first off the elevator from the hanger deck level. The aircraft hit the water upside down, slamming the canopy closed and trapping the pilot.

The aircraft sank in approximately 2,700 fathoms of water, precluding any chance of recovery

**DoD/DOE ACCIDENT RESPONSE:** The accident investigation was conducted by the Navy.

**MEDIA COVERAGE:** There was no media coverage at the time. With the release of the nuclear weapons accident list, inquiries were made by the Japanese government which resulted in extensive coverage of the story by Japanese news media. Questions concerning possible contamination of the ocean have been raised several times over the years. There have also been inquiries concerning the location of the accident.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #29 - B-52, Palomares, Spain**

**DATE: January 17, 1966**

**ACCIDENT TYPE: Mid Air Collision**

**WEAPON TYPE: Four B28 (Sealed Pit)**

**DESCRIPTION: A B-52 from Seymour-Johnson AFB, North Carolina, with four nuclear weapons on board, was on routine patrol and taking on fuel from a KC-135 from Moron AFB, Spain, at 30,500 feet above the village of Palomares, Spain on the Mediterranean Sea coast. The pilot of a Spanish Air Force transport reported seeing a collision of two U.S. planes. That report was passed on to the U.S. 16th Air Force. It was later determined that the B-52 moved forward in relation to the KC-135 and, as both attempted to readjust their positions, the aircraft collided and subsequently crashed.**

**Palomares is a small farming and fishing community with a population of between 2,000 and 3,000 and the major crops of the area, tomatoes and beans, had to be irrigated from wells. There was no major highway into Palomares, making it a remote area with few visitors.**

**The Palomares residents reported that they were going about their normal business that morning when small and large objects, along with burning fuel, fell around them and their village. Miraculously, no individual was hit or burned and no buildings were damaged, but numerous fires were started in their fields. They also reported that there were four white parachutes and one colored parachute that came down from the sky. All five landed in the water. The four white parachutes were the surviving crewmen from the B-52 who were rescued by fisherman in the area. The colored parachute was not recovered, but a fisherman who was about 75 yards from where it hit the water reported that it looked like a "stout man." He later placed the location as about six miles from the coast.**

**To provide control at the scene of the aircraft accident, Spanish Civil Guards were rushed to the area. Their major actions were to search for survivors and help put out the fires. The aircraft collision was reported through U.S. Air Force channels and although it was assumed, it was not until a check was made with Seymour-Johnson AFB that it was confirmed that the B-52 was carrying nuclear weapons.**

DOD (b)(3)  
42 USC 2168  
(a)(1)(C)

Deleted

It was only then

**that the additional problem of radioactive contamination was confirmed. More importantly, the lack of fission products in the area assured that there had been no nuclear contributions to the explosions.**

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

The B-52 had been carrying four nuclear weapons. As the first weapon and weapon components began to be found, they were numbered in the order found. All weapons and most of their components can be identified by their unique serial numbers. Weapon one was found intact, but with a bent nose, one mile northeast of Palomares, several hundred yards from the beach. Its retarding parachute had been deployed. Weapons two and three parachutes did not deploy and their conventional high explosives detonated upon hitting land. The detonation of weapon two created a crater twenty feet wide and six feet deep, one mile west of Palomares. Weapon three's detonation created a crater ten feet wide and three feet deep on the eastern edge of Palomares. Components from weapons two and three were found and from their condition it was determined that they been subjected to low order conventional explosive detonations.

No components from weapon four were found. From this it was concluded that it had not detonated. The report by a local fisherman that he had seen something like a "stout man" land in the water was not immediately considered important. The land area was searched for the missing bomb, other weapon components and aircraft debris. The search concentrated on the tomato fields and the abandoned mine shafts that were so abundant in the area.

After several week's search, weapon four was not found on shore. Attention was shifted to the sea. On March 15, after numerous searches of the sea bottom and in the area originally identified by the Spanish fisherman, a deep water exploration vehicle called Alvin discovered an object with an attached parachute at a depth of 2,550 feet, about eight miles from shore on a 70 degree slope. It was not immediately identified as weapon four, but photos taken did provide that identification. It was decided to attempt to move the weapon off the slope and on to a more level seabed. In the process, a nylon cable was cut and the weapon fell further down the slope. On April 2, Alvin relocated it at a depth of 2,850 feet. On April 7, an underwater torpedo recovery vehicle called CURV entangled itself in the parachute lines. After a two hour attempt to free the CURV, it and the weapon were raised together brought and aboard the submarine recovery vessel, USS Petrel.

DoD/DOE ACCIDENT RESPONSE: There was an immediate buildup of U.S. Air Force personnel in the Palomares area. A military camp was built on the shore and became know as Camp Wilson, named after the On-Scene Commander, Major General Delmar E. Wilson. At it's peak, there were over 700 troops in that camp assisting in the recovery of aircraft debris, weapon components, and clean-up of the local area. This search was conducted by airmen covering the area in shoulder-to-shoulder searches. The radioactive material from weapons two and three was found throughout the area, including on the buildings of the village. The buildings were washed down using fire hoses.

When it was confirmed that nuclear weapons were involved in the crash, the military notified the Office of the U.S. Ambassador to Spain, which in turn notified the Spanish government. This notification took some time as Ambassador Duke was giving a speech in Madrid and the contacts for the Spanish government were not immediately available. But once these

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

notifications were made, there was good cooperation between the governments even though problems did develop. One outcome of the accident was that such flights and air refueling over Spanish territories, and later Europe, were halted. Despite problems, clean-up of the area went forward with cooperative agreements between the governments. Numerous agencies, including the Atomic Energy Commission and the Department of State, assisted the Department of Defense in these activities.

Work was done by several organizations, including the Sandia Corporation, an AEC Contractor, to analyze all known factors such as wind direction and speed and ballistic characteristics in an attempt to predict where in the sea the lost weapon might be found. From the beginning, warships patrolled the area off Palomares, first Spanish warships, and then the U.S. 6th Fleet. A Russian trawler that was in the Mediterranean also came to the area. The U.S. brought in the Submarine Rescue Ship Petrel, the research minisubs Alvin and Aluminant, and a Controlled Unmanned Recovery Vehicle (CURV) designed to recover torpedoes. The Navy had a 2,200 man Task Force in the area to support the recovery activities.

Cleanup of the Palomares area was continued during the weapon recovery operations. Approximately 650 acres was determined to be contaminated. The areas with the highest contamination had topsoil removed and placed in barrels. The lesser contaminated areas were plowed and watered. The crops were purchased and the ones with heavier contamination either placed in barrels for removal or taken to the beach and burned at those times the wind was blowing out to sea. The tomatoes having only low levels of contamination on them were washed and eaten by the troops doing the clean-up. Some 1,400 tons of soil and vegetation in 5,500 barrels were removed from the area and shipped to the Savannah River Plant near Aiken, South Carolina where it was buried.

On March 24, the last barrel of contaminated soil and vegetation was removed from the beach off Palomares and on April 1, all land was pronounced safe, and that condition was accepted as such by the Spanish officials. On Easter Sunday, April 10, 1966, Camp Wilson was closed and weapon recovery and clean-up operations were considered completed. Periodic surveys of the area and reviews of the health of the inhabitants have continued up to the present.

Data gathered confirmed that even though these weapons were subjected to severe stresses and abnormal conditions, the safety features built into them worked as designed and there were no nuclear explosions. To improve on the problem of radioactive material scatter from the conventional high explosive detonations, Los Alamos Scientific Laboratories developed an insensitive high explosive that is now used in many modern weapons. The need for better field detection and field laboratory analysis capabilities was recognized and spurred the development of the Field Instrument for Detection of Low Energy Radiation (FIDLER), by the Lawrence Radiation Laboratory and the Hot Spot Mobile Laboratory by Lawrence Livermore Laboratories. And more important, the numerous organizations involved learned that they could work together to solve the problems of a complex accident such as this. This capability has been utilized and built on to develop the current accident response organization that can be called on to respond to any nuclear accidents that might happen in the future.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

The case of the B28 recovered from the Mediterranean as well as the case of the weapon that survived the parachute landing can be seen in the National Atomic Museum on Kirtland Air Force Base, New Mexico.

**MEDIA COVERAGE:** Extensive in world-wide media.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

**NUCLEAR WEAPON ACCIDENT SUMMARY**

**NAME: #30 - B-52, Thule, Greenland**

**DATE: January 21, 1958**

**ACCIDENT TYPE: Aircraft Crash**

Deleted

DOE  
b(3)

**DESCRIPTION:** A B-52, from Plattsburgh AFB, New York, on a routine 24 hour airborne alert mission over the Atlantic Ocean carrying four nuclear weapons, had completed its first air refueling and was about five hours into its mission when the pilot ordered a back-up pilot into the copilot's seat. The crew complained that the temperature in the plane was too cold. The pilot ordered the copilot to raise the temperature rheostat. This was done, but soon lowered to its original position. The crew then reported smelling smoke and the pilot ordered a search of the plane. When nothing was discovered, he ordered the search repeated. At that time, a fire in the navigator's compartment was discovered. An emergency rubber raft had been placed too close to one of the heat registers and had caught fire. An attempt to extinguish the blaze was not successful with the two available fire extinguishers.

The pilot turned toward the nearest air base, Thule AFB, Greenland. The crew was ordered to eject four miles south of the runway. The original copilot was seated in the extra seat which did not have ejection capability. He bailed out through the navigator's compartment which was the area of the fire, but did not survive. He was the only fatality. The other six crew members survived, but with some injuries and problems from the cold. The temperature was -24° F, and a seven knot wind gave that a wind chill factor of -53° F. One crew member was not rescued for 22 hours.

The abandoned aircraft, which had been headed inland, made a 180 degree turn and headed out over the sea ice. It crashed at 4:39 p.m., 7.5 miles west of the Air Base on the sea ice of North Star Bay. The crash site was between the mainland and Saunders Island in Bylot Sound. The sea ice at that point was about six feet thick, and the water was nearly 800 feet deep. To further complicate matters, there was a foot of snow on the ice and it was the time of perpetual darkness. The sun was not to rise in that area until the 14th of February, so there were only four hours of twilight each day.

According to witnesses and a reconstruction of the crash scenario, the plane struck the sea ice intact in a steep left bank and disintegrated from impact, explosion and fire. The Air Base reported the accident to the Pentagon and dispatched search teams in helicopters and in dog sleds with native drivers and a Danish Civil Servant interpreter. Two of the crew walked into hangers at the base, three others were found and rescued by searchers, and the body of a sixth recovered. The seventh crew member was rescued the next day. Few pieces of debris over three feet in length were found at the crash site,

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

with most the size of a package of cigarettes. Aircraft engines were sighted, but no evidence was found of the four nuclear weapons. After an extensive search, components from all four weapons were found, enough to determine that the high explosive of three of the units had detonated.

Deleted

DOE  
b(3)

**DoD/DOE ACCIDENT RESPONSE:** The Disaster Control Team from Thule AFB was soon reinforced as personnel from the Air Force, Atomic Energy Commission (AEC), Danish agencies and local Greenlanders moved in to assist in the aircraft and weapon recoveries. Over seventy U.S. agencies and 700 personnel were involved in these activities, with 565 people being the maximum involved at any one time. The logistics to support this number of people in these harsh climatic conditions became a major operation. To find components, personnel had to form lines and search the area shoulder-to-shoulder. At first, the lack of light hampered these operations. As weapons components were recognized, they were moved into a hanger and identification of specific weapons became possible.

Contamination on aircraft debris indicated the weapons high explosives had detonated inside the fuselage. Contamination was wide spread over an area of about 1 mile by 3 miles, but the majority of the contamination was confined to an area blackened by burning jet fuel that was about 500 feet wide and 2,300 feet long. After consultation with the Danish authorities, the decision was made to remove the surface snow of the blackened area. This was done by grading it into wind rows, hauling it back to a tank farm area on the base and loading it into tanks for transport back to the AEC's Savannah River Plant in South Carolina. More than 600 containers of material were shipped back to the U.S., 67 each of which held 25,000 gallons of contaminated water.

The clean up of this accident was difficult because radiation detection equipment and their batteries would not function for long periods of time in the extreme cold. A new detection instrument developed by the Lawrence Livermore Laboratory, the Field Instrument for Detection of Low Energy Radiation (FIDLER) was first used at this accident and it has become the preferred instrument for this type of work. New techniques for the use of existing instrumentation became necessary, again because of the extreme cold. The clean up of the area, to the satisfaction of both the U.S. and the Danish governments, was completed on September 13, 1968, a period of almost eight months.

The cooperation between the U.S. and Denmark was excellent, but there have been political problems in Denmark concerning that government's handling of the accident. The latest, in 1995, involves claims alleging that many of the Danish citizens who responded to the accident have developed radiation exposure related medical problems.

**MEDIA COVERAGE:** Extensive. The story was well reported at the time and is still in the news because of health related radiation exposure claims by Danish citizens.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

### NUCLEAR WEAPON ACCIDENT SUMMARY

**NAME:** #31 - Submarine at Sea (Atlantic)

**DATE:** May 22, 1968

**ACCIDENT TYPE:** Lost at Sea

**WEAPON TYPE:** Two MK34 (Sealed Pit)

**DESCRIPTION:** The USS Scorpion (SSN 589) was proceeding east in the Atlantic Ocean on a voyage from a deployment in the Mediterranean Sea to its home port at Norfolk, Virginia. It was carrying two Mk45 Astor torpedoes armed with Mk34 nuclear weapons, plus conventional torpedoes. The Scorpion was proceeding submerged under a condition of electronic silence and was not heard from after May 21.

A subsequent investigation established that, based on acoustical data that had been recorded at several stations, the Scorpion was sunk on May 22. A detailed search of the reported course finally located debris from the submarine. Photos taken of the wreckage at the bottom of the ocean have established that there was no involvement of the Astor torpedoes in the accident. A radiation survey of the area established that there was no detectable release of radioactive material either from the sub's reactor or the two nuclear weapons on board. No attempt was made to recover the weapons.

The investigating board was not able to make a determination as to the exact cause of the accident.

**DoD/DOE ACCIDENT RESPONSE:** Except for the search for the sunken vessel, none.

**MEDIA COVERAGE:** The loss of the submarine was covered in world-wide media. Details of the submarine's fate, including the number and type of nuclear weapons were declassified after a 1993 Freedom of Information request. The details listed in this report have been published in a number of newspapers.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

### NUCLEAR WEAPON ACCIDENT SUMMARY

**NAME:** #32 - Titan II ICBM Missile, Damascus, Arkansas.

**DATE:** September 19, 1980

**ACCIDENT TYPE:** Missile Accident

**WEAPON TYPE:** W (Sealed Pit)

**DESCRIPTION:** An explosion occurred at Strategic Air Command (SAC) Titan II silo complex 374-7 which was located about four miles north of Damascus, Arkansas. The explosion, which occurred inside the closed missile silo, blew off the 740 ton steel and concrete door, destroyed the missile, and scattered debris throughout the nearby countryside. At the time of the explosion, a nuclear warhead was mounted in the missile reentry vehicle. The reentry vehicle was ejected from the silo and disintegrated. The weapon ended up on its side in a ditch beside the access road to the silo. The weapon was essentially intact, but had some visible damage.

The accident scenario began early on September 18 during pressurization of the missile's second stage following a routine maintenance operation. A maintenance technician dropped a detachable socket head which fell about 65 feet, ricocheted off a concrete mounting and ruptured the aluminum skin of the first stage of the Titan II's fuel tank.

The crew in the control room did not detect the leak for another 24 minutes. By then, the crew in the control room could see that there had been a dramatic loss of pressure in the fuel tank and they ordered the maintenance men out of the silo. As the concentration of the fuel vapors continued to rise, automatic sprinklers came on, washing the side of the missile with about a quarter of a million gallons of water. By 10:00 p.m., with the water supply exhausted and the concentration of fuel vapors continuing to rise, SAC ordered the complex evacuated, cut power to the control room, and advised local authorities to evacuate homes in the immediate area.

An Air Force emergency team arrived at the silo at 2:13 a.m., September 19. The team, dressed in protective suits, went in to vent the silo to the atmosphere. The toxic fumes had become such a thick fog they could not see what they were doing. The team was ordered to evacuate the silo. At 2:50 a.m., as the emergency team was retreating through the door of the silo, the vapors ignited destroying the rocket, blowing off the blast door, and ejecting the nuclear weapon.

The nuclear weapon landed essentially intact and was recovered after a detailed field check was made to determine if it could be safely moved.

**DoD/DOE ACCIDENT RESPONSE:** At 2:34 a.m., the Albuquerque Operations Office (ALO) of the Department of Energy communications center was notified by the Department of

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

Defense Joint Nuclear Accident Coordinating Center (DoD/JNACC) of a potential Broken Arrow involving a Titan II Missile. At 2:50 a.m., DoD/JNACC confirmed an explosion about 40 miles outside of Little Rock, Arkansas and DOE assistance was requested. The DOE/JNACC was activated at 2:57 a.m. and appropriate notifications were begun, the Accident Response Group (ARG) was placed on stand-by, and permission was requested from DOE Headquarters to activate the ARG. At 4:46 a.m., DOE/HQ authorized ALO to send the ARG, with ALO to provide the Senior DOE Representative.

While the ARG personnel were being assembled, transportation alternatives were explored. An Air Force C-130 was diverted to Kirtland Air Force Base and a Ross Aviation DC-9 was directed into Albuquerque. By 7:30 a.m., the seven team members, from ALO, Los Alamos National Laboratories (LANL), and Sandia National Laboratories-Albuquerque (SNL) were assembled at ALO for a departure briefing. The ARG elected to depart Albuquerque on the C-130 due to its earlier availability and take-off was at 8:55 a.m. From fragmentary reports available at that time, the team understood that a Titan II missile, equipped with a nuclear weapon, had exploded in its silo. The weapon had basically survived the explosion, and no radioactive contamination had been detected. The ARG arrived at Little Rock Air Force Base at 12:36 p.m..

The ARG was briefed by the Commander of the 308th Strike Missile Wing. He confirmed that the weapon had been found about 500 feet to the west of the silo next to the access road to the site, and was basically intact with no radioactive contamination detected. The ARG was then flown by helicopter to the accident scene, arriving there at about 2:15 p.m. After a short discussion with the OSC and his staff, the ARG was taken to the location of the warhead.

The weapon was lying in a shallow ditch in a horizontal position. There was visible damage, both at the front and rear of the weapon, and a DoD Explosive Ordnance Disposal (EOD) team had already partially evacuated soil under the case and passed chains underneath for lifting. The initial ARG assessment was that structural damage was severe enough to suspect cracking or crushing of the high explosive (HE), but no heat damage to the HE was expected because of the short heat pulse. No radioactive contamination was expected and none was found.

The ARG concluded that movement of the weapon should not be attempted until the status of the internal components and the HE could be determined by field radiography. Also, Pantex packaging experts should be requested to assist in the evaluation of handling and packaging requirements for ultimate disposition. The conclusions and proposed actions were discussed with the OSC. The required personnel and equipment were requested, and all arrived at Little Rock Air Force Base on the Ross Aviation DC-9 that day.

The radiography of the weapon took all of the next day and the review of the films went on into the night. No major damage to the weapon could be detected, so it was decided to separate it into two sections for return to the DOE. The DoD/EOD, in conjunction with the members of the DOE/ARG, practiced the partial disassembly. After a rest period for the EOD, the weapon was disassembled, packed into two aircraft engine shipping pods and moved to

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

Little Rock Air Force Base. The next day it was flown in an Air Force C-141 to Amarillo, Texas. There it was turned over to representatives of the DOE and moved to the Pantex Plant.

Several important changes in both the DOE and the DoD's handling of nuclear weapon accidents came from this accident response. The DoD came under much criticism from state and local officials and from the general public in the area for not announcing the presence of the warhead. This policy was changed to give the local DoD Commanding Officer the authority to make such an announcement. The DoD was also surprised to see such a large ARG Team (13) arrive.

The ARG has increased its capabilities in several areas, including packaging and shipping, weapon extraction from the debris, and protection of the responding personnel, the general public and the environment. The DOE rosters have now grown to hundreds, and it is expected that if ever another accident does occur, the ARG will respond in force.

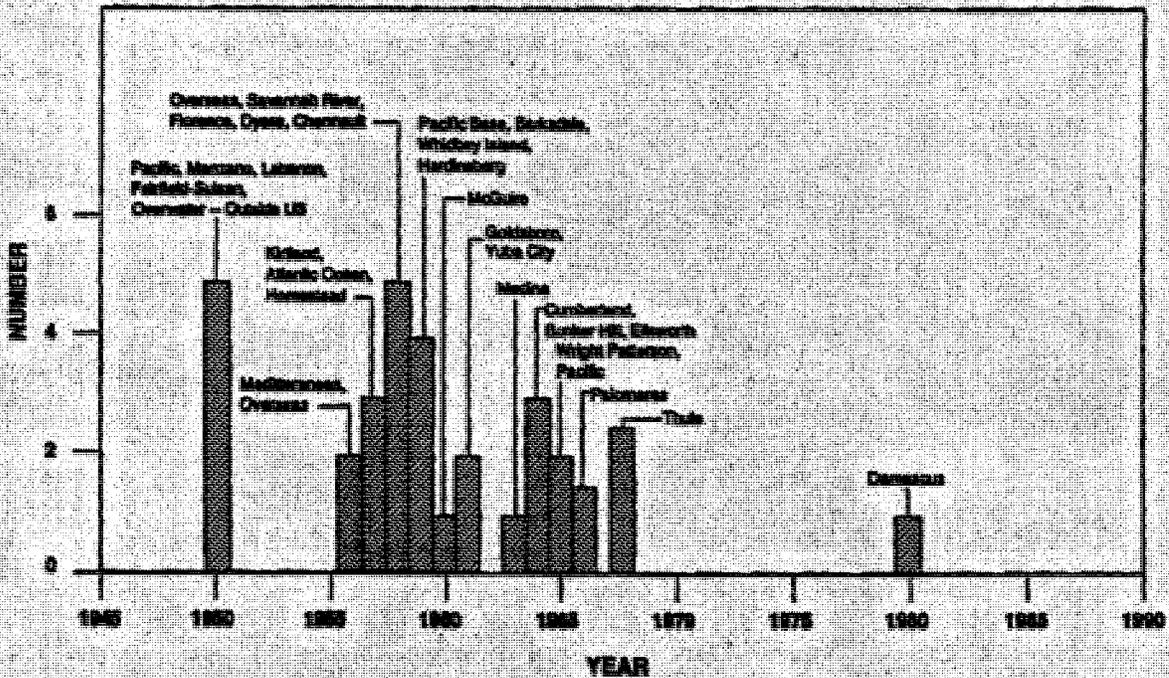
**MEDIA COVERAGE:** Extensive. News crews were on scene within hours and used cherry pickers to film action at the site. Because of problems in answering news inquiries, Air Force information policy was changed after a review to be more responsive to the news media.

###

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

### Nuclear Weapon Accidents



(S) (C) (U) (F) (M) (D) (R) (S) (E) (A)  
(T) (E) (R) (E) (L) (A) (N) (C) (I) (P) (L) (A) (T) (I) (O) (N) (S)

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

DEPARTMENT OF DEFENSE

NARRATIVE SUMMARIES OF ACCIDENTS  
INVOLVING U.S. NUCLEAR WEAPONS  
1950-1980

Attached are unclassified summaries describing the circumstances surrounding 32 accidents involving nuclear weapons. Also attached is the Department of Defense (DOD)/Department of Energy (DOE) definition of "accident" used in researching this project.

Twenty-six of these summaries were first released by the Air Force in 1977; another was prepared following the Titan II explosion in Arkansas in September 1980. Those previously-released summaries are marked with a figure "1"; in some cases they include new material made available as a result of more recent research.\*

There never has been even a partial inadvertent U.S. nuclear detonation despite the very severe stresses imposed upon the weapons involved in these accidents. All "detonations" reported in the summaries involved conventional high explosives (HE) only. Only two accidents, those at Palomares and Thule, resulted in a widespread dispersal of nuclear materials.

Nuclear weapons are never carried on training flights. Most of the aircraft accidents represented here occurred during logistic/ferry missions or airborne alert flights by Strategic Air Command (SAC) aircraft. Airborne alert was terminated in 1968 because of:

- Accidents, particularly those at Palomares and Thule.
- The rising cost of maintaining a portion of the SAC bomber force constantly on airborne alert, and,
- The advent of a responsive and survivable intercontinental ballistic missile force which relieved the manned bomber force of a part of its more time-sensitive responsibilities. (A portion of the SAC force remains on nuclear ground alert.)

Since the location of a nuclear weapon is classified defense information, it is Department of Defense policy normally neither to confirm nor deny the presence of nuclear weapons at any specific place. In the case of an accident involving nuclear weapons, their presence may or may not be divulged at the time depending upon the possibility of public hazard or alarm. Therefore, in some of the events summarized here, the fact of the presence of nuclear weapons or materials may not have been confirmed at the time. Furthermore, due to diplomatic considerations, it is not possible to specify the location of the accidents that occurred overseas, except for Palomares and Thule.

Most of the weapon systems involved in these accidents are no longer in the active inventory. Those include the B-29, B-36, B-47, B-50, B-58, C-124, F-100 and P-5M aircraft, and the Minuteman I missile.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

With some early models of nuclear weapons, it was standard procedure during most operations to keep a capsule of nuclear material separate from the weapon for safety purposes. While a weapon with the capsule removed did contain a quantity of natural (not enriched) uranium with an extremely low level of radioactivity, accidental detonation of the HE element would not cause a nuclear detonation or contamination. More modern designs incorporate improved redundant safety features to insure that a nuclear explosion does not occur as the result of an accident.

This list of accidents was compiled by DOD/DOE researchers during December 1980-January 1981. The researchers reviewed all available records of the military services and DOE, applying current definitions to determine if an event warranted categorization as an accident.

For example, one event not covered by these narratives was included in a "Chronology of Nuclear Accident Statements," released by DOD in 1968:

"March 18, 1963, Titan (I) Missile Burned in Silo near Moses Lake, Washington."

The researchers found, however, that only a small retrorocket on the missile had accidentally fired. The missile and its warhead were not damaged. That event does not warrant inclusion in a list of accidents involving nuclear weapons.

Another event from the 1968 list, involving a U.S. Navy Terrier missile (January 20, 1966; NAS Mayport, Florida) was not considered to be an accident, but has been categorized as a significant incident. In that incident, a nuclear warhead separated from the missile, and fell about eight feet. The warhead was dented; no other damage occurred.

The other events in this list that were also cited in the 1968 "Chronology....." are identified with a figure "2".\*\*

The events outlined in the attached narratives involved operational weapons, nuclear materials, aircraft and/or missiles under control of the U. S. Air Force, U.S. Navy, or a DOE predecessor agency, the Atomic Energy Commission. The U.S. Army has never experienced an event serious enough to warrant inclusion in a list of accidents involving nuclear weapons. The U.S. Marine Corps does not have custody of nuclear weapons in peacetime and has experienced no accidents or significant incidents involving them.

To the best of our knowledge, this list is complete. Reporting requirements varied among the Services, particularly in the earlier period covered by these narratives, so it is possible but not likely that an earlier accident has gone unreported here. All later events, however, have been evaluated and are included if they fall within the established definition of an accident.

Current as of April, 1981

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

DEFINITION OF AN ACCIDENT

An "accident involving nuclear weapons" is defined as

-An unexpected event involving nuclear weapons or nuclear weapons components that results in any of the following:

-Accidental or unauthorized launching, firing, or use, by U.S. forces or supported allied forces, of a nuclear-capable weapon system which could create the risk of an outbreak of war.

-Nuclear detonation.

-Non-nuclear detonation or burning of a nuclear weapon or radioactive weapon component, including a fully assembled nuclear weapon, an unassembled nuclear weapon, or a radioactive nuclear weapon component.

-Radioactive contamination.

-Seizure, theft, or loss of a nuclear weapon or radioactive nuclear weapon component, including jettisoning.

-Public hazard, actual or implied.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~

### **Origin of the 32 Nuclear Weapons Accident Report**

There have been a number of reports and accounts of accidents involving nuclear weapons over the years. These reports were generated by the armed services, the national laboratories and the AEC, ERDA and DOE. Each report was for a different purpose and there was little consistency in the terminology, criteria or amount of information in each report. Most of the reports were classified.

When the Damascus accident occurred in September 1980, the media asked how many accidents there had been, and no one had a consistent answer. Later in the year when preparation for NUWAX 81 was started, plans were made for a media day at the exercise. David Foster, then chief of the emergency response branch at DOE/AL, realized that the media would want a record of the nuclear weapons accidents including where and when they had occurred, and a short description of each accident. He discussed the matter with Jack Burke, the DOE on-scene commander for NUWAX 81 and he agreed that a list would be valuable, not only to the media, but to the whole nuclear weapons establishment. At least we would all have the same data base.

Foster formed a committee made up of himself, and staff from the Defense Nuclear Agency Field Command, Interservice Nuclear Weapons School and the Air Force Safety Center. Each organization had its own records. The criteria for a serious nuclear weapon accident or "Broken Arrow" was defined in a Joint Chiefs of Staff paper, JCS Pub 6, and was used in the review of all accidents and incidents that they could locate.

This effort took several months of work. According to Foster, there was considerable discussion about several incidents that might have been included but were not, primarily because it was not felt that they met the criteria as listed in Pub 6. An incident involving minor damage to a weapon is known as a "Bent Spear." No bent spears were listed in the final report.

The final report listed 32 accidents, the first in 1950, the last in 1980. Many of the accidents had been reported by the media, others had not. The classified report was sent to the Pentagon and DOE Headquarters for review and approval. The final unclassified report was jointly prepared by the DOE and DOD and issued to the media at the NUWAX 81 exercise. Several of the accident descriptions have been rewritten over the years to reflect additional information that became available.

The current list is all the information that can be given on each accident, according to current classification guidance.

~~CONFIDENTIAL~~  
~~RESTRICTED DATA~~