

# REPORT DOCUMENTATION PAGE

*Form Approved*  
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information on Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.  
**PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

<b>1. REPORT DATE</b> (DD-MM-YYYY) 14-09-2009			<b>2. REPORT TYPE</b> Final		<b>3. DATES COVERED</b> (From - To)	
<b>4. TITLE AND SUBTITLE</b> Test Operations Procedure (TOP) 3-2-836 (0) Combat Vehicle Fire Control Systems - Overview Document				<b>5a. CONTRACT NUMBER</b>		
				<b>5b. GRANT NUMBER</b>		
				<b>5c. PROGRAM ELEMENT NUMBER</b>		
<b>6. AUTHORS</b>				<b>5d. PROJECT NUMBER</b>		
				<b>5e. TASK NUMBER</b>		
				<b>5f. WORK UNIT NUMBER</b>		
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> US Army Aberdeen Test Center (TEDT-AT-AD) 400 Collieran Road Aberdeen Proving Ground, MD 21005-5059				<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b> TOP 3-2-836 (0)		
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> Test Business Management Division (TEDT-TMB) US Army Developmental Test Command 314 Longs Corner Road Aberdeen Proving Ground, MD 21005-5055				<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>		
				<b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b> Same as item 8		
<b>12. DISTRIBUTION/AVAILABILITY STATEMENT</b> Approved for public release; distribution unlimited.						
<b>13. SUPPLEMENTARY NOTES</b> Defense Technical Information Center (DTIC), AD No.: This TOP supersedes ITOP 3-2-836 (0), dated 31 March 1987						
<b>14. ABSTRACT</b> TOP 3-2-836 is comprised of a family of procedures. This document describes the content and format of the family of documents. There are approximately 50 different subsets of test procedures currently planned to assess combat vehicle fire control systems. Appendix A shows the structure of these documents in a block diagram. The reader should be aware that although some of the procedures listed in this TOP will exist as International Test Operations Procedures (ITOPs), the numbering scheme is the same as for TOPs (3-2-836).						
<b>15. SUBJECT TERMS</b>						
<b>16. SECURITY CLASSIFICATION OF:</b>			<b>17. LIMITATION OF ABSTRACT</b>  SAR	<b>18. NUMBER OF PAGES</b>  13	<b>19a. NAME OF RESPONSIBLE PERSON</b>	
<b>a. REPORT</b> Unclassified	<b>b. ABSTRACT</b> Unclassified	<b>c. THIS PAGE</b> Unclassified			<b>19b. TELEPHONE NUMBER</b> (include area code)	

US ARMY DEVELOPMENTAL TEST COMMAND  
TEST OPERATIONS PROCEDURE

\*Test Operations Procedure (TOP) 3-2-836 (0)

14 September 2009

COMBAT VEHICLE FIRE CONTROL SYSTEMS  
OVERVIEW DOCUMENT

	<u>Page</u>
Paragraph 1. SCOPE .....	2
2. FACILITIES AND INSTRUMENTATION .....	2
2.1 Facilities .....	2
2.2 Instrumentation .....	2
3. REQUIRED TEST CONDITIONS .....	2
4. TEST PROCEDURES .....	3
5. DATA REQUIRED .....	3
6. PRESENTATION OF DATA .....	3
Appendix A. BLOCK DIAGRAM OF PROCEDURES .....	A-1

\*This TOP supersedes ITOP 3-2-836 (0), dated 31 March 1987.

---

Approved for public release, distribution unlimited.

1. SCOPE.

TOP 3-2-836 is comprised of a family of procedures. This document describes the content and format of the family of documents. There are approximately 50 different subsets of test procedures currently planned to assess combat vehicle fire control systems. Appendix A shows the structure of these documents in a block diagram. The reader should be aware that some of the procedures listed in this TOP will exist as International Test Operations Procedures (ITOPs); the numbering scheme is the same as for the TOPs (3-2-836).

2. FACILITIES AND INSTRUMENTATION.

2.1 Facilities.

This section of the TOP is intended to detail unique facilities that are required to execute the test procedure. Typical facility requirements are test courses, target definitions, grid boards, collimators, pitch/cant racks, climatic chamber, firing ranges, communication networks, observation equipment, etc. Facility descriptions are generally functional, with any detailed requirements being defined in the body or appendix of the document.

2.2 Instrumentation.

This section of the TOP is intended to detail instrumentation required to meet the data requirements shown in paragraph 5 of the test procedure. Instrumentation requirements are listed as a 'DEVICE FOR' measuring and a 'PERMISSIBLE ERROR OF MEASUREMENT'.

The 'DEVICE FOR' measuring is intended to describe the data required and not the specific instrumentation to be used. A typical entry is a 'DEVICE FOR' measuring vehicle roll (cant). The specific piece of instrumentation may be a gunner's quadrant, an inclinometer, or a gyroscope.

The specific instrumentation used must meet the 'PERMISSIBLE ERROR OF MEASUREMENT' as defined in this paragraph of each document. A numerical 'PERMISSIBLE ERROR OF MEASUREMENT' will be defined for each required measurement. The 'PERMISSIBLE ERROR OF MEASUREMENT' is typically defined in statistical terms as the two standard deviation values for normally distributed instrumentation calibration data. Thus, 95 percent of all instrumentation calibration readings will fall within two standard deviations from the known calibration value.

3. REQUIRED TEST CONDITIONS.

This section of the TOP is intended to detail those conditions that must be met prior to test initiation. The required test conditions may pertain to safety, instrumentation, facilities, or the system under test. The required test conditions are intended to ensure safe test execution, the test item is operational in accordance with prescribed procedures, and the test facilities and instrumentation do not have an unintended effect on the test results.

4. TEST PROCEDURES.

This section of the TOP is intended to detail procedures required to execute the test. Procedures may detail the choice of test course, installation of instrumentation, and the number of trials to be executed.

If the procedures used to execute the test differ from those shown in the TOP, an explanation as to why the procedures were not followed and a full description of the procedures used will be required. The tester is not limited by the procedures shown in the TOP. The tester may conduct other tests/trials, in addition to those in the TOP to fully assess the combat vehicle fire control system. Any additional data collected shall be in accordance with the TOP to the extent possible.

The family of combat vehicle fire control test procedures has been split into two subsets: component and system level tests. These subsets have been further divided into smaller groups of tests. A block diagram is presented in Appendix A showing the organization and relationship of the family of combat vehicle fire control system test procedures.

5. DATA REQUIRED.

This section of the TOP is intended to describe the data required based on the purpose of the TOP as stated in Scope. These data are to be used to assess the performance of the combat vehicle fire control system. Some data requirements can be cross-referenced to a measurement in the Facilities and Instrumentation section. Data required will also include administrative data, test inputs, and calibration data.

6. PRESENTATION OF DATA.

This section of the TOP is intended to describe what data are to be presented and how those data are to be presented. This section may include data reduction techniques and an assessment of system performance. Typical data presentations are tabular, or graphical. Reduced data will also be presented in this section of the TOP. The use of a data reduction technique not supplied in the TOP is acceptable if the methodology is fully documented in the test report.

## APPENDIX A. BLOCK-DIAGRAM

### Test Operations Procedures (TOP's) for Combat Vehicle Fire Control Tests

#### Definitions:

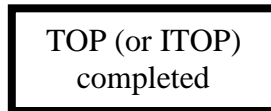
##### Component:

Component testing is possible in the laboratory or as an integrated part of the fire control system. It is important during integrated component testing that you concentrate on the component's functional performance and its characteristics and not on its performance with other components of the system.

##### System:

A system test is testing conducted on a complete system or on subsystems comprised of integrated components to be evaluated.

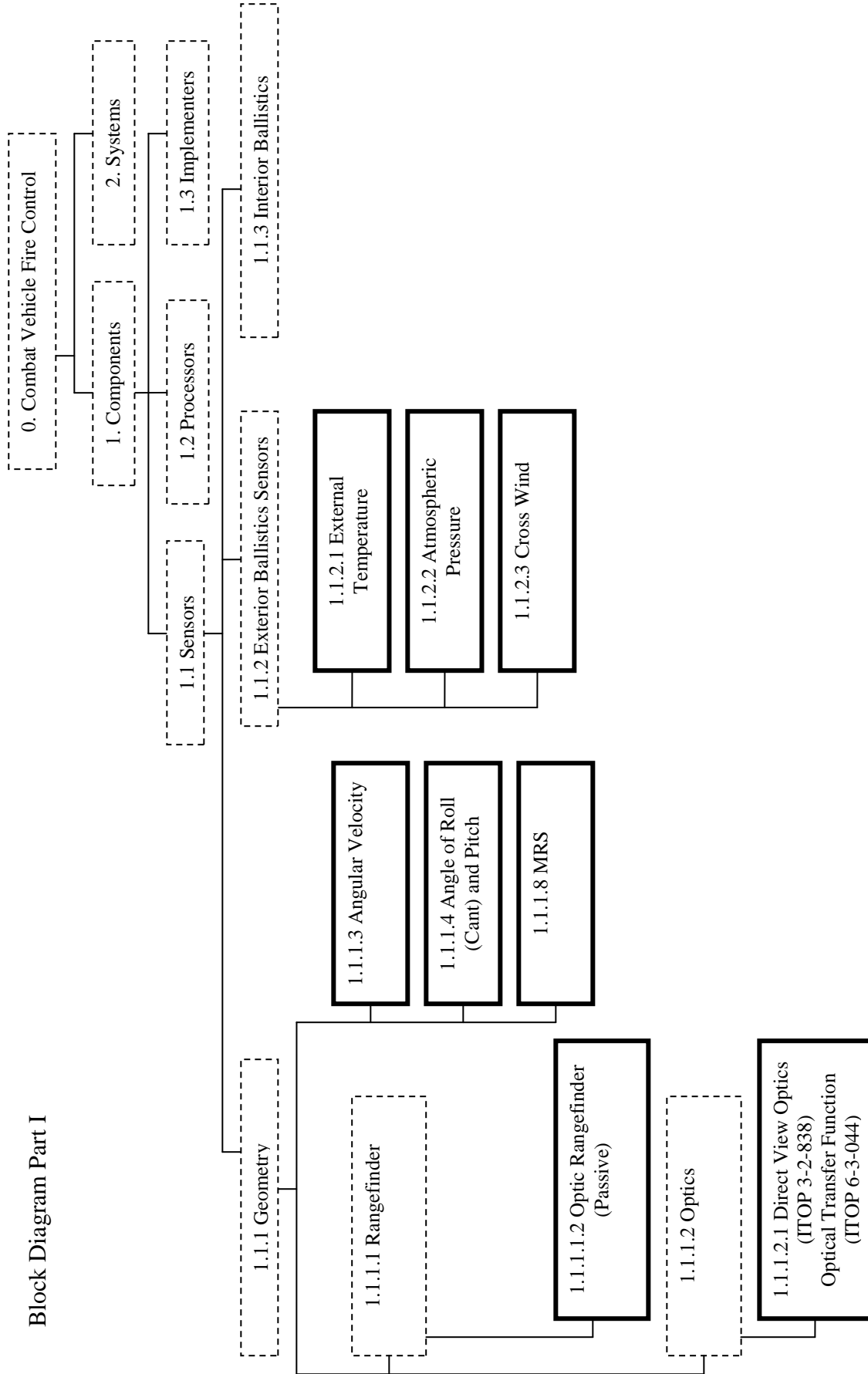
#### Legend:



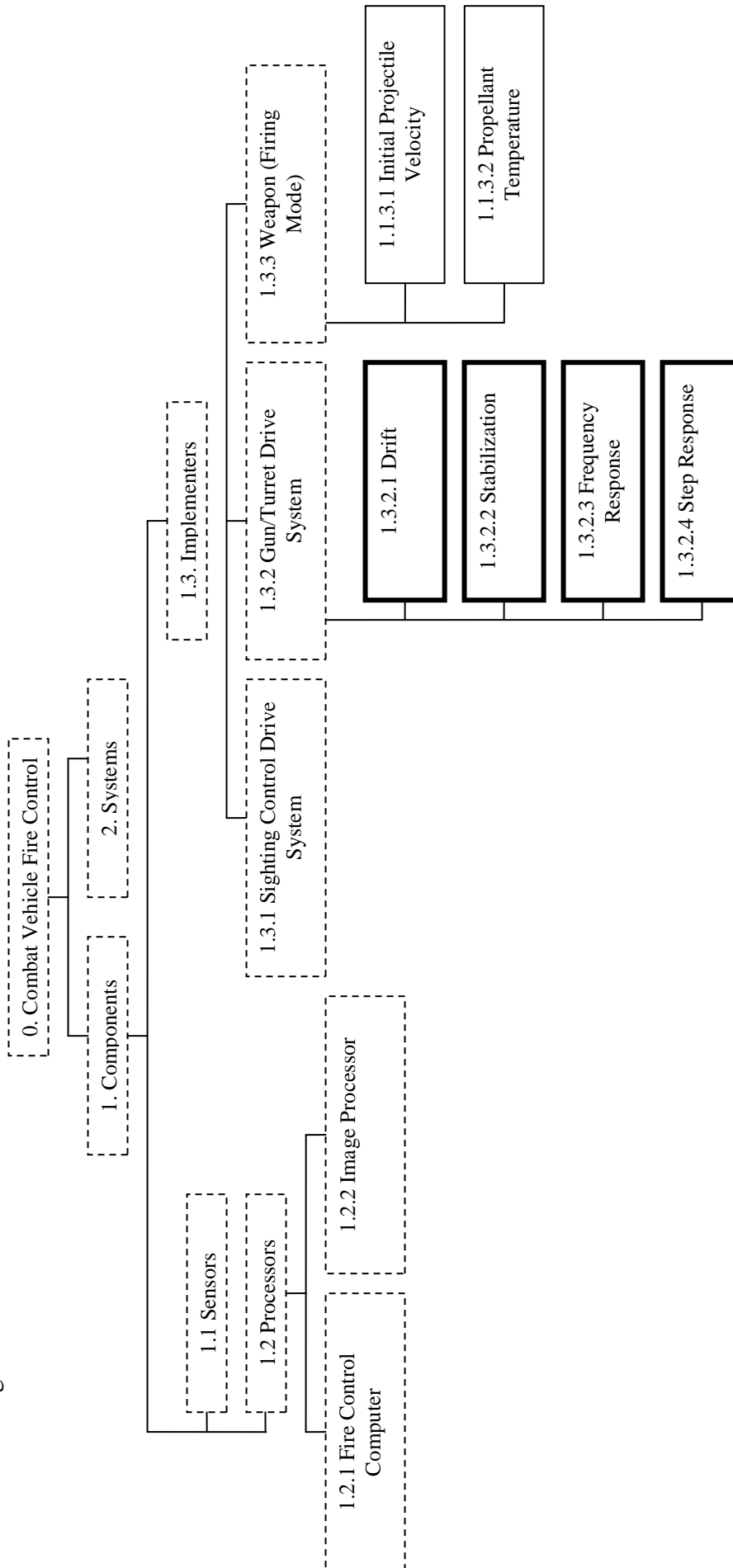
#### Firing Configurations:

S-S	Standing Tank-Standing Target
S-M	Standing Tank-Moving Target
M-S	Moving Tank-Standing Target
M-M	Moving Tank-Moving Target

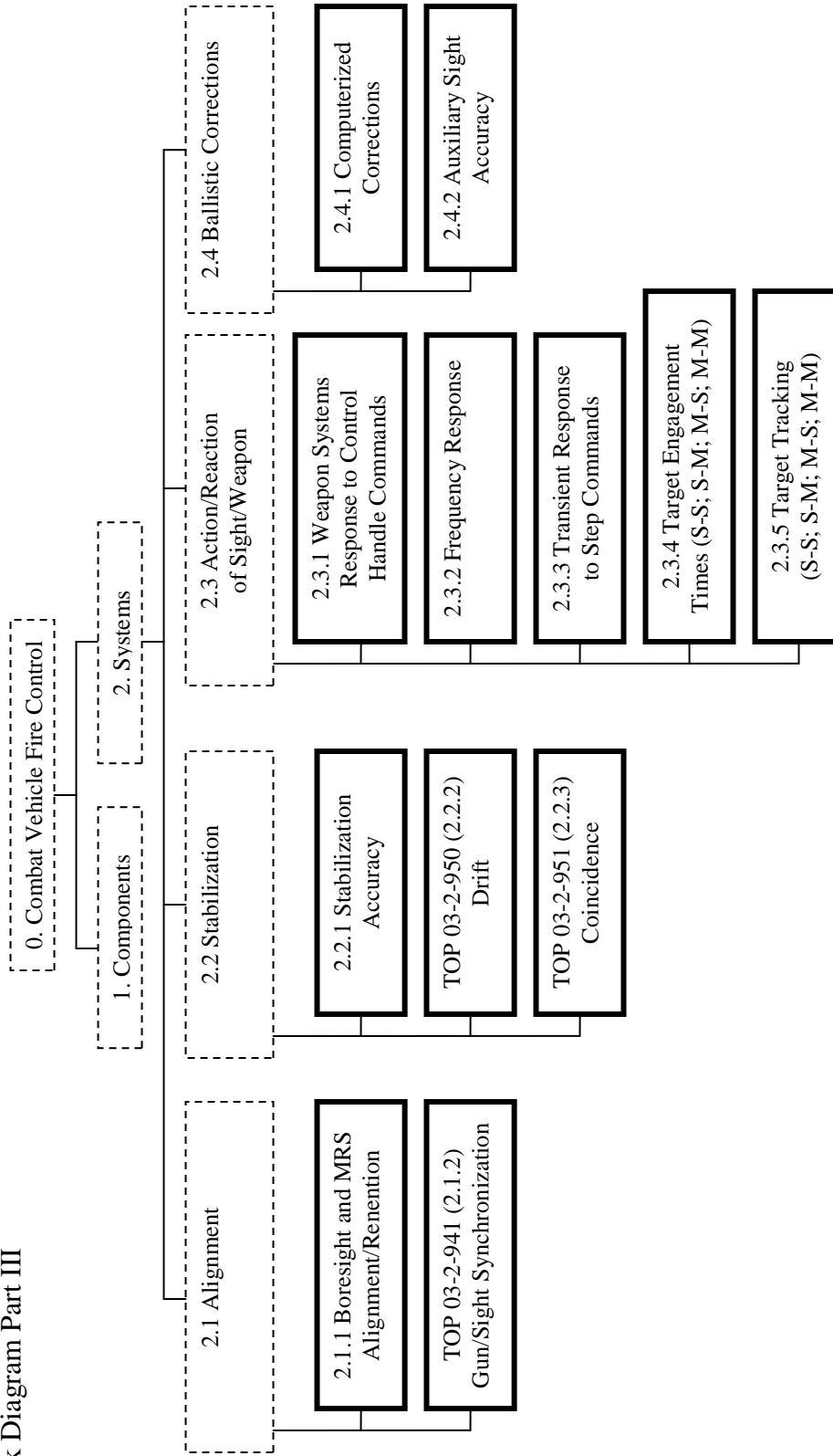
Block Diagram Part I



Block Diagram Part II

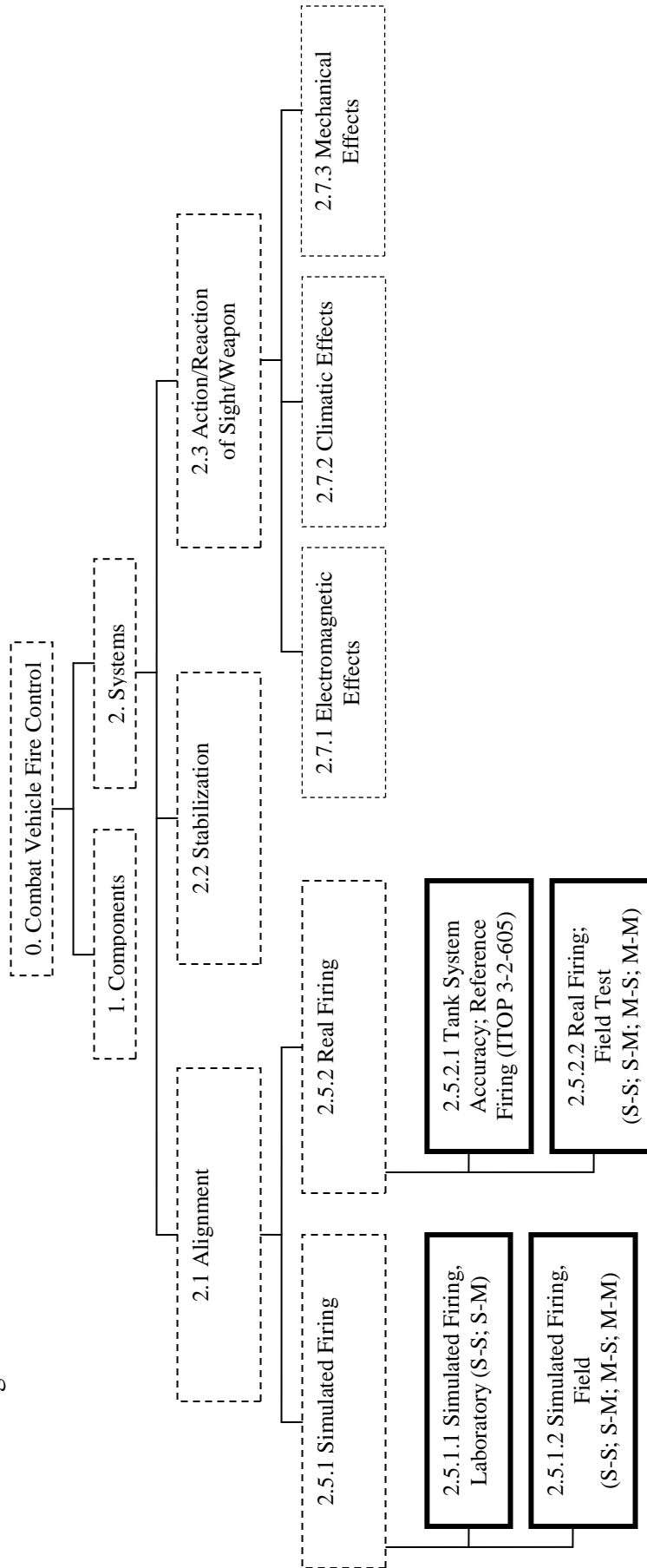


Block Diagram Part III





Block Diagram Part IV



Forward comments, recommended changes, or any pertinent data which may be of use in improving this publication to the following address: Test Business Management Division (TEDT-TMB), US Army Developmental Test Command, 314 Longs Corner Road Aberdeen Proving Ground, MD 21005-5055. Technical information may be obtained from the preparing activity: Close Combat Systems Division (AT-FPC), US Army Aberdeen Test Center, 400 Collieran Road, Aberdeen Proving Ground, MD 21005-5059. Additional copies can be requested through the following website: <http://itops.dtc.army.mil/RequestForDocuments.aspx>, or through the Defense Technical Information Center, 8725 John J. Kingman Road, Suite 0944, Fort Belvoir, VA 22060-6218. This document is identified by the accession number (AD No.) printed on the first page.