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FINAL TEST REPORTS FORMAT AND STYLE GUIDE

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Approved for Public Release

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14. ABSTRACT

This format and style guide provides a survey of requirements on DTRA to publish final reports on test and experiment activities. It identifies the background mandates and requirements of the Scientific and Technical Information Program (STIP), Information Security Program (ISP) and Information Security Oversight Office (ISOO). It provides a table of document elements required by the ANSI/NISO Z39.18-2005 standard and tailors them to the DTRA RD-CXT final test report format. Finally, it provides guidelines and recommendations on using a test objective matrix for tracking the planning, execution, data collection and final reporting on tests and experiments. The purpose of this matrix is to enable complete and accurate reporting so that results are reported in context with the approaches used to implement the objectives required.

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Technical Reports, Content Formats, Test and Experiments, Test Designs, Test Requirements

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PREFACE

This guide describes basic format and style requirements for Final Test Reports (FTRs) published by the Defense Threat Reduction Agency (DTRA) Research and Development Counter-WMD Test Support Division (RD-CXT). It also describes the nature and general requirements of other core publications; including Technical Notes (TNs) and Technical Documents (TDs). It provides an unclassified example document template of a SECRET FTR showing all format and style elements common to these reports along with appropriate security classification markings. This document is both a format and style guide for FTRs, and a guide on classification marking. More detailed information on classification marking is provided in the Information Security Oversight Office (ISOO) Directive 1 Marking Guide and in DOD 5200.1-PH, available on the internet. ISOO waiver has been granted for not portion marking wholly unclassified sections of large documents, as illustrated in Appendix C.

A separate section, “REPORTING ON COMPLEX TESTS AND EXPERIMENTS”, is provided based on lessons learned in 30 years of documenting test and experiment activities at Army, Navy, NASA, and DOD research and test facilities. This section explains the use of the basic reporting paradigm (objective:methods:results), required by the ANSI/NISO standard for technical reports, when tests or experiments are involved. Here, a test objective matrix is recommended to develop the test design, define the test requirements, and provide data results that clearly and directly answer the test objectives. In addition, some derivative design issues in test planning matrix formats are shown and briefly described. These are generally associated with acquisition management issues.

Appreciation is expressed to Dr. Phil Randles of the Test Technology branch; Kiran Shah and Kash Winningham of the Instrumentation branch; Steve Pappas and Maj. Fred R. Miller, USAF of the Fielding branch DTRA CXT, for comments and contributions to this guide. Also, to Dianne Luna, TTD-Policy Division; Linda Hodgson, Chief, Surety, Security and Intelligence Division at the U.S. Army Test and Evaluation Command; and Thelda Thielman, Security Manager, U.S. Army Evaluation Command for sharing their insights in the preparation of this guide. Appreciation is also extended to Joyce Andrews and Lynn McDaniel (code 21513) of the Space and Naval Warfare Systems Center, San Diego, for providing review and editorial comment, as well as format design suggestions.

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FIGURE LIST

FIGURE LIST (CONT)

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INTRODUCTION

ABOUT THIS GUIDE

This guide contains both general policies and guidance for the production of core technical publications of the DTRA Research and Development Counter-WMD Test Support Division (RD-CXT). Core technical publications are those that describe the tests and experiments performed, are based on final analyses and results, and are formal publications capable of both electronic and printed reproduction. Core technical publications include test execution plans (TEPs) as they are finalized and combined into final test reports (FTRs). Since contractors are major participants in DTRA test and experiment activities and contribute interim documentation as well as final analysis reports and the FTRs, this guide is primarily addressed to those contractors.

This guide tailors the ANSI/NISO standard (Reference 1) for scientific and technical reports to provide a more robust and flexible format able to organize test and experiment designs that apply multiple objectives, events, and participants.

THE SCIENTIFIC AND TECHNICAL INFORMATION PROGRAM

The Department of Defense (DOD) Directive 3200.12 of February 11, 1998 (Reference 2) mandates and DOD Instruction 3200.14 (Reference 3) establishes the Scientific and Technical Information (STI) Program with the following obligations to Federal Agencies and DOD components:

- Instruction 3200.14, Paragraph E4.4. IMPLEMENTATION OF POLICY, PRINCIPLES, AND CONCEPTS:
  - ✓ E4.4.1. DOD R&E and studies efforts performed by or sponsored in whole or in part by DOD activities shall be documented sufficiently to permit others to comprehend the purpose, scope, approach, results or outcomes, and conclusions or recommendations from the conduct of such activities.
  - ✓ E4.4.2. Wide and timely dissemination of all documented efforts promote a greater awareness of the technology base and serves in part to promote the awareness of the expertise and capabilities of performing personnel and the organizations.
  - ✓ E4.4.3. Such efforts may be documented in any media or form including paper or electronic copy, and shall include text, graphics, and audio, but shall be prepared in a logical form and in sufficient detail to promote maximum

understanding of the efforts by those intended to receive primary distribution of the documented efforts.

- ✓ E4.4.4. Documented efforts regardless of media or form shall be prepared, to the maximum extent practical, in accordance with ANSI Standard Z39.18-1995 (reference (t)), which is adopted for DOD use. Also, a SF 298, "Report Documentation Page," is established and shall be prepared for each documented effort.

Implementing DTRA Instruction 3200.14 (Reference 4); Dr. Byron Ristvet is the designated STIP Manager for DTRA RD-CXT and supports Dr. Eric Rinehart, the Chief Scientist, in ensuring publication of quality technical reports.

THE INFORMATION SECURITY PROGRAM

DOD Directive 5200.1 (Reference 5) and DOD Regulation 5200.1-R (Reference 6), define the DOD Information Security Program (ISP). The ISP is applicable to all DOD components, including Defense Agencies.

- ➢ THE ISP REQUIREMENTS
  (DOD Directive 5200.1 and DOD Regulation 5200.1-R, DOD Information Security Program)

  - ✓ Implements Executive Order 12958, “Classified National Security Information”, the ISP applies to all DOD components including Defense Agencies.

  - ✓ Specific guidance provided in references a through i of the Directive.

  - ✓ In summary, national security information shall be classified, declassified, and safeguarded in accordance with national-level policy issuances. Misclassification shall be avoided.

  - ✓ Appropriate information security notices, classification marking, and distribution statements shall be used (References 7, 8).

- ➢ THE INFORMATION SECURITY OVERSIGHT OFFICE (ISOO)

  The ISOO is responsible to the President for policy and oversight of the Government-wide security classification system and the National Industrial Security Program. It receives its authority from Executive Orders 12958

"Classified National Security Information" and 12829 "National Industrial Security Program", as amended.

ISOO is a component of the National Archives and Records Administration (NARA) and receives its policy and program guidance from the National Security Council (NSC).

- ✓ Specific guidance for marking classified documents is provided in the **ISOO Marking Guide, Directive #1, Sept. 2007** (available on-line) (Reference 9).

- ✓ Appendix C of this DTRA format guide provides a marking example of a classified FTR (based on ISOO Marking Guide, Directive #1, Sept. 2007). Appendix C may also be used to create a Microsoft® doc template for a classified (SECRET) FTR.

- ✓ The Appendix C, unclassified example, applies a specific waiver granted [email R.Tringali to J. Anderson, October 31, 2006] to DTRA RD-CXT from ISOO:

  "…for unclassified sections or chapters within a large (100-300 pages) classified document, each page shall be marked unclassified top and bottom. In addition, each **top page marking** shall include in parenthesis (All portions of this Section are unclassified); but no portion marking of paragraphs, figures, tables, or titles will be used in this unclassified section."

  Note: Such unclassified sections of a classified document should be inspected to ensure that "classification by compilation" issues do not occur.

DTRA RD-CXT ACTIVITIES AND PUBLICATIONS

As the Counter-WMD Test Division, CXT is a Research and Development Test and Evaluation (RDT&E) organization providing test design and operations for conducting Chemical, Biological, Radiological, and Nuclear (CBRN) and explosives field tests. Many of these efforts are done within a counter-WMD or counter-terrorism context. Such testing is normally done without a Test and Evaluation Master Plan (TEMP) or other developmental guides associated with more mature acquisition programs. CXT testing is often experimental and may include test objectives fundamental to proof of concept and future CBRN or weapon Concept of Operations (CONOPS). Test objectives are normally designed to reproduce or simulate a threat environment, to validate specific aspects of a weapon type and/or target, or to validate modeling efforts.

The CXT test process is described in more detail in DTRA RD-CXT Operating Instruction 1 (OI-1) (Reference 10).

DEFINITION OF CORE PUBLICATION PRODUCTS

- ✓ **The Final Test Report (FTR)** is the core publication of CXT and, combined with the finalized Test Execution Plan (TEP), is published as a formal document to describe the objectives, methods, and findings of CXT test and experiment activities. While the TEP is an informal and internal CXT document, the planning and methodologies it contains are incorporated into Section 2, "Test Conduct" of the published FTR. See **Tailoring the ANSI Standard Format to CXT Needs** on page 11 of this guide.

- ✓ **Technical Note (TN)**. The TN is published as a formal document (i.e., includes front matter and a Form 298) and is normally used to address specific scientific or technical issues beyond the normal scope of a test or experiment. The TN is a core publication product and may be produced by a contractor or government personnel, or a combination of the two at the discretion of the CXT owner. The TN will normally follow the conventional technical report paradigm (objective or problem; methods or approaches; findings or results including discussion, conclusions, and recommendations). The TN may also be a preliminary effort for a professional journal submission.

- ✓ **Technical Document (TD)**. The TD is normally published as a formal document but has a completely open format. The TD is a core publication product and may be a collection of computer printouts, a collection of photographs, a group of contractor reports, or even a video program (in which case the "front matter" is submitted to DTIC and DTRIAC as a separate hard copy item with the DVD disk enclosed). The TD has a unifying purpose or theme, related to testing, but usually does not follow the ANSI/NISO standard format, and may be produced at the discretion of the CXT owner. **A TD may also be published in place of an FTR when test analysis/results are published, controlled, or withheld by another government agency or a participating contractor. In this case the format will closely follow the FTR and ANSI format, but lack definitive and complete results based on the information withheld.**

- NON-CORE PUBLICATIONS

  - ✓ **Other Publication Products.** In addition to the publications described above, other products include interim data products, Data CDs, PowerPoint presentations, posters, video-clips, and brochures. These products are produced as needed, often with contractor support, and are not fully covered by this format and style guide.

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STYLES AND FORMAT

PAGE STYLES

Use single column format on portrait style pages as the standard page. Use landscaped pages as needed for graphics and wide tables or charts. All styles are represented in the FTR template provided in Appendix C. Set page margins for all pages as follows: 72 pt. left, right, top, and bottom. Any margin may be reduced to provide additional text or image space. Left margins on landscaped pages should allow separation between page numbers and image area.

TEXT STYLES

The following text styles are used in Final Test Reports:

1. HEADING 1 (SECTION HEAD)

Heading 1 is the title used for the acknowledgements, the summary, references, appendix titles, and distribution list title as well as numbered sections. It is 14 pt. bold, Arial font, centered. It appears as the first line on an odd-numbered page with 0 pt. paragraph spacing before and 24 pt paragraph spacing after. This descriptive text is body text: 12 pt. Arial 6 pt. paragraph spacing before and after. Body text is flush left, **block paragraph** style.

1.1 HEADING 2

Heading 2s are the primary side-heads: flush left, numbered, all caps, 12 pt. bold, Arial and stand-alone. It may be followed by body text, an item list, or a numbered heading 3. Paragraph spacing is 12 pt. before and 6 pt. after.

1.3.1 Heading 3

Heading 3s are flush left, initial caps, 12 pt, text only underlined, Arial and stand-alone. Paragraph spacing is 12 pt. before and 6 pt. after.

a. First Subparagraph. Subparagraphs may follow Heading 2 or Heading 3 paragraphs. Subparagraph headings are indented, lower case lettered with the title initial caps underlined, followed by run-in text.

b. Second Subparagraph. As with all numbered headings and lettered subparagraphs, there must be at least two or more. If you have only one paragraph at the heading level 2, 3, or subparagraph level, it must appear as body text below the next highest heading. Note the body text above, following 1.3.1 Heading 3. Its placement implies that it is introductory material to the two subordinate lettered subparagraphs that follow.

Note that subparagraphs may use underlined titles as shown in a and b above, or simply begin with a and b followed by the first sentence of the paragraph. Such lettered

paragraphs should be principle ideas or issues and may also be followed by further discussion in unlettered subsequent paragraphs (body text) as shown here, depending on the demands of topic/subject subordination. However, to maintain clarity of structure and topic focus, the **preferred** style is to use underlined titles with lettered subparagraphs.

If a fifth level paragraph structure is needed, it would be subordinate to lettered subparagraphs as shown above. Use numbered sub-subparagraphs (Heading 5) as shown:

1. First Sub-subparagraph. And this also may or may not have an underlined title.

2. Second Sub-subparagraph. And there must be two or more of this level paragraph. All paragraph text is wrapped flush left to the margin.

Item lists may be lettered or Arabic numbered (preferred) and appear as:

(1) Item one
(2) Item two
(3) Item three and so on (item lists are not normally punctuated)

FIGURE STYLES

Number figures with Arabic numerals in order of appearance. Ensure figures are cited in the text before they appear. Figure titles should be complete and intelligible without reference to the text. Long figure titles should have margin limits determined by the left and right vertical limits of the figure. Figures may be photographs, drawings, graphs, or charts but not tables or matrices.

The following figure styles are used for line art and photographs. Figures 1-2 show use of quarter-page size figures. Position figures as close as possible after its first reference in the text. Figure titles are centered, below the figure.

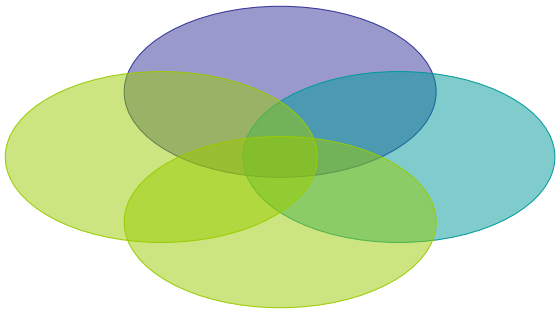
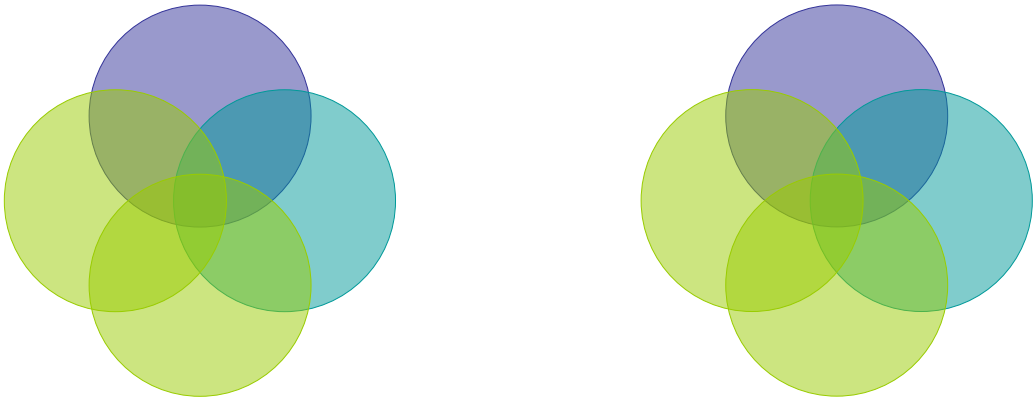


Figure 1. 1st Quarter-page Size Figure



A B

Figure 2. Example of a Compound Figure: (A) shows a left-side image, (B) shows a right-side image

Compound figures may also be used in which two or more images, each with its own subtitle, are presented in the same figure. Ensure that subtitled figures of this type are identified and explained briefly in the main figure title. Subtitled figures are also normally explained in greater detail in the text.

Figures should be of good quality in terms of contrast and definition with a minimum 8 pt. size lettering after final resizing to the page. Use of color is preferred.

TABLE STYLES

Tables present a style problem because so much of the resulting test data is in tabular formats, often composed without a standard format by multiple sources, and produced using a variety of publishing applications. If practical, reformat tables in the body of the FTR to conform to the following preferred style, and leave the bulk table data in appendices to the FTR. In all cases, tables must be clear, sharp and legible. Character size may be below 8 pt for tables in original form.

Table 1. Example Table Using Preferred Table Style; Summary of Styles

STYLE	ELEMENT	FONT (New Times Roman)
PAGE	Standard Portrait Pages, Single Column All Margins 72 pt.	N/A

Table 1. Example Table Using Preferred Table Style; Summary of Styles (Cont)

STYLE	ELEMENT	FONT (New Times Roman)
TEXT	#1 Heading #2 Heading #3 Heading a. Subpara. Hd. 1. Sub-sub. Hd	14 pt All caps bold 12 pt All caps bold 12 pt Init caps 12 pt Init caps ind. 12 pt Init caps ind.
FIGURE	¼ Page ½ Page Full Page Landscaped Page Composite Figure	Figure Titles 12 pt Init caps Interior Text ≥ 8 pt
TABLE	Preferred Style but Multiple Styles Allowed	Table Titles 12 pt Init caps Interior Text 10 pt

Table data should be entered for all table cells. Use ellipses (. . .) instead of dashes to indicate missing values. Use N/A (not applicable) in cells where no data applies. Indicate units of measurement in parentheses on a line below the column heading. Choose units so that entries are near unity in magnitude, so that powers of ten are not needed for most entries. Align columns of related numbers by decimal point. If footnotes are used in a table, use superscript lower-case letters [a], [b], [c], etc., with a new sequence for each table. Order footnote indicators top to bottom and left to right across the first row; then left to right across subsequent rows.

REFERENCES

References appear in an unnumbered section at the end of the body of the report and prior to appendices. Use the number-identification system of consecutive Arabic superscript numbers in text in order of citation with a consecutive numbered list of references. References are prepared according to the accepted practice of the discipline of the primary author/creator of the report (see Appendix A.3 of the ANSI/NISO standard for guides). All references will normally include: name of author(s)/creator(s), title of the referenced work, and publication data including date.

TAILORING THE ANSI STANDARD FORMAT TO CXT NEEDS

As mandated by the DOD STI Program, documented efforts regardless of media or form shall be prepared, to the maximum extent practical, in accordance with ANSI Standard Z39.18-1995 (reissued in 2005), which is adopted for DOD use.

CXT test and experiment activities range in complexity from single test events with a few objectives, to very complex tests with multiple test events and many objectives. For final reports on all tests and experiments the following Table 2 of format elements is recommended. To apply this format to more complex tests with multiple objectives, events, and participants see the next section: Reporting on Complex Tests and Experiments.

Table 2. ANSI versus CXT Final Test Report Format Elements

ANSI ELEMENT	CXT FTR ELEMENT
✓ Optional COVER	✓ **Mandatory COVER** (Back sides of cover and title page provide needed space for security notices and handling instructions.)
✓ **Title Page**	✓ **Title Page**
✓ **Notices**	✓ **Notices** (Incl. Distribution Statement, Export Control statement, and Classification Level with associated data as applicable. Appropriate handling/safeguarding instructions are included.)
✓ Optional Std. Form 298 (Report Documentation Page)	✓ **Mandatory Std. Form 298**
✓ **Abstract** (Stand Alone)	✓ **Abstract** (Incl. within Form 298)
✓ **Table of Contents**	✓ **Contents** (in table format)
✓ **Lists of Tables and Figures**	✓ **Lists of Tables and Figures**

Table 2. ANSI vs. CXT Final Test Report Format Elements (Cont)

ANSI ELEMENT	CXT FTR ELEMENT
✓ Optional Foreword	✓ Optional Foreword (precedes Acknowledgements when used)
✓ Optional Preface	**Preface (Not Used)**
✓ Optional Acknowledgements	✓ **Mandatory Acknowledgements**
✓ **Summary**	✓ **Summary** Will normally include unnumbered side heads: Background, Test Conduct, Results, Conclusions (and Recommendations if available). Should run 8-12 pages and contain key illustrations.
✓ **INTRODUCTION**	✓ **Section 1. INTRODUCTION** 1.1 Background (includes Participating Organizations and Functions (table if complex test) 1.2 Test Objectives (List) 1.3 Other Considerations 1.3.1 Testing Authority 1.3.2 Security, Safety, and Environmental Considerations 1.4 Organization of This Report (Include identification and location of supplemental reports/media)
✓ **METHODS, ASSUMPTIONS, AND PROCEDURES**	✓ **Section 2. TEST CONDUCT** 2.1 Test Concept (Text or detailed Objectives Matrix as appropriate) 2.2 System Description (Incl. Physical Structure, Instrumentation and Camera Plans) 2.3 Predictions 2.4 Operations (Incl. Communications, Countdown, Go-NoGo, and Re-entry Plan) 2.5 Data Requirements (Incl. Data Required/Distribution Table, plus definition of special data reduction and processing performed and by whom)

Table 2. ANSI vs. CXT Final Test Report Format Elements (Cont)

ANSI ELEMENT	CXT FTR ELEMENT
✓ **RESULTS AND DISCUSSION**	✓ **Section 3. RESULTS AND CONCLUSIONS** Number side heads depending on length and complexity of the following subjects. Present **resulting data** in an organized and logical sequence (e.g., chronology of events and for each, types of data collected; or other logical scheme). Present **discussion** of each test objective, supporting approaches, and specific results from each approach. Refer to resulting data already presented to support results specific to each test objective. Present brief **Conclusions** (and Recommendations if available.)
✓ **CONCLUSIONS** ✓ Optional RECOMMENDATIONS	✓ **Section 4. CONCLUSIONS (Optional)** (If Conclusions or Conclusions and Recommendations exceed 5 pages, provide here and **modify Section 3 title to Results**)
✓ **REFERENCES**	✓ **REFERENCES** (This is the last and unnumbered section of the body of the report)
✓ Optional APPENDICES	✓ **Mandatory APPENDICES** **A.** Classification Letter (and OPSEC Plan if required) **B.** Health and Safety Plan (HASP) **C.** Environmental Assessment Certification **D.** First Optional Appendix (Test Specific) (Appendices A-C are preserved from the Test Plan) **X.** Abbreviations and Acronyms **DL.** Distribution List (Not an Appendix, page numbered DL-1, DL-2, etc.)

Table 2. ANSI vs. CXT Final Test Report Format Elements (Cont)

ANSI ELEMENT	CXT FTR ELEMENT
✓ Optional BIBLIOGRAPHY	**BIBLIOGRAPHY (Not Used)** (May be used in Technical Notes if distinct from References)
✓ **List(s) of SYMBOLS, ABBREVIATION, AND ACRONYMS**	**List of SYMBOLS (Not Used)** (Non-standard symbols if used will be footnoted or defined in parentheses when first used) Standard symbols (e.g., V, m, μ) are not defined in a separate list. ABBREVIATIONS and ACRONYMS are provided in the last Appendix. See Appendices above.
✓ Optional GLOSSARY	**GLOSSARY (Not Used)**
✓ Optional INDEX	**INDEX (Not Used)**
✓ Optional DISTRIBUTION LIST	✓ **Mandatory DL** See Appendices above.

NOTE: A more detailed description on the scope and nature of all elements defined in the ANSI and CXT formats just described are provided in the ANSI standard. This format has not changed with the updated 2005 ANSI standard. The CXT Elements described above serve as a typical outline for CXT FTRs.

Table 2 outlines the report format elements recommended by the ANSI standard and found in CXT FTRs. This outline follows the traditional 3-step paradigm of scientific and technical reports:

(1) state the problem or **objective**,

(2) describe the **approach** or methodology, and

(3) provide the findings or **results** (including discussion, conclusions and recommendations if appropriate).

This approach to technical reporting is a familiar starting point for university students writing a research paper as well as experienced researchers documenting an experiment. It remains a sound approach for tests and experiments that have simple or few objectives or problems under study. The challenge for the technical writer on complex tests with multiple objectives, events, and participants is how to make this format work for them! This problem is explored further in the next section.

REPORTING ON COMPLEX TESTS AND EXPERIMENTS

Most tests and experiments performed by CXT are not simple in terms of objectives. Most test activities involve multiple objectives, often more than five, several events, and numerous participating contractors. Without a clear test concept or design, it is very difficult if not impossible to draft and deliver a final report that clearly answers the test objectives with the results. Moreover, without a test plan that addresses the approaches intended for each objective, and the physical, operational and data requirements that implement each approach, the test design is often oversimplified and the results incomplete.

COMMON PROBLEMS IN DOCUMENTING TESTS

For tests and experiments, an adequate test plan must account for each objective, the approaches or methods designed to meet that objective, and the requirements (physical, operational, and data requirement) needed to implement each approach. This design approach recommends use of a test objective matrix or table that defines these elements. Such a matrix of test objectives allows tracking of each objective through the planning phase, execution, and data collection and analysis. Moreover, it provides a plan by which the resulting data is organized and meaningful in terms of the original objectives, and provides the framework and context for a final report that is meaningful to the larger DOD community and to future researchers.

The test objective matrix basically outlines the overall test concept for a complex test and, in fact, requires the rigor of the 3-step paradigm of technical reporting separately, for each test objective. Table 3 illustrates a **working level**, preliminary **test objective matrix** (it contains only the first and last objective in this illustration).

This matrix may be only a text outline of the objectives, approaches, and requirements for simpler tests and a detailed matrix for more complex tests. As a tool to plan, design and document tests at CXT, it has evolved since 2005. It was initially proposed to eliminate or control the following problems common within the DOD-wide community, frequently experienced in the documentation of large and complex tests:

1. A narrow focus on some objectives allows test designers to address “primary” concerns of the project, at the expense of the other objectives required. Thus, some test objectives are under-explored or largely unaddressed.

Table 3. Partial, Preliminary Test Objective Matrix (Working Level)

TEST OBJECTIVE (TEP Paragraph)	APPROACH (TEP Paragraph)	REQUIREMENTS (TEP Paragraph)	PLANNING NOTES
1. Assess weapon capability against both hard and medium targets.	1a. Erect a simulated weather door within the entry of target D to provide the weapon with a guidance system targeting reference.	Target structure— design and construction required. Figures	Technical Planning Working Group (TPWG) Agenda Item 1. Use of laser designator?
		Ops— Construction schedule	Contract/Budget Coordination
		Data— Target/Structure pre-test Inspection and Approval.	Any limits on AOA resulting from target designator or recessed location of door? (TPWG issue ?)
	1b. Provide instrumentation on the target test bed to measure and quantify detonation effects.	Instrumentation— Seismic/Acoustic instrumentation layout figures and shot-sheet. Include any high-speed cameras for detonation effects.	Technical Planning Working Group (TPWG) Agenda Item 2. Seismic/Acoustic Item 3. Optics NO PRESSURE OR THERMAL SENSORS REQUIRED
		Ops— Describe timing, control, data recording operations.	
		Data Required— Perform data analysis. Select applicable data items from Data Requirements /Distribution Table 5 (TBD)	Agenda Item 4. Trigger Screens /Recording System

Table 3. Partial, Preliminary Test Objective Matrix (Working Level) (Cont)

TEST OBJECTIVE (TEP Paragraph)	APPROACH (TEP Paragraph)	REQUIREMENTS (TEP Paragraph)	PLANNING NOTES
5. Establish additional input parameters for IMEA mission and prediction model (demonstrate the effectiveness of planning tool models for weapon attacks on targets).	5. Collect and analyze all data to identify usable factors and parameters in IMEA and other planning tool models.	Data Required— Associated Data Items from Table 5 (TBD)	Contractor to provide. Agenda Item 5.

2. Familiarity of project personnel with the test program often fails to provide the necessary context and detail to allow outside experts, or researchers at a later date, to clearly relate the available data in the test report to the purpose or objectives of the test. While the immediate customer is provided critical data on familiar issues, an outside observer or later researcher is unable to clearly understand the test design, activity involved, or significance of the test.

3. A tendency among test personnel, to believe that the immediate customer or program manager is not interested in and is not funding a report that provides "unnecessary detail" about the conduct or methods used in the test. This results in research products (the reports) of extremely limited utility.

4. On complex test activities, with numerous contractors and government components, a tendency to produce segmented or autonomous final reports without an overall integration and summary report. This often results in incomplete or piecemeal analysis and reporting.

Perhaps the most costly problem is experienced when complex and expensive tests and experiments produce nearly immediate and useable data to the customer, allowing program decisions to go forward, but fails to provide a meaningful end-product of the research: a complete final report that contributes meaningfully to the knowledge base of the organization and to the wider research community where similar test issues may be of critical interest.

MAPPING AND REPORTING ON TEST OBJECTIVES

The basic reporting paradigm required for all objectives by the ANSI/NISO standard (Reference 11) is illustrated in Figure 3.

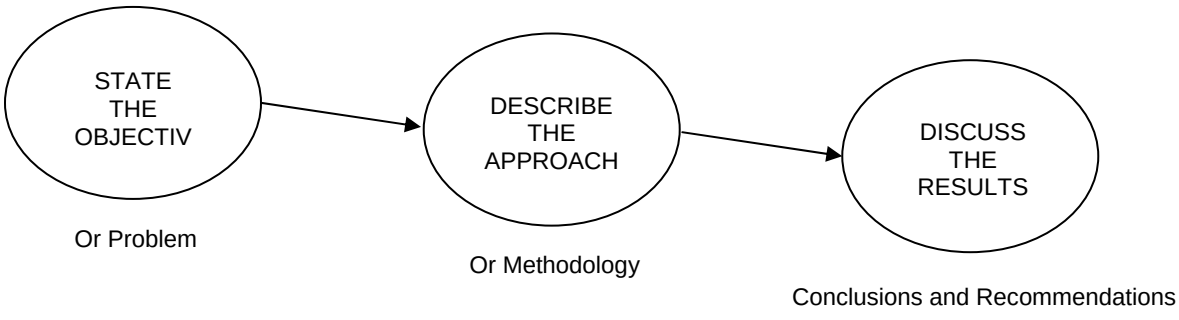


Figure 3. The Basic Reporting Paradigm

In planning a complex test where an adequate final report is required the following preparation in three steps is recommended.

1. **Distinguish test objectives** from program objectives or methodology required by the customer. Test objectives should be measurable or observable during the current test planned. Some objectives may be obtained only after phased testing or by combining the results of iterative tests/experiments. In any case, ensure that each objective that is measurable or observable (quantitatively) will be tested in the current test so that the type of data planned will produce adequate results.

2. **Define approach/methodology** that deconstructs or redefines each objective, separately, into a measurable or observable "event". Frequently, more than one approach is needed or useful to fully address each test objective. See section "Other Planning Tools", below.

3. **Define the requirements** needed to implement each approach. Without a mature research plan providing a test and evaluation master plan (TEMP) or test requirements document, three types of requirements naturally exist. Although all three are not always required for each approach:

a. Physical Requirements; i.e., the test bed structure—building, tunnel, range, test environment; and the observation/measurement instrumentation placed on the test bed to record the test event. This also includes a test item (weapon) to produce the phenomenon under study.

b. Operations Requirements; the human operations or interventions needed to execute the test approach, including adjustments to physical elements already defined, necessary communications for safety and test conduct, etc.

c. Data Requirements; i.e., the specific data collected to implement the approach. This also includes any special data reduction or processing required to obtain final data products (e.g., bio-sampling and analysis methods, pixel analysis of high-speed digital video, etc.)

A typical test objective matrix is normally provided in Section 2, Test Conduct of DTRA Final Test Reports, under the heading "Test Concept". An example of such a completed test objective matrix is shown in Table 4. Table 5 is an example of the data requirements and distribution table, and allows identification of the data requirements of the test objective matrix to be assigned as line items in the data requirements table.

Table 4. Example Complete Test Objective Matrix

OBJECTIVES	APPROACH	REQUIREMENTS
1. Assess weapon capability against both hard and medium targets (develop and demonstrate technologies to hold at risk and defeat military missions protected in tunnels and other deeply buried hardened facilities).	1a. Erect a simulated weather door within the portal of Tunnel D to provide a guidance system targeting reference.	Target structure design and construction required. (Construction Figures)
		Ops— (No target designation performance criteria specified. No weapon guidance requirement specified.)
		Data— Target/Structure Inspection and Approval. (No data item specified)
	1b. Provide instrumentation on the target test bed to measure and quantify detonation effects.	Instrumentation— Seismic/Acoustic instrumentation layout figures and shot-sheet. Include any high-speed cameras for detonation effects. (Instrumentation Plan and Camera Plan)
		Ops— None.
		Data Required— Perform data analysis. Select applicable data items from **Table 5 , Data Distribution Requirements Table.**
2. Demonstrate weapon terminal guidance performance and provide measurement of impact accuracy.	2a. Employ a variety of video cameras to record and measure weapon terminal flight profile to target impact.	Instrumentation— Optics plan for high-speed terminal guidance record.
		Ops— Terminal Flight Predictions if provided. Reference video recording system ops if cited earlier.
		Data Required— Video data items for target impact record. **Table 5, Items 1-7, 9.**
	2b. Perform post-impact and detonation survey of target to verify point of impact.	Instrumentation— Reference pre/post-impact still photos.
		Ops— Reentry Plan and Doc Photo Plan may be cited if defined. Perform data analysis.
		Data Required— Data items from Data Requirements **Table 5, Items 11, 12, and 15**

Table 4. Example Complete Test Objective Matrix (Cont)

OBJECTIVES	APPROACH	REQUIREMENTS
3. Demonstrate fuse and warhead function.	3a. Perform post-impact and detonation survey of target to document weapon debris.	Ops— Re-entry Plan, Phase II Initial Doc. Photo, Phase III Data Recovery and Structural Survey. Perform data analysis.
		Data Required— Associated Data Items from **Table 5, Data Item 15** Impact Analysis Report
	3b. Perform post-impact and detonation recovery of weapon debris and assess functionality.	Ops— Re-entry Plan, Phase I, Weapon Recovery Team. (Contractor to collect material and perform assessment.)
		Data Required— Associated Data Items from **Table 5, Data Item 16** Weapon/Fuze Functionality Analysis Report
	3c. Determine high-order warhead detonation.	Data Required— Associated Data Items from **Table 5, Data Item 18** Seismic Acoustic Report
4. Determine target degradation caused by weapon effects	4. Perform target damage assessment and structural degradation.	Ops— Re-entry Plan Phase III, Data Recovery/Structural Survey. (Contractor perform analysis and write report)
		Data Required— Associated Data Items from **Table 5, Data Item 17** Target Damage Assessment Report
5. Establish additional input parameters for IMEA mission and prediction model (demonstrate the effectiveness of planning tool models for weapon attacks on tunnels).	5. Collect and analyze all data to identify usable factors and parameters in IMEA and other planning tool models.	Data Required— Complete Final Report **Table 5, Data Items 15-19**

Table 5. Typical Data Requirements and Distribution Table

ITEM No.	Data Item	Format	Security Class	Data Producer	Delivery to CXT	Distribution			
						CXT	ARA	Customer	Total
	Weapon Performance								
1	B&W S-VHS Videos (4)	S-VHS	SCG	WSMR	0 days	1	1	0	2
	Documentation Video								
2	Safety (1)	S-VHS	SCG	WSMR	0 days	2	1	0	3
3	Suicide camera - door (1)	SVHS	SCG	WSMR	0 days	1	1	0	2
4	Suicide camera - brow (5d) (1)	SVHS	SCG	WSMR	0 days	1	1	0	2
5	Documentation Video (2)	HS	SCG	WSMR	0 days	1	0	1	2
	Composite Video								
6	Safety Video (1) - AVI/MPEG CD	AVI/MPEG	SCG	Honeywell	1 day	1	1	1	3
7	Composite Video	VHS	SCG	(TBD)	7 days	2	1	1	4
	Instrumentation								
8	Seismic Acoustic	ASCII	SCG	CXT	1 day	2	0	0	2
9	IRAD Video / EDTM		SCG	422	2	0	0	1	1
	Meteorological								
10	Remote Station Met Data - SAM sites	MS Office	SCG	WSMR	1 day	1	1	0	2
	Pre-shot Documentation								
11	Pre-shot Images	Digital-CD	SCG	NEWTEC	0 days	1	1	1	3
	Post-shot Documentation								
12	Post-shot Images	Digital-CD	SCG	NEWTEC	0 days	1	1	1	3
	Post-shot Data								
13	Recorded Data	Digital - CD	SCG	Honeywell	0 days	2	1	0	3
	Reduced Data Products								
14	Hot Wash Report	PowerPoint	SCG	ARA	7 days	1	1	1	3
15	Impact Analysis Report	MS Word	SCG	ARA	10 days	1	1	1	3
16	Weapons/Fuze Functionality Analysis Report	MS Word	SCG	ARA	15 days	1	1	1	3
17	Taget Damage Assessment Report	MS Word	SCG	ARA	75 days	1	1	0	2
18	Seismic Acoustic Report	MS Word	SCG	CXTTP	10 days	1	1	0	2
19	Final Report	Digital - CD	SCG	CXT	210 days	1	1	1	3
	NOTES:								
	(1) Unclas Only								

OTHER TEST PLANNING TOOLS

While the test objective matrix was originally developed as a tool to improve the quality and completeness of final test reports, it has not been consistently applied. Initially, its purpose was not fully understood. It was often adapted as a planning tool, with little regard for its original purpose in shaping final documentation, resulting in numerous modifications to its format.

Examples of other planning tools that can be derived from (or even preceded) the basic test objective matrix are shown in Tables 6 through 9, below. Table 6 shows how test assets are balanced to provide full coverage of objectives, but concentrated on primary objectives. It also shows how methods are further defined in terms of measurement criteria. Table 7 shows how risks in meeting test objectives can be identified, and a mitigating strategy assigned. Such planning occurs prior to the test execution and allows refinement in final test design. Table 8 extends risk mitigation of the same objectives in Table 7 to instrumentation planning. Table 9 is a simple test objective matrix developed for a chem/bio dissemination test and used in the final test plan. However, Table 9 does not provide a requirements column, leaving the final report writer to gather the data results according to the approaches used and as provided by the multiple contractors involved. In this case, the final report effort becomes more time-consuming and costly.

The examples shown in Tables 6-9 show a variety of planning approaches and considerations found useful in test design. These can often improve test approaches to reduce risk, cost, and improve safety. These examples, as stated earlier, are for highly experimental tests whose programs usually do not have TEMPs or test requirements documents (TRDs). Of course, there is a synergy between good test design and good documentation, and they should complement each other.

It is the responsibility of the test team to ensure that the final test plan undergoes a “post-test review” so that the basic test objective matrix reflects the as-built, as-tested configuration. Until these ideas are accepted by all members of the test activity, those drafting final reports must often “back-engineer” the test design (developing an accurate test objective matrix) in order to produce a good final report. While matrices are useful and frequently used in the early planning to refine the test design, maintaining the features described here in the test objective matrix (Table 4) are essential to start a logical test design and to adequately meet the end-product documentation.

Table 6. Test Methodology Matrix (Chem/Bio Dissemination Test 1)

	Test Objectives	Method	Measure
MAJOR	Demonstrate the mixing of taggant and biological simulant from a modified BLU-116 detonation	Single Exit Point Near Field aerial bio samplers - LTS-1 Tower array - 3 balloons at 300 ft	ARA taggant analysis DPG Bio-assays Calculate taggant to simulant ratio
	Show that the taggant and biological simulant co-transport in a detonation plume	Far field aerial bio samplers - 5 balloons at 2000 ft - 7 balloons at 3000 ft - Helicopter samplers	5 min threshold ARA taggant analysis DPG Bio-assays Calculate taggant to simulant ratio - Compare to exit point ratios
	Track the taggant-bio plume from a specified distance for a specified amount of time	BaLIDAR WD LIDAR (referee) IR Cameras (plume formation)	5 km threshold Compare BaLIDAR track with WDL track
MINOR	Perform ground-based bio-sampling in discrete arrays radially from the test structure	- LVS samplers at 300ft - HVS samplers 2k/3k ft	ARA taggant analysis DPG Bio-assays Calculate taggant to simulant ratio - Compare LVS to HVS ratios
	Measure the BLU-116 warhead detonation and tunnel exit velocity	VODS/TOADS	Gauge data reduced, compiled, & summarized
	Characterize the pressure and temperature environment in the test structure caused by the detonation of a BLU-116 warhead	P/Q/T gages	Gauge data reduced, compiled, & summarized

Table 7. Objective Risk Mitigation (multiple explosive weapon test)

	Objective	Concern	Risk	Strategy
1	Confirm each weapon detonation	Closely spaced detonations may be obscured by prior detonation. Final determination may require post-test inspection. A test of this nature has never been done.		Impact timing - High speed photo In-slab detonation - geophone/accelerometers In-room detonation - pressure, video Below room detonation - geophone, in-room diagnostics Correlate active, video data with post-test observations
2	Determine impact conditions for each weapon	None. Objectives statement accepts increased uncertainty of projection from observation above plume to target.		Project from last visible point above debris cloud. Correlate video data for all weapons. Correlate high-speed video with post-test observations
3	Determine detonation location (especially depth) for each weapon	With what precision is depth required (initially, finally)? Weapon damage to slabs makes subsequent in-slab detonation more difficult to diagnose. Low Moderate High		Initially attempt to determine approximate location: In which slab, in-room or in soil Attempt to identify in-slab detonations with in-slab motion sensors. Analyze pressure, video and radar data to determine if in-room detonation Analyze geophone data for in-soil detonations Refine location assessment with comparison of post-test damage documentation with active data
4	Characterize target response to each weapon	Adequate instrumentation to distinguish, quantify response modes. Survival of instrumentation for for multiple detonations and long duration environments including heating effects.		Reasonable array of gages principally addressing the response of the walls between rooms 3 & 4 and 2 & 3 as well as floor and ceiling slabs. Gages ranged based on data from prior similar events. Post-test documentation of breach, inelastic deformation and fragment damage. Analysis of response using post-test environment data.
5	Determine cumulative cratering effects	None. Construction support will have to be funded.		Cumulative (end-state) effects will be documented by photo and survey post-test.
6	Characterize airblast effects in all four rooms	Adequate survivable instrumentation locations in Room 4		Measure airblast using combination of high and low range gages to account for detonation location uncertainty. Complement standard gages with quasi-static gages to provide redundant measurement approach. Use post-test calculations to confirm reasonableness of measured room environments.

Table 7. Objective Risk Mitigation (multiple explosive weapon test) (Cont)

Minor Objectives				
1	Determine arrival order of weapons	None		Provide clearly identifiable marking to identify weapon sequence in impact photography. Use WSMR optical tracking from release to impact.
2	Determine cratering effects of each weapon *as feasible*	Substantial uncertainty in determining specific weapon damage due to obscuring effects of subsequent detonations. Difficulty in determining individual cratering effects below floor.		Simple cratering estimates based on physical observation post-test and analysis of active data (including high speed photography above target and into room)
3	Characterize fragmentation damage effects	None.		Document fragment impacts and wall damage posttest.
4	Provide data points for analysis of weapon CEP	Accuracy of estimated/inferred impact locations.		Estimate CEP for horizontal plane above debris from video data and project to surface. Incorporate physical crater data at burster slab.

Table 8. Instrumentation Risk Mitigation (multiple explosive weapon test)

OBJECTIVE	RISK	CONCERN	STRATEGY
Determine impact conditions for first weapon.	Low		OPTICS OBJECTIVE
Determine individual and cumulative weapon cratering effects	High	Do not expect to be able to distinguish individual cratering effects with high confidence, accuracy.	POST-TEST SURVEY OBJECTIVE Use detonation location (geophone data) to estimate cratering effect from each weapon. Perform careful post-test excavation, documentation. Possible geophones below floor. Color code weapons, cameras, and internal gages.
Characterize air blast effects within structure	Medium	Duration of multiple weapon events, number of potential weapons detonating, locations of detonations. Available working gage locations. Cable routing through structure.	FOCUS ON FIRST WEAPON TO APPEAR Multiple gages in several locations in all bays, with additional gages in adjacent bays 3 and 4. Redundant instrumentation in all bays.
Characterize fragmentation damage in all bays	Low	Assume only cumulative damage required. Ensure safety of structure for reentry. Cost of debris removal	NOT AN INSTRUMENTATION OBJECTIVE Use lessons learned, proven methods for planning and documentation.
Characterize structural response to each weapon	Medium	Duration of multiple weapon events, identification of individual weapon effects. Survivability of active instruments Cost of debris removal	FOCUS ON FIRST WEAPON TO APPEAR Motion measurements in walls, roof, floor as well as in burster slab. Document post-test deformation and damage. Redundant measurements in all bays.
Positive confirmation of detonation of each weapon	High	Duration of multiple weapon events, identification of individual weapon effects. Survivability of active instruments	FOCUS ON FIRST WEAPON Use exterior EM gages Geophone gages located in direct relationship with weapon travel, including geophones below structure floor. Internal structure pressure/accelerometer gages.

Table 9. Test Methodology Matrix (Chem/Bio Dissemination Test 2)

TEST OBJECTIVE	APPROACHES
Develop the capability to establish an independent estimate of the true plume properties in x, y, z, and t.	An air cannon system will be used to produce a known amount of virus/toxin (V/T) simulant into the atmosphere as a plume.
	Collectors will be used for cloud samples on the ground, and balloons [wind vane samplers (WVS)] to gather and measure sample doses.
	Plume video will be used to observe the visible cloud and to measure time-of-arrival (TOA) and time-of-departure (TOD) at sample locations, cloud passage duration and cloud volumes.
	A Laser Imaging Detection and Ranging (LIDAR) system will be used to define the invisible cloud dimensions and location versus time. Using a precise bacteriophage (MS2) material to produce a cloud will also allow the LIDAR to provide cloud densities.
	A West Desert LIDAR will be used to define the dimensions and location of the cloud.
	A DustTrak® aerosol monitor will be used to determine cloud density as well as measure cloud arrival and departure times.

CONCLUSIONS

This guide has surveyed the relationship between experimental test design and its final documentation in the form of a final test report. Since responsibility for these activities are distributed among a wide group of Government and contractor personnel, where both organizational and contract provisions apply, this guide is largely suggestive and recommended.

The current FTR standard document template as provided in this guide (Appendix C) is the final test report format required by CXT. Unclassified FTRs would, of course, not have the classification markings. This template is subject to periodic revisions and improvements.

Questions, comments and suggestions on any issues covered in this guide are welcomed by DTRA RD-CXT and the Chief Scientist, please contact the CXTC Senior Technical Editor:

Email: mailto:jefferey.anderson@abq.dtra.mil

REFERENCES

1. ANSI/NISO Z39.18-2005, Scientific and Technical Reports– Elements, Organization, and Design, March 21, 1995; Revised July 27, 2005.

2. DOD Directive 3200.12, DOD Scientific and Technical Information (STI) Program (STIP), February 11, 1998.

3. DOD Instruction 3200.14, Principles and Operational Parameters of the DOD Scientific and Technical Information Program (STIP), May 13, 1997.

4. DTRA Instruction 3200.14 (Draft) Defense Threat Reduction Agency Scientific and Technical Information (STI) Documentation and Dissemination, undated.

5. DOD Directive 5200.1, DOD Information Security Program, December 13, 1996.

6. DOD 5200.1-R, DOD Information Security Program Regulation, January 17, 1997.

7. DOD Directive 5230.25, Withholding of Unclassified Technical Data from Public Disclosure, November 6, 1984.

8. DOD Directive 5230.24, Distribution Statements on Technical Documents, March 18, 1987.

9. “Marking”, Information Security Oversight Office (ISOO) Directive No. 1, October 2007.

10. DTRA/CXT Operating Instruction (OI)-1, Test Event Planning Process, May 25, 2004.

APPENDIX A. ACRONYMS

ANSI– American National Standards Institute

CBRN– Chemical, Biological, Radiological, and Nuclear

CONOPS– Concept of Operations

CXT– Counter WMD Technology Directorate, Test Support Division (DTRA Albuquerque)

CXTC– Test Support Division, Chief Scientist

DOD– Department of Defense

DTIC– Defense Technical Information Center

DTRA– Defense Threat Reduction Agency

DTRIAC– Defense Threat Reduction Information Analysis Center

FTR– Final Test Report

ISOO– Information Security Oversight Office

ISP– Information Security Program (DOD Regulation 5200.1-R)

MS– Microsoft®

NARA– National Archives and Records Administration

NASA– National Aeronautics and Space Administration

NISO– National Information Standards Organization

NSC– National Security Council

OI– Operating Instruction

R&E– Research and Engineering

RD-CXT– Research and Development Enterprise, Counter WMD Technologies Directorate, Test Support Division

RDT&E– Research and Development Test and Evaluation

STIP– Scientific and Technical Information Program (DOD Directive 3200.12)

TD– Technical Document

TEMP– Test and Evaluation Master Plan

TEP– Test Execution Plan

TN– Technical Note

TRD– Test Requirement Document

TTD– Test Technology Division (U.S. Army Test and Evaluation Command)

WMD– Weapons of Mass Destruction

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APPENDIX B. FINAL TEST REPORTS CHECKLISTS

PRODUCTS	DOCUMENT CONTROL NO.	PUBLICATION DATE	DISTRIBUTION STATEMENT	RD-CXT ADDRESS	CLASSIFICATION MARKING (IF CLASSIFIED)	OTHER REQUIREMENT
FINAL TEST REPORT (FTR)	●	●	●	●	●	FORM 1 REVIEW/APPROVAL SOP-05-005
TECHNICAL NOTE (TN)	●	●	●	●	●	FORM 1 REVIEW/APPROVAL SOP-05-005
BROCHURES		●	●	●	NOT CLASSIFIED	FORM 1 REVIEW/APPROVAL
PROGRAM SHEETS		●	●	●	●	FORM 1 REVIEW/APPROVAL
AUDIO/VIDEO		●	●		●	RD-CXT LOGO
VIEWGRAPHS		●	●		●	RD-CXT LOGO
DATA CDs	SOP-05-008					
QUICK-LOOK DATA REPORTS (QLDRs)		●	●	●	●	RD-CXT LOGO
TECHNICAL DOCUMENTS (TDs)	●	●	●	●	●	FORM 1 REVIEW/APPROVAL
CONFERENCE PAPERS		●	●	●	●	FORM 1 REVIEW/APPROVAL
JOURNAL ARTICLES		●	PUBLIC RELEASE (NOT LABELED)	●	NOT CLASSIFIED	FORM 1 REVIEW/APPROVAL
ADMINISTRATIVE PUBLICATIONS	●	●			NOT CLASSIFIED	FORM 1 REVIEW/APPROVAL
WORKING PAPERS		OPTIONAL			●	

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APPENDIX C.

FINAL TEST REPORT
STANDARD TEMPLATE
AND
CLASSIFIED
MARKING EXAMPLE
(TEMPLATE UPDATE 8/12/09)

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Defense Threat Reduction Agency

RESEARCH AND DEVELOPMENT COUNTER WMD TECHNOLOGIES
TEST SUPPORT DIVISION
1680 Texas Street, SE
Kirtland AFB, NM 87117

DTRA FTR-00-000

FINAL TEST REPORT
(TASK CODE AND SERIES TO BE FILLED IN LATER)

(PRINCIPAL AUTHOR(S) TO BE FILLED IN LATER)
Contractor or Government Organization

Technical Monitors
(TEST GROUP DIRECTOR and TEST SCIENTIST)
DTRA RD-Test Support Division

(MONTH & YEAR PUBLISHED)

DRV FM: Multiple Sources
Dated: 24 September 2004
DECL ON: 31 July 2029

DTRA FTR-00-000

Derived from Multiple Sources:
Source 1: Security Classification Guide
DTRA Hard Target Defeat Project
Dated: 24 September 2004
Declassify on: 31 July 2029

Source 2: Security Classification Guide
F-18 Weapons System
Dated: 15 October 1996
Declassify on: 15 October 2016

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RESEARCH AND DEVELOPMENT COUNTER WMD TECHNOLOGIES
TEST SUPPORT DIVISION

DTRA FTR-00-000

FINAL TEST REPORT
(TASK CODE AND SERIES TO BE FILLED IN LATER)

(PRINCIPAL AUTHOR(S) TO BE FILLED IN LATER)
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Technical Monitors
(TEST GROUP DIRECTOR and TEST SCIENTIST)
DTRA RD-Test Support Division

(MONTH & YEAR PUBLISHED)

DRV FM: Multiple Sources
Dated: 24 September 2004
DECL ON: 31 July 2029

Prepared for
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1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From – To)*
30-01-2008	Final Test Report	-

4. TITLE AND SUBTITLE	**5a. CONTRACT NUMBER**
Final Test Report, (Task Code and Series to be filled in later) (Test Number(s) to be filled in later)	**5b. GRANT NUMBER**
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	**5d. PROJECT NUMBER**
(Principal Author to be filled in later)	**5e. TASK NUMBER**
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	**8. PERFORMING ORGANIZATION REPORT NUMBER**
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)	**10. SPONSOR/MONITOR'S ACRONYM(S)**
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESP. PERSON:**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER**
Secret	Unclassified	Unclassified			

Standard Form 298 (Rev. 8-98),
Prescribed by ANSI Std. 239.18

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(U) ACKNOWLEDGEMENTS

(U) Acknowledgements of significant technical assistance that contributed to the planning or conduct of the test, or to the content of this report are made here.

(U) In rare cases, a Preface may also be used in the Final Test Report, following the Acknowledgements. When used, the Preface specifies the audience for whom a report is intended. It may also highlight the relationship of this report to a special project or program. The Preface, when used, will follow the Acknowledgements and precede the Executive Summary.

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(ALL PORTIONS OF THIS SUMMARY ARE UNCLASSIFIED)

EXECUTIVE SUMMARY

The Executive Summary is not an abstract. It may run a maximum of 2 pages in length. It does not include photographs, tables or illustrations. The Executive Summary covers key points described in detail in the main text. Introductory material includes program purpose, specific test objectives and limitations.

TEST CONDUCT

This paragraph is a condensed summary of the test concept, including weapon and delivery, test bed, types of instrumentation used.

RESULTS AND CONCLUSIONS

Results addressing each test objective should be summarized. Conclusions and recommendations (if applicable) should be condensed. If results and conclusions are extensive a bulleted style may be used to condense the information.

NOTE

SUMMARIES OF CLASSIFIED REPORTS NORMALLY CONTAIN CLASSIFIED INFORMATION, REQUIRING THESE PAGES TO BE MARKED ACCORDINGLY.

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CONTENTS

CONTENTS (Cont)

FIGURE LIST

TABLE LIST

SECTION 1. (U) INTRODUCTION

1.1 (U) BACKGROUND

(U) Include a brief description of the program and mission and the funding authority by which TDT testing support is given. Don't repeat the overview and relationship to other programs if a Preface is used, but provide the background of the immediate test series and related tests that may support it. Cite applicable references and list them in the References section provided. Provide a table of Principal Organizations, Personnel, and Functions as shown in Table 1, listing key personnel and contact numbers.

1.2 (U) TEST OBJECTIVES

(S) The objective(s) of the test is a statement of the overall purpose of the testing and should be a restatement of the objective(s) from the test plan, updated as necessary. Test objectives can range from very precise and structured to broadly defined and generalized. This sentence represents [secret information], requiring this paragraph to be portion marked (S). Thus all other elements in this section are portion marked even though they are unclassified.

1.3 (U) OTHER CONSIDERATIONS

1.3.1 (U) Testing Authority

(U) DJ 3-7 is sponsored by the DTRA WMD Counterforce Combat Assessment Program Office (DTRA/TDSD), Ft. Belvoir, VA.

1.3.2 (U) Security, Safety, and Environmental Considerations

(U) This test series is unclassified. It is a Research and Development (R&D) effort on debris and bio clouds. This information will feed into the BCAS ATD. All results should be treated as critical technology (DTRA 30 August 2005) with export controls (Arms Export Control Act, Title 22 U.S.C., Sec. 2751, et. Seq.). DTRA WMD Counterforce Combat Assessment Capability Security Classification Guide, January 3, 2005 applies. The Security Classification Letter and Operations Security (OPSEC) plan are provided in Appendix A, the Safety and Hazard Analysis are provided in Appendix B, the Environmental Assessment certification letter is provided in Appendix C.

1.4 (U) ORGANIZATION OF THIS REPORT

(U) Section 2, Test Conduct summarizes the test plan as executed. Section 3, Results describes the test findings associated with the test objectives. Section 4, Conclusions and (optional) Recommendations are brief summaries based on results discussed in the previous section. An optional Section 5, Subtests, may be used for very extensive and complex tests to provide the detailed findings of each test event when the test conditions, test bed configurations, or objectives are modified and produce results unique from other events. Section 3 would then provide comparative data tables and charts that combine subtest results.

Table 1. (U) Principal Organizations, Personnel, and Functions

ORGANIZATION	PERSONNEL	FUNCTION
DTRA	Maj John Smith	BCAS ATD Program Manager (PM)
DTRA DJ 3-7 Test Team	Program Coordinator (PC) Mr. John Smith	Coordinate DJ 3-7 Tests
	Test Fielding Coordinator (TFC) Mr. John Smith	Supervise Test Conduct
	Test Scientist (TS) Mr. John Smith	Define Test Requirements
	Technical Coordinator (TC) Ms. Joan Smith	Coordinate Data Collection and Processing
	Safety Officer (SO) LCDR Lucy Smith-Jones	Manage Test Safety
	Environmental Engineer (EN) Mr. John Smith	Manage Environmental Requirements
	Construction Engineer (CE) LTC John Smith	Manage Site Preparation and Construction
	Instrumentation Engineer (IE) Mr. John Smith	Manage Site Instrumentation
	Photo Tech (PT) Mr. John Smith	Manage Photo Data
DTRA Collateral Effects Branch (HPAC)*	Dr. John Smith (NGIT)	(HPAC) Plume Modeling
DPG Special Projects	Test Officer (TO) Mr. John Smith	Coordinate DPG Range Support, Test Bed Support, and Air Cannons.
DPG Weather/Air Resource Laboratory	Mr. John Smith	Manage Meteorological Forecasting and Data
Los Alamos National Laboratory (LANL)	Mr. John Smith	XM-94 LIDAR
DPG West Desert Test Technology Div-Adv. Tech.	Dr. John Smith Mr. John Smith	WindTracer® IR Doppler LIDAR
AMTI (Contractor)	Mr. John Smith	AMTI-DTRA Liaison
Apogee (Contractor)	Dr. John Smith	Balloon Samplers
ARA (Contractor)	Mr. John Smith	Test Bed Instrumentation Setup & Teardown
Honeywell (Contractor)	Mr. John Smith	Test Bed Instrumentation
Northrop Grumman (Contractor)	Dr. John Smith Mr. John Smith	Test Analysts and Test Bed Support
Measurement Science Enterprise (Contractor)	Dr. John Smith	Laser Attenuation (LATS)
UNCLASSIFIED		

***HPAC – HAZARD PREDICTION AND ASSESSMENT CAPABILITY

SECTION 2. TEST CONDUCT

2.1 TEST CONCEPT

Table 2 describes the test objective matrix. Components of the table are as follows:

a. Test Objectives are defined by the customer to meet mission and program requirements.

b. Approach describes how the test objective will be tested or evaluated. The test approach deconstructs the objective into tasks that are measurable or can be observed or demonstrated. The test organization/activity defines the approach based on test experience, available resources, time and budget, and coordinates customer acceptance of all approaches prior to test execution.

c. Requirements are the physical (weapon, test bed, instrumentation and support equipment), operational (countdown and remote interventions) and data requirements (includes data reduction/processing procedures) needed to implement each approach.

2.2 TEST SYSTEM DESCRIPTION

Provide an overview paragraph encompassing the scope of the test environment, measurement, control and communication subsystems, and weapon/threat system being tested.

2.2.1 Structural Requirements (as applicable)

2.2.2 Test Bed/Instrumentation (as-tested)

Include all fixed and mobile sensors/detectors and locations, control and data recording subsystems (e.g., trigger screens, IRIG, etc.), and any digital or video data links used.

2.2.3 Instrumentation Plan

Include standard location graphic and specification table (SHOTSHEET) for the variety of sensors (if available). If a large and uncommon variety of sensors and detectors are used, provide separate hardware specification sheets (if available) including photo/illustration in an optional appendix.

2.2.4 Camera Plan

Include standard location graphic and specification table for video cameras.

EDITOR'S NOTE:

IN SECTIONS OR APPENDICES CONTAINING NO CLASSIFIED DATA,
PAGE MARKS BUT NO PORTION MARKS ARE USED AS SHOWN.

Table 2. Test Objective Matrix

OBJECTIVES	APPROACH	REQUIREMENTS
1. Assess weapon capability against both hard and medium targets (develop and demonstrate technologies to hold at risk and defeat military missions protected in tunnels and other deeply buried hardened facilities). (Cont)	1a. Erect a simulated weather door within the portal of Tunnel D to provide a guidance system targeting reference.	Physical— Target structure design and construction required. Figures ...
		Ops—Construction schedule
		Data— Target/Structure Inspection and Approval. (None Specified)
	1b. Provide instrumentation on the target test bed to measure and quantify detonation effects.	Physical— Seismic/Acoustic instrumentation layout figures and shot-sheet. Include any high-speed cameras for detonation effects.
		Ops— Describe timing, control, data recording operations.
		Data— Perform data analysis. Select applicable data items from Data Requirements/Distribution Table 3
2. Demonstrate weapon terminal guidance performance and provide measurement of impact accuracy	2a. Employ a variety of video cameras to record and measure weapon terminal flight profile to target impact.	Physical— Optics plan for high-speed terminal guidance record.
		Ops— Terminal Flight Predictions if provided. Reference video recording system ops if cited earlier.
		Data— Video data items for target impact record. Table 3

Table 2. Test Objective Matrix (Cont)

OBJECTIVES	APPROACH	REQUIREMENTS
2. Demonstrate weapon terminal guidance performance and provide measurement of impact accuracy (Cont)	2b. Perform post-impact and detonation survey of target to verify point of impact.	Physical— Reference pre/post-impact still photos.
		Ops— Reentry Plan and Doc Photo Plan may be cited if defined. Perform data analysis.
		Data— Data items from Data Requirements Table 3
3. Demonstrate fuse and warhead function.	3a. Perform post-impact and detonation survey of target to document weapon debris.	Ops— Re-entry Plan, Phase II Initial Doc. Photo, Phase III Data Recovery and Structural Survey. Perform data analysis.
		Data— Associated Data Items from Data Requirements and Distribution Table 3
	3b. Perform post-impact and detonation recovery of weapon debris and assess functionality.	Ops— Re-entry Plan, Phase I, Weapon Recovery Team.
		Data— Associated Data Items from Table 3
4. Determine target degradation caused by weapon effects	4. Perform target damage assessment and structural degradation	Ops— Re-entry Plan Phase III, Data Recovery/Structural Survey.
		Data— Associated Data Items from Table 3

Table 2. Test Objective Matrix (Cont)

OBJECTIVE	APPROACH	REQUIREMENTS
5. Establish additional input parameters for weapon effects, mission and prediction model (demonstrate the effectiveness of planning tool models for weapon attacks on tunnels).	5. Collect and analyze all data to identify usable factors and parameters in modeling and other planning tools.	Data — Associated Data Items from Table 3

NOTE: MATRIX option of Table 2 may be substituted with a text outline, at the option of the TS/PC (document "owner"). A text outline of test concept information (objectives, approaches, requirements) may be more suitable for simple test activities.

2.2.5 Control and Monitoring System

Include standard functional block diagram specific to this test and test bed.

2.3 PREDICTIONS

Include any predictions if available and briefly describe how they determined type, use, or calibration of instrumentation and other factors in test design.

2.4 OPERATIONS

Provide an overview paragraph describing the conduct of the test event(s). Include dates and times weather conditions, and chronology of the test. Include any critical roles of test participants during test conduct.

2.4.1 Test Participants

Include the standard contact list table. (This is always used and is different from Table 1, used only for large and complex tests.)

2.4.2 Weapon Preparation and Launch (if live delivery)

Identify weapon delivery details including: aircraft/launch system and delivery requirements.

2.4.3 Countdown (as-executed)

Include standard Countdown with integrated system checks. Include delay/hold criteria.

2.4.4 Re-entry Plan

Include re-entry plan outline with reference to safety plan (provided in Appendix B).

2.5 DATA REQUIREMENTS

Provide an overview paragraph describing the variety of raw data obtained from this test, the data reduction/processes, and analysis procedures required (and/or the organizations or individuals who performed these tasks). If rigorous data or sampling procedures were used, extensive procedures can be provided in an optional appendix. Otherwise, briefly describe normal recording and processing of sensor and video data under paragraph 2.3.2 below.

2.5.1 Data Required

Include standard Data Requirements/Distribution table.

2.5.2 Data Analysis Methods

Briefly describe in a separate paragraph, for each type of data collected, the methods used to process or convert the raw data into the final data provided in this report. Specify methods and limitations used in representative sampling, statistical analysis, and simulations or modeling. Provide detailed descriptions of analysis methods under each subtest. Provide a summary description of these methods here.

(ALL PORTIONS OF THIS SECTION ARE UNCLASSIFIED)

Table 3. Data Requirements/Distribution (*EXAMPLE*)

ITEM No.	Data Item	Format	Security Class	Data Producer	Delivery to CXT	Distribution			
						CXT	ARA	Customer	Total
	Weapon Performance								
1	B&W S-VHS Videos (4)	S-VHS	SCG	WSMR	0 days	1	1	0	2
	Documentation Video								
2	Safety (1)	S-VHS	SCG	WSMR	0 days	2	1	0	3
3	Suicide camera - door (1)	SVHS	SCG	WSMR	0 days	1	1	0	2
4	Suicide camera - brow (5d) (1)	SVHS	SCG	WSMR	0 days	1	1	0	2
5	Documentation Video (2)	HS	SCG	WSMR	0 days	1	0	1	2
	Composite Video								
6	Safety Video (1) - AVI/MPEG CD	AVI/MPEG	SCG	Honeywell	1 day	1	1	1	3
7	Composite Video	VHS	SCG	TBD	7 days	2	1	1	4
	Instrumentation								
8	Seismic Acoustic	ASCII	SCG	CXT	1 day	2	0	0	2
9	IRAD Video / EDTM		SCG	422	2	0	0	1	1
	Meteorological								
10	Remote Station Met Data - SAM sites	MS Office	SCG	WSMR	1 day	1	1	0	2
	Pre-shot Documentation								
11	Pre-shot Images	Digital-CD	SCG	NEWTEC	0 days	1	1	1	3
	Post-shot Documentation								
12	Post-shot Images	Digital-CD	SCG	NEWTEC	0 days	1	1	1	3
	Post-shot Data								
13	Recorded Data	Digital - CD	SCG	Honeywell	0 days	2	1	0	3
	Reduced Data Products								
14	Hot Wash Report	PowerPoint	SCG	ARA	7 days	1	1	1	3
15	Impact Analysis Report	MS Word	SCG	ARA	10 days	1	1	1	3
16	Weapons/Fuze Functionality Analysis Report	MS Word	SCG	ARA	15 days	1	1	1	3
17	Taget Damage Assessment Report	MS Word	SCG	ARA	75 days	1	1	0	2
18	Seismic Acoustic Report	MS Word	SCG	CXTTP	10 days	1	1	0	2
19	Final Report	Digital - CD	SCG	CXT	210 days	1	1	1	3
	NOTES:								
	(1) Unclas Only								

SECTION 3. (U) RESULTS

(U) The following paragraph structure is dependent on the nature and complexity of the test. Data may be presented in a logical order or combination; chronologically, by event sequence, and by instrumentation/data type. If the test has been designed to organize the data by test objective, then that should also be a logical consideration.

(U) Illustrations (charts and photos) as well as tables may be used to support the findings, but should be selective and represent a larger class of detailed data provided in the subtests (if used) or an Appendix. If very extensive detailed data is provided, a separate data supplement (on a CD or hard copy) may be necessary. Data-based observations described and discussed in these findings may be used to substantiate conclusions.

3.1 (U) DATA AND OBSERVATIONS

(U) The number of test events or data complexity may make it more practical to extend primary side heads for each test event (e.g., 3.1 Event 1, 3.2 Event 2, 3.3 Event 3, etc.). Extend the paragraph structure as needed to cover presentation of the results. However, the Discussion, Conclusions, and Recommendations (if provided) will be presented as primary side heads (3.X) and appear in the table of Contents.

3.2 (U) DISCUSSION

(C) This paragraph/subsection will address each test objective and discuss how the data met or answered each objective. Approaches used for each objective and the data sets required to implement those approaches may be revisited. However, in citing or presenting the data itself, make reference to the data presented earlier in Data and Observations. This sentence represents [confidential information], requiring this paragraph to be portion marked (C).

3.3 (U) CONCLUSIONS

(S) The conclusions interpret the findings or observations from the test without introducing any new facts or material. It includes the author's opinions as to the implications of the data or observations. Conclusions, as a minimum, should state how well the test objectives have been met and identify any inconclusive findings resulting from the test. This sentence represents [secret information], requiring this paragraph to be portion marked (S).

(U) As a minimum, conclusions should state whether each test method or approach in Table **2** met the test objective, did not meet, or partially met the objective and what the significance was.

3.4 (U) RECOMMENDATIONS (OPTIONAL)

(C) This is an optional paragraph unless asked for by the customer. Recommendations might propose other areas of study or alternate test design approaches. Specific recommendations are presented with an informative lead-in sentence followed by a bulleted or numbered list. This sentence represents [confidential information], requiring this paragraph to be portion marked (C). Since the figure below is secret, the page marking is the same as the highest classification on the page.

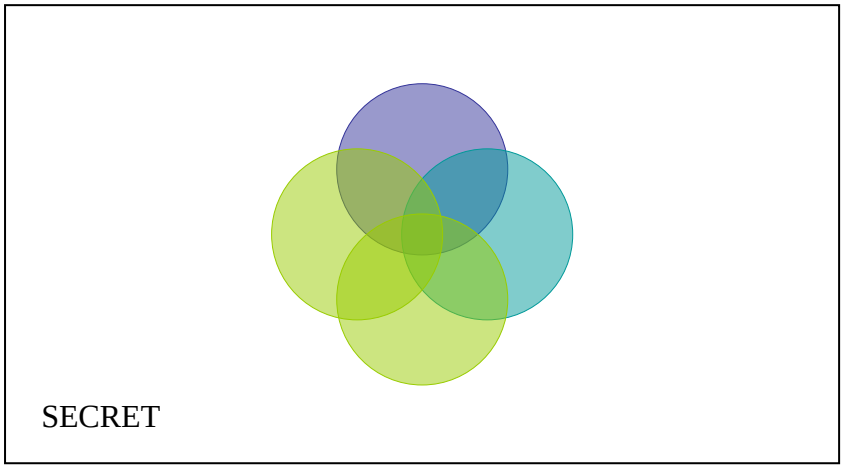

Figure 1. (U) Marking a Classified Figure
(Note: use a border, bounding a classified figure or illustration)

REFERENCES

1. Background Information for the Large Test Structure (Update), Letter Report, ARA-LR-4.03-004, M. A. Plamondon and N. P. Baum; Applied Research Associates, Albuquerque, NM; February 8, 1994.

2. BLU-109/B Penetration Study, Minutes, Penetration Workshop, E. J. Rinehart and J. D. Renick; Test Division, Defense Threat Reduction Agency, Kirtland AFB, NM; March 1999.

3. BOLTS, Quick Look Data Report, M. Carter; Test Operations Directorate, Field Command, Defense Special Weapons Agency, Kirtland AFB, NM; November 1994. (SECRET)

4. Cast BLU-109/B Full Scale Development (FSD) Tests, MSD-TR-90-27, N. S. Gagnon and K. B. Parson; Prepared by the 322246th Test Wing, Munitions Systems Division, Eglin AFB, FL; May 1990. (SECRET)

5. DIPOLE EAST 1 AND 2, Volume 2, Results Report, POR 7449-2, N. Baum, et. al.; Test Operations Directorate, Field Command, Defense Special Weapons Agency, Kirtland AFB, NM; December 1994. (SECRET)

NOTE

In listing references, use a parenthetical tag to identify classified references. Here, (SECRET) is used to identify three classified reports. The remaining references are unclassified and need not be tagged. Other levels of classification for references may also be used; such as, (CONFIDENTIAL), (SECRET RD), etc. Also the special handling tag (FOUO) may be used. No classification tags are used for titles of references because none are normally classified. If, in a rare instance, a reference title itself is classified the entire reference page (top and bottom marks) must have the same classification as the highest classification on the page and all references must be portion marked immediately after the reference number and before the text: (U), (C), (S), etc. In addition the classified title must have a second portion mark following the title.

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APPENDIX A. CLASSIFICATION LETTER AND OPSEC PLAN

INFORMATION SECURITY (InfoSec) LETTER, OPSEC PLAN for MIDWAY SEPIA (UNCLASSIFIED TEST)

1. This plan has been created by the DTRA Test Directorate, Testing Division, by utilizing the OPSEC/RTP Checklist, with the assistance of the DTRA Security and Counterintelligence Detachment – Albuquerque. The primary purpose of this OPSEC plan is to protect Critical Program Information (CPI) that may be involved in the program. It is understood that there may not be any CPI currently identified for this program; however, CPI may be identified at a later date.

2. Test Series Name, Description, Test Location, Test Date, and Objectives: MIDWAY SEPIA will be conducted at the Large Blast Thermal Site, White Sands Missile Range (WSMR), New Mexico. The objective is to test survivability of a newly designed Radome for large aircraft under a pre-determined harsh air blast environment. The test is scheduled for 4 June 2008.

3. DTRA Office of Control: CXT, 1680 Texas Street SE, KAFB, 87117. Customer: USAF (Capt Matt Hirzel); FAB-T Radome Team (Boeing, Radent Technologies, MITRE Corp, and ITT AES.)

4. The test will be conducted on the Radome that is used with the FAB-T antenna system.

5. Security Classification Guides: All results should be treated as Unclassified Critical Technology. Information from this test falls under developing science and technologies.

6. Distribution Statement: Distribution Statement D will be utilized for all unclassified paperwork associated with this test. Distribution Statement D specifies release only to DoD and DoD contractors who have a need to know. This document contains information exempt from mandatory disclosure under the Freedom of Information Act. Exemption 2 applies.

7. In addition, such documents should be marked: "WARNING—This document contains export-controlled technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et. seq.) or the Export Administration Act of 1979, as amended, Title 50, U.S.C., Ap. 2401, et. seq. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DOD Directive 5230.25."

Maj. John Smith, USA
DTRA Test Group Director
LBTS Facility

John Smith
Counterintelligence Office
SCDQ, Kirtland AFB, NM

(ALL PORTIONS OF THIS APPENDIX ARE UNCLASSIFIED)

Information Security (InfoSec) Letter

Security Classification Guidance

(CLASSIFIED TEST)

RD-CXT 31 July 2008

MEMORANDUM FOR MIDWAY TEAL TEST TEAM

SUBJECT: Security Classification Guidance for Midway Teal.

1) REFERENCES.

a. OPNAVINST C5513.02C Enclosure 118

Security Classification Guide for Fuel-Air Explosives, 07-10-04 (4 Oct 2007)

COMNAVEAIRWARCENWPNDIV China Lake

2) PROCEDURES: Based on the classification references listed above, data from these tests will be classified using the criteria outlined in the below table.

Classified Issue	Class	Declass	Ref	Sect.	Para
Performance Data and technical Characteristics:					
1. New Fuel-air explosive compounds, mixtures, or compositions that provide substantial improvement in a property of military interest that affects weapon system performance (extensive of the state-of-the-art), especially regarding target damage capability	**C–TS**	10 yrs	a	6	A
2. New fuel-air explosive compounds, mixtures or compositions that produce a new, undocumented target damage capability	**C–TS**	10 yrs	a	6	B
3. Compounds, Mixtures, and Compositions:					
(a) Chemical name of compounds	**U**				E.1
(b) Code names of compounds (molecular fuels), mixtures (of compounds), or compositions (combinations of ingredients, e.g. compounds, metal powders, and inert fluidizers)	**U**		a	6	E.2
(c) Chemical name of classified compounds with reference to its military use	**C**				E.3
(d) Chemical name with relation to classified properties of military interest	**C**	2014			E.4
(e) Code name with reference to military use	**U**				E.5
(f) Code name with reference to classified properties of military interest	**C**				E.6
(g) Synthesis route for classified properties of military interest	**C**				E.7
(h) Physical appearance	**U**				E.8
(i) Classified properties of military interest (ESOA)	**C**				E.9
4. Fuel-air explosive materials					
(a) Ethylene oxide	**U**		a	6	F.1
(b) MAPP (methylacetylene-propadiene)	**U**				F.2
(c) Normal-propulnitrate	**U**				F.3
(d) Propane	**U**				F.4
(e) Propylene oxide	**U**				F.5

Classified Issue	Class	Declass	Ref	Sect.	Para
5. Explosive Effectiveness parameters (free field properties, e.g., peak pressure, impulse, positive phase duration, thermal pulse,etc.) for the following:		2014			
(a) Ethylene oxide	**U**		a	6	G.1
(b) MAPP (methylacetylene-propadiene)	**U**				G.2
(c) Normal-propulnitrate	**U**				G.3
(d) Propane	**U**				G.4
(e) Propylene oxide	**U**				G.5
Operational and Tactical					
Refer to the weapons launch platform classification guide for additional operational and tactical security guidance	**U—TS**		a	7	
Hardware					
1. Fuel-air explosive materials test hardware and all data pertaining there to are Unclassified			a	8	
(a) CBU-55B, CBU-55A/B, and CBU-72B bomb, cluster, fuel-air explosive	**U**				A
(b) SSU-49B, SSU-49A/B, dispenser, bomb	**U**				A
(c) BLU-73B, BLU-73A/B, bomb, fuel-air explosive	**U**				A
(d) CNU-102E, CNU-19E NAVAIR container	**U**				A
(e) FMU-83B and MK 339 MOD 0 and 1 dispenser fuze	**U**	2014			A
(f) FMU-74B, FMU-95B bomb fuze	**U**				A
2. If the hardware design would reveal a property of military interest that is ESOA, then the hardware and all data pertaining thereto are classified	**C**				
Other information					
1. Fuel-air explosive materials and properties of military interest of any new material if the properties of military interest ESOA in accordance with this guide	**C**	2014	a	10	A
2. Code Name Convention: When properties of military interest of a fuel-air explosive are classified, a code name shall be adopted for the fuel-air explosive material.			a	10	B
(a) The code name will not be mnemonic for the true name (code name)	**U**	2014			
(b) Any connection between the code name and the chemical identity of the fuel-air explosive or its classified properties of military interest if they disclose properties of military interest extensive of the state-of-the-art	**C**				
3. Chemical reactions: Documents disclosing the chemical reactions of a fuel-air explosive or a precursor, including syntheses used in making an unclassified and ordinary physical and chemical properties of the material if they disclose properties of military interest extensive of the state-of-the-art	**C**	2014	a	10	C
4. Material deficiencies (e.g., Inserv reports, Casreps, Etc)		2014	a	10	
(a) Factual deficiency revealing performance or technical characteristic of fuel-air explosives	**C**				D.1

Classified Issue	Class	Declass	Ref	Sect.	Para
(b) Factual deficiency revealing degradation or inability of fuel-air explosives to function as designed	**C (note)**				D.2
(c) Evaluation or assessments of tactual material deficiencies which reveal degrading of fuel-air explosives (note: Declassify on correction of deficiency)	**C (note)**				D.3
5. Intelligence data coming under the classification guidance of this guide shall be classified IAW Source documents.	**U—TS**		a	10	E
6. Exploratory and advanced development data resulting in major increases in the utility and/or effectiveness of FAE weapons	**S**	2014	a	10	F
7. Technology/information that would either disclose or allow the development of countermeasures to weapon systems based on FAE technology	**C**	2014	a	10	G

3) Results regarding this test program not classified by this guidance should be treated as UNCLASSIFIED – Limited Distribution (Critical Technology) and Export Controlled (per reference (a)).

7) Distribution Statement D will be used for Midway Teal Information:

"Distribution authorized to the Department of Defense and U.S. DoD contractors only,Critical Technology, 31 Jul 08. Other requests shall be referred to COMNAVAIRWARCENWPNDIV China Lake, CA"

8) Classification authority is the SCG listed above. Information must be reviewed by NAVAIRWARCENWPNDIV CHINA LAKE prior to declassification or downgrading.

9) POC regarding the above guidance is Mr. Shawn C. Quillen, at (505) 846-5445 or DSN 246-5445. China Lake, CA Security POC is Mr. John Trowbridge, at DSN 437-0987.

John Smith
Program Coordinator
DTRA/RD-CXTTP

John Smith
Test Group Director
DTRA/RD-CXTFS

RECORD OF OPERATIONS SECURITY (OPSEC) PLAN STATEMENT

The proposed MIDWAY TEAL tests involves information that would provide insight into new military technologies that could compromise their effectiveness. Considerations must be taken to reasonably protect "Controlled Unclassified Information" used or produced by the test. Additionally, some of the information used is mandated to be controlled under the Military Critical Technologies List (MCTL) and International Trade Agreement Regulations (ITAR), and must be managed and controlled in a matter to prevent release of component manufacturing or specific use information to foreign interests.

Steps should be taken to identify "Critical Program Information" (CPI) or "Critical Information" (CI). This information would include any information that could allow an adversary to copy; or mitigate weapons system effectiveness or validate information on weapons effects; or effectively gain conclusions of a classified nature. This information should be listed or identified as Critical Information by the program and marked and protected as limited distribution information IAW DoD 5400.7-R, *DOD Freedom of Information Act Program*, DoD 5230.24, *Distribution Statements on Technical Documents*, DoD Directive 5205.2, *DoD Operations Security (OPSEC) Program*, and DoD 5200.1-R, *DoD Information Security Program*. All documents should be marked with "Distribution Statement D" "Distribution authorized to US Department of Defense and US DoD contractors only; Critical Technology, 31 July 2008. Other requests shall be referred to NAVAIR WARCENWPNDIV China Lake, CA." Along with the warning statement "WARNING – The document contains export-controlled technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et. seq.) or the Export Administration Act of 1979, as amended, Title 50 U.S.C., Ap.2401 et. Seq. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25."

Reference the "Security Classification Guidance for Fuel Air Explosives" Memorandum dated 31 Jul 2008 for classification guidance.

CI and countermeasures for MIDWAY TEAL is as follows:

Critical Inforamtion	Countermeasure
Components, mixtures, and compositions that could possibly create an Extensive State-of-the-Art (ESOA) reaction/response	Components, mixtures, and compositions should be listed by codes on a classified chart prior to and during the test to ensure that they do not produce an ESOA reaction/response. Additionally, this listing should not be declassified (in whole or in part) until all components, mixtures, and compositions have been tested and NONE have produced an ESOA reaction/response, in order to prevent an adversary the ability identify components, mixtures, and compositions through deduction.

Basic precautions need to be made to protect the information above. If one component, mixture, or composition where to create an ESOA result, than that information would be considered Classified IAW the Classification Guidance. In such a case then test results could create a major security incident, a compromise of Classified Information, and jeopardize future weapon development.

John Smith

Security Specialist
SC DET-ABQ

CDR John Smith, USN

Test Group Director

APPENDIX B. HEALTH AND SAFETY PLAN

DTRA/CXT
Test Specific Health and Safety Plan

HUMBLE MAPLE

You can't get 'home,' unless you're safe.

17 August 2006

I certify by signature that I have received and understand the requirements of the DTRA Health and Safety Plan for the HUMBLE MAPLE series tests.

Name	Organization	Date	Signature	Badge No.

HUMBLE MAPLE Site Specific Health and Safety Plan (HASP) 17 August 2006

A. General: This HASP applies to all test participants and observers.

- All test personnel, contractors, and visitors to the test site must contact the Experiment Coordinator (EC) when coming on the test site to ensure they receive a safety briefing and required Personal Protective Equipment (PPE). Visitors or groups must have at least one radio for communication and emergency response.
- Any field changes to the test plan must be coordinated with the test team. Any tasks changed from the original test plan must be coordinated with the Safety Officer (SO), who will conduct a safety risk assessment of the proposed change. Any increase in risk will be addressed, the HASP changed and distributed/briefed to all test participants.
- Supervisors must conduct hazard assessments of their operations and take necessary actions to protect their workers. DTRA/CXTS must be informed of hazards that may affect other test participants.
- All test participants are responsible for safety. Anyone identifying a hazardous condition is responsible to mark the hazard, advise others of the hazard, take corrective action as appropriate, and report the hazard to the responsible agency and DTRA CXTS. (Para B).

B. Key Personnel:

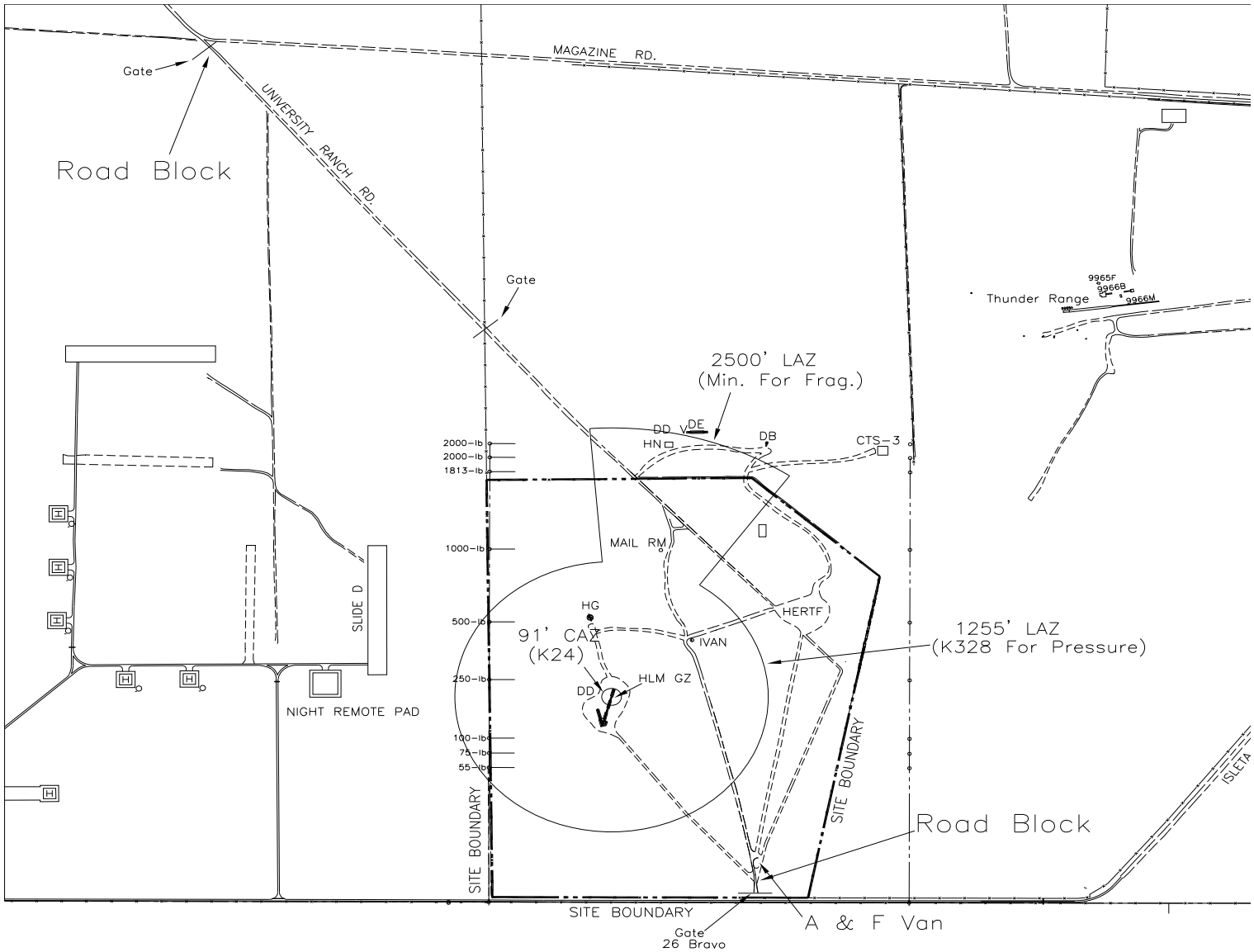
- EC– Dr. John Smith – Overall in charge of operations and in case of emergency
- SO – CWO4 Jones/John Smith – Overview of safety, 2nd in case of emergency
- TC – Major Smith – 3rd in case of emergency

Safety Contacts:

- Construction Engineer – John Smith 846-6606
- ARA- John Smith 846-8600 COR – Jean Smith 846-2701
- HONEYWELL – John Smith (505) 842-9307 COR: John Smith, 853-7382

C. Health and Safety Risk Analysis (HASRA) Attachment 2: This risk assessment is conducted by DTRA/CXTS to identify risks associated with test operations that apply to all test participants and observers. It also identifies actions to reduce the risk. Supervisors will use this HASRA in conjunction with their job/task specific risk assessments to determine risk and remediation actions for their operations.

D. Site Control Measures Site Map



- **Test will be conducted in the Tunnel A structure of the Scaled Tunnel Test Facility at Chestnut Test Site.**
- Road Guards (provided by ARA/DTRA)
- SO/EC account for test site evacuation to T&F
- Attendance Sheets forwarded to EC.
- Safety Exclusion Parameters are based on 20 pounds of PBXN-109 explosives:
    - Control Access Zone (CAZ) during explosive handling: 75 **feet**
    - Limited Access Zone (LAZ) during detonation: **1,530 feet**
- Check-in/out Procedures: Personnel must check in with the EC when arriving and departing test site.
- Post test: Follow reentry plan. No one will enter the structure until approval from Safety Officer (SO).

E. Training/Briefs/Qualification Required

- Formal Training from HASRA (Table 3)
    - DTRA PHETS Safety Video (all test participants).
    - Brief Topics from Safety Brief (all test participants) (see attachment 1)
    - Qualifications
        - Permit Required Confined Space (PRCS) – As required
        - Respiratory Protection Program – As required (Table 1)
        - Equipment Operators
        - Air/Gas/Dust monitoring by CXTS personnel (Table 2)

Table 1. **Personal Protective Equipment** (From HAS Risk Assessment)

Worker	PPE Required	Comments
All	Steel Toed Boots	Material Handling, Rocks, Nails, etc
All	Sun Block	For prolonged periods outside in sun
Cut/abrasion hazard	Leather Gloves	Wear when handling sharp/jagged material (rebar, wood splinters, etc.)
In & around Test Structure	Hard Hat	Wear when on the test bed
Near loud equipment	Hearing Protection	Mandatory for 85 dba or greater
Elevated >6’	Fall Protection	Man-lift, above portals
Re-entry team	SCBA	Phase 1 personnel

Table 2. Air and Employee Monitoring

Type	PEL	Monitor	Location	Air/Pers
Explosive	10% of LEL	Gas Monitor	Tunnel	Air/ CXTS Pers
CO	25 ppm	Gas Monitor	Tunnel	Air/ CXTS Pers
Oxygen	Min 19.5%	Gas Monitor	Tunnel	Air/ CXTS Pers

F. Hazardous Materials/Operations:

- **Explosive build up.**
  - Clear radius of 75' for test personnel not associated with explosive operations utilizing 20 pounds of PBXN-109 explosives.

- **Explosive detonation.**
  - Limited Access Zone is 1530 ft. All non test personnel must be outside this radius during explosive operations and all personnel must be outside this distance for detonation.
  - Safe viewing area will be the T&F trailer at the entrance to Chestnut. Safety
  - Observers will be posted at the road guard positions (see figure 1).
- **UXO**: The test site may contain Unexploded Ordnance. Do not disturb anything you cannot positively identify. Report suspected UXO to Safety Officer and/or TGD.
- There will be detonation products in the test structure after the explosive event. The tunnel will be ventilated for a specific period of time before anyone enters the tunnel. After the tunnel has been ventilated, CXTS Safety Officer will monitor to ensure the atmosphere is safe before allowing others to enter the structure.

G. Confined Space: The HUMBLE MAPLE Test Structure is a confined space. When the structure is posted with an orange sign that reads "Warning, Confined Space" there are no known immediate hazards in the structure. The restriction on entering the test bed is that you must inform your supervisor that you are entering the confined space and evaluate the space for potential hazards upon entry. If you perform operations such a welding, painting, running a generator, or introduce chemicals that may create a hazardous atmosphere, you must install and use ventilation that ensure a breathable atmosphere and removal of contaminants. The atmosphere must be continually monitored while these operations are in progress. If ventilation does not control the atmosphere to >19.5 but < 23.5% oxygen and contaminants at or below the Permissible Exposure Limit the confined space will be reclassified as a Permit Required Confined Space (PRCS) and subject to all PRCS procedures.

- Hazardous materials (paint, fuel, gas cylinders, etc.) must be removed from Confined Spaces at the end of the work day.
- When the structure is posted with a white sign that reads "**Danger, Permit Required Confined Space (PRCS)**" it can only be entered by permit. These spaces contain hazards that may cause serious injury or death. You cannot enter a PRCS without coordinating with DTRA (CXTS) Test Safety.
- Hazardous materials (paint, fuel, gas cylinders, etc.) must be removed from Confined Spaces at the end of the work day.

Confined Space	Permit required	Auth. Personnel	Attendant	Entry Permit
Tunnel pre-test	NO	All	N/A	Not required
Tunnel post test	POSSIBLE	CXTS	CXTS Safety	Possible

H. Sign Plan:

- Signs posted, as necessary for applicable hazards during reentry.
- Hazardous area marked with Caution/Danger tape.

I. Emergency Response Plan

- General (Applies to all Personnel):
  - Announce Emergency on Channel: B-3
  - Phone available at I-Van (3-2367) and T&F trailer (3-1018) if open.
  - For medical emergencies: Call 911, 853-9111 from cell phone.
  - If landline or cell phone is not available use Channel B-9 to call KAFB Fire Control (911 system). Fire Control Net is a secure net and our radios are not secure.

    Radio's programmed for KAFB Fire Control

    - 18 (TGD)
    - 32 & 34 (TC)
    - 40 (CXTS) Safety
    - 55

  - **RADIO PROTOCOL: When you call KAFB Fire Control they can hear you, but you will not be able to hear them unless they switch to the unsecure mode. An emergency call to Fire Control should go like this:**

"Fire Control this is **NAME/ORGN.** Describe emergency & location:_____. We are not secure capable, please "Go to your portable radio and switch to non-secure mode". Over

NOTE: Chestnut Test Site gate is located at 26.2, Bravo .2 on the KAFB Crash Grid Map. It is east of the Auxiliary Field on South Boundary Road.

  - The EC (1st)/SO (2nd)/TC (3rd)/Ranking Person (4th) assumes On-Scene-Commander (OSC) responsibilities. These personnel should have a radio with channel B-9. This channel provides direct contact with KAFB Fire Control.
- Specific (Applies to person assuming OSC):

- The EC, SO, TC, or ranking mil person assume OSC
- Inform all test personnel on B-3 that there is an accident.
- Call for all Medical Caregivers or Evacuate Area as the situation dictates.
- Conduct an initial site safety survey. Proceed if accident scene is safe, if not call for additional help.
- Determine level of response required/provide first aid/transport.
- Request emergency assistance for life threatening situations
  - Cell phone: Dial 853-9111 for on base emergency assistance.
  - Phone line: I-Van or T&F trailer; dial 911.
  - Radio: Call bldg 749 (ARA Admin) on channel B-3 and request relay of information

  NOTE: Chestnut Test Site gate is located at 26.2, Bravo .2 on the KAFB Crash Grid Map. It is east of the Auxiliary Field on South Boundary Road.

  - Secure accident scene and post road guards to control traffic.
  - Assign personnel to rendezvous with emergency response agencies to direct them to the scene.
- DTRA OSC retains authority until relieved by DTRA/CXTS Safety personnel or the KAFB OSC

IN THE EVENT OF A FIRE, DIAL 911. FOR FIRE DEPARTMENT STANDBY SUPPORT, CALL FIRE STATION #3 (MANZANO) AT 846-7948

ATTACHMENT 1

HUMBLE MAPLE Safety Briefing

General

- Driving: Don't park over dry vegetation, drive < 35 mph on dirt roads
- Weather: If lightning is present or lightening warning is issued, stop work and take cover.
- Leave spiders, snakes, etc. alone
- Obey Warning Signs, Caution Tape, and Barriers that mark hazards
- UXO: Do not touch anything you cannot positively identify. Report to Supervisor/Safety/EC
- Wear hearing protection when working around loud equipment (85 dba or greater)
- Steel-toed footwear required on test bed. (Visitors escorted and limited)
- Wear leather gloves when handling sharp or jagged material.
- Wear eye protection when work produces eye hazard
- Have fire extinguisher available for "Hot Work"
- Don't leave unsecured objects aloft, avoid damage areas, wear hard hat
- Slips, trips, falls: Watch footing, loose rocks etc. Open trenches/craters.

Test Specific

- Steel-toed shoes and hard hats required on test bed.
- Do not enter confined spaces or work on top of elevated surfaces without notifying your supervisor or other test personnel.
- Equipment within 75' (K24) of detonation is subject to damage.
- Limited Access Zone is 1530 feet.
- ARA will provide lightning detector during explosive work.

Test Day

- Report to EC or your POC when arriving at Chestnut
- Maintain radio communications. Monitor Channel B-3, do not use within 25' of explosives.
- Explosive Build-up: Clear outside CAZ (75') if authorized for test preps; all others to observation location.
- For test event: All personnel clear to Observation Location/Safe Viewing area (T&F trailer area) and report to EC. Only exceptions are Road Guards and Safety Observers.
- Only enter and exit the test-bed through the control entry point.
- Fire extinguisher will be available in the event of small fires.

Post test/Reentry Plan

- **Phase Ia for SINGLE detonation:**
  - **For test involving single detonation, there is a minimum wait time of 5 minutes prior to conducting Phase I reentry.**
  - Safety Officer and ARA Explosive personnel will conduct initial external damage assessment & monitor outside atmosphere.
  - If outside atmosphere is clear, Safety Officer will request to have fan & generator placed at either tunnel A or B (depending on wind direction).
  - Ventilate tunnel for approximately 20-30 minutes. During this time all vent covers can be removed.
  - Safety Officer will conduct atmospheric monitoring inside tunnel.

- **Phase Ia for MULTIPLE detonations:**
  - **For test involving multiple detonations, there is a minimum wait time of 30 minutes prior to conducting Phase I reentry.**
  - Safety Officer and ARA Explosive personnel will conduct initial external damage assessment & monitor outside atmosphere.

- If outside atmosphere is clear, Safety Officer will request to have the man-hole cover (between tunnel A & B) removed. Safety Officer will then lower monitor inside man-hole to check atmospheric conditions.
- If inside atmosphere is clear, Safety Officer & ARA Explosive personnel will enter tunnel via man-hole to check for any unexploded charges. If unexploded charges are found, ARA Explosive personnel will assess the situation and recover any remaining charges from tunnel structure
- If inside atmosphere is not clear, Safety Officer will request to have fan & generator place at either tunnel A or B (depending on wind direction). Ventilate tunnel for approximately 20-30minutes. Safety Officer will conduct atmospheric monitoring inside tunnel. Once atmosphere inside tunnel is clear, ARA Explosive personnel will assess the situation and recover any remaining charges from tunnel structure.

- **Phase Ib**

- The Principal Engineer will perform a structural safety assessment. Road blocks can be dropped at this time.

- **Phase II**

- Upon completion of structural safety assessment, TC & DOC photo conduct documentation of site.

- **Phase III**

- Test Team Inspection
- Post test damage documentation and clean up

- **NOTE:** Do not enter test site until authorized (per reentry plan). The tunnel test structure is a confined space. The structure may become a permit required confined space if a hazardous atmosphere exist. Any work in the structure that could introduce hazardous materials, fumes, vapors, or could create an oxygen deficient atmosphere must be coordinated with DTRA/CXTS (Safety).

Table 3. Risk Assessment HUMBLE MAPLE

Task	Hazard	Cause	Effect	S	P	RAC	Elimination Substitution	Engineer Controls	Awareness	Training Procedures	PPE	S	P	RAC
Test Bed														
Gen'l Work	Cut	Grab sharp/rough objects	Injury	III	B	Med			Safety Brief		Leather Gloves	IV	C	Low
Driving	Fire	Exhaust system temperature	Injury	III	C	Med	Drive on roads only		Safety Brief			III	E	Low
Equipment Operations	Noise	Generator, Construction Equipment	Loss of hearing	III	A	High	Limit access		Safety Brief		Hearing pro @ sound > 85 dBA	III	D	Low
Gen'l Work	Electric Shock	Lightning	Death	I	D	High	Take Cover in vicinity	Lightning Detector	Safety Brief			I	E	Med
Gen'l Work	Explosion	Touching UXOs	Death	I	C	High			Safety Brief	UXO Training		I	E	Med
Gen'l Work	Slip, trip, falls	Inattention	Injury	III	A	High			Safety Brief		Boots	III	D	Low
Gen'l Work	Temperature	Heat Stress/Cold	Injury	III	B	Med	Institute Work rest cycles	Temp Cont Trailer/Vehicle	Safety Brief		Sun block, Hat Warm Cloths	III	D	Low
Gen'l Work	Wildlife	Snakes/spiders	Injury	II	D	Med			Safety Brief	Emerg. resp. plan	Boots	II	E	Low
Hot Work	Fire	Ignition of material	Injury	II	C	High		Fire Ext.	Safety Brief			II	E	Low
Work in access spaces	Confined space	CO from equipment or introduction of haz. material.	Death	I	C	High		Monitor Air Quality prior to entry & vent.	Safety Brief CS sign	PRCS if PRCS entry req.	As req. for PRCS entry	II	E	Low
Work on top of structure	Fall	Trip/fall from structure	Death	I	C	High		Guardrails installed	Safety Brief	Fall pro. PPE as Req.	Fall Pro. Harness (no guard rail)	II	D	Med
Gen'l Work	Falling objects	Dropped or kicked off structure	Injury	III	B	Med	Limit access	Install toe boards	Safety Brief		Hard hat	III	D	Low
Explosive Operations														
Exp. Work	Explosion	Lightning	Death	I	D	High	Evac. If storm w/in 6 miles	Lightning Detector		Explosive SOP Ammo Cert.		I	E	Med

Exp. Work	Explosion	Static	Death	I	C	High	Equalize static potential	EBW used,		Explosive SOP Ammo Cert.		I	E	Med
Exp. Work	Explosion	RF, EMR	Death	I	C	High	No radio trans. 25'	EBW used,		Explosive SOP Ammo Cert.		I	E	Med
Exp. Work	Explosion	Malfunction/Misfire	Death	I	B	High	Wait Time, Min. Pers.	Road Guards		Explosive SOP Ammo Cert.		I	E	Med
Test Event														
Detonate Explosives	Explosion/ Impact	Detonation/Impact of fragments	Death	I	C	High	LAZ, CAZ, Attendance Sheet	Road Guards	Safety Brief			I	E	Med
Detonate Explosives	Hazard to Aircraft	Impact of Fragments or Pressure	Death	II	D	Med	Hold Channel	Safety Observers	Safety Brief			II	E	Low
Post Test														
Re-entry	Explosion	Explosive residue	Death	I	D	High	Limit access		Safety Brief	Re-entry Plan, test atmosphere		I	E	Med
Re-Entry	Structural Damage	Loose structure, fall hazard, debris hazard.	Death	I	D	High	Limit access	Adhere to signs, barriers, tape, etc.		Required PPE, Fall protection if required		I	E	Med
Re-entry	Jagged metal	Damage to test article	Injury	II	D	Med		Limit Access	Safety Brief.		Gloves,	II	E	Low
Re-entry	Fire	Fireball	Injury	III	C	Med		Fire Ext.	Safety Brief	Fire Ext. Tng		I	E	Med
Re-entry	Explosion	Unexploded ordnance from multiple shots	Death	I	D	High	30 Minute wait time	Road Guards	Safety Brief	Re-entry Plan		I	E	Med
Re-entry	Respiratory	Detonation Products	Illness	II	B	High	Limit access	Ventilation	Brief	Safety Brief	FF Respirator w/P100 filter	III	D	Low

Reference: 29 CFR 1910.132(d) (2). The employer is required to verify a workplace hazard assessment had been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and that identifies the document as a certification of hazard assessment.

Personal Protective Equipment addressed in this survey is the minimum protection required and shall not be considered all-inclusive. This survey identifies this document as the written hazard assessment of the Humble MAPLE test-bed, located at the Tunnel A Structure of the Scaled Tunnel Test Facility (STTF) at Chestnut Site, (KAFB).

Assessment completed by _____ Date _____
John Smith, CWO4 USN

Review completed by _____ Date_____
John Smith, CXTS

Review completed by _____Date _____
Joan Smith, CXTS

Approved by _____ Date _____
Dr. Jack Smith

Certified by _____ Date _____
John J. Smith, CAPT, USN

Original Signed and on file at CXTS.

Attachment 2

Risk Assessment Matrix			PROBABILITY				
			Frequent	Likely (Probable)	Occasional	Seldom (Remote)	Unlikely (Improbable)
			Likely To Occur Frequently	Will Occur Several Times	Likely To Occur Sometime	Unlikely But Possible To Occur	So Unlikely It is Assumed Occurrence May Not Be Experienced
			A	B	C	D	E
SEVERITY	CATASTROPIC Death or System Loss	I	Extremely High	Extremely High	High	High (Serious)	Medium
	CRITICAL Severe Injury or Major System Damage	II	Extremely High	High	High (Serious)	Medium	Low (Medium)
	MODERATE (Marginal) Minor Injury or Minor System Damage	III	High (Serious)	Medium (Serious)	Medium	Low (Medium)	Low (Medium)
	NEGLIGIBLE Less Than Minor Injury or System Damage	IV	Medium	Low (Medium)	Low	Low	Low

Risk Definitions

Extremely High Risk: Loss of ability to accomplish the mission. A frequent or likely probability of catastrophic loss (IA or IB) or frequent probability of critical loss (IIA) exists.

High Risk: Significant degradation of mission. Occasional to seldom probability of catastrophic loss (IC or ID) exists. A likely to occasional probability exists of a critical loss (IIB or IIC) occurring. Frequent probability of marginal losses (IIIA) exists.

Moderate Risk: Expected degraded mission capabilities. An unlikely probability of catastrophic loss (IE) exists. The probability of a critical loss is seldom (IID). Marginal losses occur with a likely or occasional probability (IIIB or IIIC). A frequent probability of negligible (IVA) losses exists.

Low Risk: Expected losses have little or no impact on accomplishing the mission. The probability of critical loss is unlikely (IIE), while that of marginal loss is seldom (IIID) or unlikely (IIIE). The probability of a negligible loss is likely or less (IVB through (IVE).

Reference: Multiservice Risk Management Tactics, Techniques, & Procedures (Army: FM 3-100.12, USMC: MCRP 5-12.1C, Navy: NTTP 5-03.5, USAF: AFTTP(I) 3-2-34), AFPAM 90-902, DA PAM 385-1, & ATEC Regulation 385-1.

Note: Items in parenthesis in the matrix are categories used in MIL-STD 882D. MIL-STD 882D is used for systems safety risk assessments and for operations at the Nevada Test Site. The above matrix is used for joint service operations and will be used for test operations at WSMR, KAFB, and other TDT test locations. ATEC Regulation 385-1 requires this risk matrix for operations on ATEC installations (WSMR) and the matrix is the example used in AFPAM 90-902 & DAPAM 385-1.

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APPENDIX C. ENVIRONMENTAL ASSESSMENT CERTIFICATION

Dec 19 05 10:40a p.2

US ARMY WHITE SANDS MISSILE RANGE
WHITE SANDS MISSILE RANGE, NEW MEXICO 88002-5000

ENVIRONMENT AND SAFETY REVIEW
RECORD OF ENVIRONMENTAL CONSIDERATION
CONTROL NUMBER RC06012a

TITLE: DISCRETE SET TEST

This proposed action has been reviewed in accordance with Part II, Department of Defense, Department of Army, 32 CFR, Part 651, Environmental Analysis of Army Actions, Final Rule, March 29, 2002, and the National Environmental Policy Act (NEPA). This type of proposed action has been assessed in the *Programmatic Environmental Assessment for the Permanent High Explosive Test Site and Bedrock Penetration Test Sites* (2002). This is also supplemented by the additional analysis contained within this Environment and Safety Review. Environmental Impact and Safety Risk Reduction Procedures are incorporated.

CONCUR:

John Smith _____ DATE: 12/15/05

APPROVE:

John Smith _____ DATE: 12/19/05

Environmental Officer, WSM-ES, 678-8615

EXAMPLE

Page 1 of 2

ENVIRONMENTAL IMPACT AND SAFETY RISK REDUCTION PROCEDURES

The Proponent of the proposed action, described in this document (RC06012a), shall adhere to the following:

1. At this time, WSM-ES is not aware of any major biological, cultural, or other environmental, fire or safety issues or concerns. Should any part of the proposed action, such as location or scope of the project change, the Proponent shall contact WSM-ES-C in writing (e-mail is sufficient to kochr@wsmr.army.mil).

2. All participants, including observers, visiting White Sands Missile Range shall receive a Safety/UXO Hazards Briefing. A statement shall be provided for each individual to sign, indicating that she/he has received the briefing, and the Proponent shall maintain the statement for follow-up monitoring.

3. The Proponent and the Proponent's contractor(s) shall comply with OSHA 1910 and 1926. If necessary, contact WSM-ES-S (678-1211), for a copy of these requirements. All personnel shall be briefed on the potential hazards and necessary precautions to be taken and procedures to be followed.

4. All activities shall employ standard dust control methods (e.g., minimizing soil disturbance, reducing vehicle speed, watering, etc.).

5. All government- and contractor-owned vehicle and motorized heavy equipment shall be equipped with portable fire extinguisher (minimum 2.5-lb. dry chemical) and communications in uprange areas.

6. All activities shall be restricted to previously disturbed areas, unless authorized by WSM-ES.

7. Off-road/cross-county driving is prohibited. All vehicles shall stay in existing approved areas. This includes pedestrian activity related to this action.

8. The Proponent shall be responsible for spill prevention and cleanup. All fuel spills shall be promptly contained and reported (site and amount of spill) by dialing 911, if the spill is more than 25 gallons. If the spill is less than 25 gallons, WSM-ES-EC (678-1007) shall be contacted immediately or within the next working day.

9. All project debris shall be removed from the project areas following the action. Cleanup and restoration of the area shall be coordinated with WSM-ES-C and other WSM-ES personnel, as determined necessary.

(ALL PORTIONS OF THIS APPENDIX ARE UNCLASSIFIED)

APPENDIX D. OPTIONAL APPENDICES (U)

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(ALL PORTIONS OF THIS APPENDIX ARE UNCLASSIFIED)

APPENDIX E. ACRONYMS

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