

Supplemental VV&A Product Formats

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¹ This document replaces the 8/4/2004 template, Common VV&A Product Formats. It has been revised to support the DoD VV&A Documentation Standard.

This document corresponds to the web version of the VV&A RPG Templates of the same name and date. It has been modified to make it suitable for printing.

Introduction

A verification and validation (V&V) effort is documented to capture valuable evidence for use in the accreditation assessment. An accreditation assessment is documented to provide the decision maker with conclusions and recommendations regarding the fitness of the simulation for the intended purpose. VV&A documentation also provides essential information of simulation capabilities and limitations for current and future users of the simulation. The (draft) *DoD VV&A Documentation Standard*² provides guidance on the four primary VV&A documents: Accreditation Plan, V&V Plan, V&V Report, and Accreditation Report.

The information to be included and/or referenced in these four documents is often initially collected in supplemental documents. The most common of these are described in this document and templates are provided for each. These templates are intended to serve as guides only. For a given VV&A effort, the types of supplemental documents produced, and the information to be included in each, should be determined during the planning process. They should be based on the needs of the intended application.

Examples:

- When a well-documented legacy simulation requires only minor modifications, there may be no need to conduct V&V activities on all aspects of the simulation and its artifacts. The V&V Agent may choose to produce one detailed V&V report instead of separate reports for each V&V activity and one summary V&V report.
- The VV&A effort for a spiral development M&S program will generate V&V reports at the end of each milestone or spiral. Accreditation reports are generally produced only for interim and final product releases.
- For the VV&A effort of a federation or distributed simulation suite, the owners of the individual federates and components are responsible for providing V&V evidence of their individual capabilities. However, the overall federation VV&A effort may require additional information about individual federate capabilities as well as their ability to interoperate with each other. This information should be compiled and documented in an integrated VV&A report.

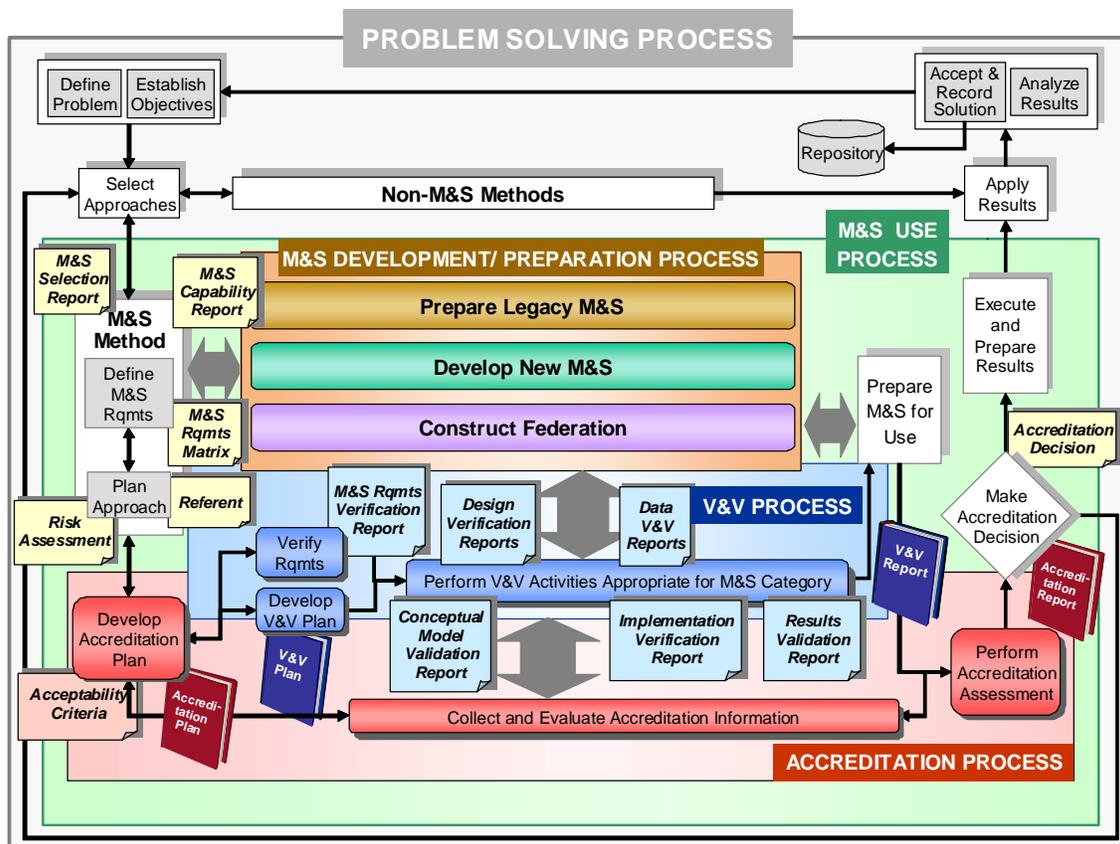
Documentation formats should be adapted to provide the information needed to satisfy the intended use and should be structured to conform to the reporting requirements of the simulation's configuration management system. The DoD VV&A Documentation Tool³ or other automated aids for generating reports should be used when available to support standardization and to reduce the cost and time of report preparation.

² The DoD VV&A Documentation Standard is in review for issuance in 2007. The templates contained in this standard for VV&A plans and reports are posted on the VV&A RPG website under Templates and provided as appendices to this document.

³ The DoD VV&A Documentation Tool is scheduled to be available in 2007.

Essential VV&A Documentation

The Accreditation Plan, V&V Plan, V&V Report, and Accreditation Report are the four basic or essential documents to be produced during a VV&A effort. However, for lengthy or complex VV&A efforts much of the detailed information may be captured in interim or supplemental documents. In addition, a number of documents typically produced by the User or Developer may be used to supplement the VV&A effort. The following Problem Solving Process diagram depicts basic and supplemental VV&A documents. The basic VV&A documents are depicted as color-coded books (blue for V&V; red for accreditation). Supplemental documents are depicted as color-coded boxes with a folded corner (blue for supplemental V&V products; pink for supplemental accreditation products; cream for development and intended use supporting documents). The document icons are superimposed on the M&S life cycle to indicate when during the M&S life cycle the information is normally available for collection.



VV&A Reports in the Overall Problem Solving Process

These documents are listed below and synopsised in the following paragraphs. Templates for supplemental VV&A documents are included at the end of this document.

Templates for the four basic VV&A products are separate RPG documents and included as appendices for your convenience.

[Accreditation Products](#) [p. 3]

- Accreditation Plan
- Accreditation Report
- Supplemental Accreditation Product: Acceptability Criteria Report

[V&V Products](#) [p. 4]

- V&V Plan
- V&V Report
- Supplemental V&V Products:
 - M&S Requirements Verification Report
 - Simulation Conceptual Model Validation Report
 - Design Verification Report(s)
 - Implementation Verification Report
 - Results Validation Report
 - Data V&V Reports

[Supporting Documentation](#) [p. 6]

- M&S Requirements Matrix
- Referent Information
- Simulation Capability Report
- Risk Assessment Report
- Simulation Selection Report
- Accreditation Decision

Accreditation Products

Accreditation Plan

The accreditation plan (see [Appendix A](#)) is prepared by the Accreditation Agent. It identifies the information needed (i.e., accreditation information needs) to assess the fitness of the simulation for the intended application, establishes their priorities based on associated risk, details the approach to be used for collecting or generating the information, and details the approach for conducting the assessment. It also identifies the personnel and resources needed to perform the accreditation assessment,

establishes the schedule, and defines the relationship of the accreditation effort to simulation preparation and the V&V effort.⁴

Accreditation Report

The accreditation report (see [Appendix D](#)) is prepared by the Accreditation Agent.⁵ It is used in formulating the accreditation decision. It includes a list of the M&S requirements and acceptability criteria used in the assessment, a list of the accreditation information needs and priorities, a discussion of the assessment process comparing the simulation capabilities and the M&S requirements of the intended application, a summary of the simulation's development and use history, estimates of costs and resource needs of using the simulation, results of the assessment identifying simulation limitations, recommendations on the accreditation decision. This report is submitted to the User or designated accrediting authority for consideration during the decision process. Once the [accreditation decision](#) [p. 8] is made, it is usually included as an insert in the accreditation report for distribution and archiving.

Acceptability Criteria Report

The [acceptability criteria report](#) [p. 10] is a supplemental report prepared by the Accreditation Agent and/or the User. It includes a description of the acceptability criteria selected to define, or measure, how well the simulation needs to represent each M&S requirement and the rationale used in their selection.⁶ The acceptability criteria are used during the accreditation assessment to determine if the simulation is fit for the intended use and during the V&V planning to determine what tasks to perform, what techniques to use, and what data to collect in order to provide the information needed in the accreditation assessment. This report provides information needed to support all phases of accreditation, V&V planning, and implementation. Although the information provided by this report is essential, it may be provided in another form (e.g., M&S Requirements Matrix). When more than one source is available, the information from each should be reviewed to ensure consistency.

V&V Products

V&V Plan

The V&V plan (see [Appendix B](#)) is usually prepared by the V&V Agent although it may be initiated by the Accreditation Agent or the M&S Program Manager (M&S PM) when the selection of the V&V Agent is delayed.⁷ It identifies the V&V tasks to be performed to address the accreditation information needs and priorities, the requirements to be addressed and the acceptability criteria to be used in validation, the data and

⁴ See the core documents on the Accreditation Agent role for additional information.

⁵ See the core documents on the Accreditation Agent role for additional information.

⁶ See the special topics on Requirements and Measures for additional information.

⁷ See the core documents on the V&V Agent role for additional information.

techniques to be used, the data to be collected, and the rationale for each. For medium and large V&V efforts, the V&V tasks are organized into activities, each of which focuses on a specific artifact of the simulation (i.e., M&S requirements, simulation conceptual model, design, implementation [code], results [output])⁸. The plan also identifies the personnel and resources needed to perform each task, establishes the schedule, and defines the relationship between individual V&V tasks and activities and the activities detailed in the simulation development or modification plan.

V&V Report

The V&V report (see [Appendix C](#)) is prepared by the V&V Agent. This report details the conduct of each task, including the assumptions and constraints involved, the M&S requirements addressed and the acceptability criteria used in the validation, the techniques and data employed, the results of each task, and the insights and recommendations resulting from analysis of the results. The report also includes the analysis of the overall V&V effort, including conclusions and recommendations. Actual documentation of each task and data used in the analyses are referenced or included in attachments.⁹

Supplemental V&V Reports

For extensive V&V efforts, individual V&V activities are often documented in separate supplemental or interim reports. The overall V&V Report then summarizes the results of each activity and provides analysis, conclusions and recommendations of the overall effort. The individual V&V activity reports are referenced or included as attachments. These individual V&V activity reports include:

- [M&S Requirements Verification Report](#) [p 10] — This report should be prepared by whoever is responsible for conducting the requirements verification. When the V&V Agent is not available to do so, it is generally conducted by SMEs designated by the User.¹⁰ The V&V Agent is, however, responsible for reviewing the report and ensuring the effort was sufficient and complete. Actual documentation of each task and data used should be referenced or included in attachments.¹¹
- [Simulation Conceptual Model Validation Report](#) [p. 11] — This report should be prepared by the V&V Agent and details the tasks performed in evaluating the completeness, accuracy, and consistency of the simulation conceptual model. Data V&V tasks performed in conjunction with this activity should be referenced

⁸ Activities can be organized in other ways, depending on the needs of the specific V&V project; however, organizing around the simulation development/modification artifacts and products being evaluated is a common approach.

⁹ See the core documents on the V&V Agent role for additional information.

¹⁰ See the core documents on the V&V Agent role for additional information.

¹¹ See the special topic on Requirements for additional information.

here and detailed in appropriate Data V&V Reports. Actual documentation of each task and data used should be referenced or included in attachments.¹²

- [Design Verification Reports](#) [p. 12] — These reports are prepared by the V&V Agent and detail the tasks performed in evaluating the completeness, accuracy, and consistency of the different iterations of the design (e.g., high level design and the detailed design). Tasks performed by the Developer or others to support this activity should be detailed here. Data V&V tasks performed in conjunction with this activity should be referenced here and detailed in appropriate Data V&V Reports. Actual documentation of each task and data used should be referenced or included in attachments.
- [Implementation Verification Report](#) [p. 13] — This report is prepared by the V&V Agent. It details the tasks performed in evaluating the completeness, accuracy, consistency of the code and the implementation. Tasks performed by the Developer and others to support this activity should be detailed here. Data V&V tasks performed in conjunction with this activity should be referenced here and detailed in appropriate Data V&V Reports. Actual documentation of each task and data used should be referenced or included in attachments.
- [Results Validation Report](#) [p.14] — This report is prepared by the V&V Agent and details the tasks performed in determining the extent to which the simulation's results provide the fidelity needed for the intended application.¹³ The actual tests performed, data sets used, and validation data used for the referent should be included as attachments whenever possible.¹⁴ Tasks performed by the Developer, testers, or others to support this activity should be detailed here. Data V&V tasks performed in conjunction with this activity should be referenced here and detailed in appropriate Data V&V Reports.
- [Data V&V Reports](#)¹⁵ [p. 16] — These reports are prepared by the V&V Agent for each data set. Ideally, data V&V tasks are performed in conjunction with specific simulation V&V activities and as early as possible in the overall V&V effort. However, because of the myriad of data involved and because different data sets come from different authoritative sources at different times, individual data V&V tasks are conducted throughout the V&V effort. Individual data V&V tasks should be recorded as part of the simulation V&V activity with which they are associated. However, the information from all data V&V tasks performed on a specific data set should be collected and documented in a Data V&V Report to be shared with the data provider.

Supporting Documentation

¹² See the special topic on Conceptual Model Development and Validation for additional information.

¹³ See the special topic on Fidelity for additional information.

¹⁴ See the special topic on Validation for additional information.

¹⁵ See the special topic on Data V&V for additional information.

M&S Requirements Matrix/Database

A [requirements matrix](#) or database [p. 17] is generally prepared by the Developer, but it may also be prepared by the V&V Agent or the Accreditation Agent. It is used to trace the M&S requirements through the different phases of the simulation development and preparation to ensure they are being consistently and adequately addressed.¹⁶ The matrix should also include information regarding how each M&S requirement should be measured or evaluated and what acceptability criteria should be used.¹⁷ This matrix provides information needed to support all phases of accreditation and V&V planning and implementation. Although the information available in this matrix is essential, it may be provided in another form (e.g., section or appendix in the four basic VV&A products; acceptability criteria report; requirements database). The essential factor is to provide information that connects M&S requirements to their associated acceptability criteria and metrics. When more than one source is available, the information from each should be reviewed to ensure consistency.

Referent Information

The referent is the collection of the best information available about the entities, objectives, relationships, and behaviors being represented in the simulation. It is used by M&S Developers during design and development of the simulation and by V&V Agents during validation. The information included in the referent is generally identified and approved by the User, but it may need to be identified and collected by the V&V Agent. Because this collection of information is obtained from a wide variety of sources in a wide variety of forms and frequently depends heavily on subject matter expertise, the [Referent Information](#) document [p. 17] generally consists of a list of information sources. The source information included should be sufficiently complete so that the specific information used is easily located. When the source is subject matter expertise, the referent information document should include the SME contact information, qualifications, the specific expertise supplied and the VV&A activities supported. This document is often included as an appendix in the basic VV&A documents.

Simulation Capability Report

The [simulation capability report](#) [p. 18] is associated with legacy simulation reuse. It is prepared by the V&V Agent or a Developer to give decision makers a general idea of the simulation's capability. It may be prepared for the Accreditation Agent to use in determining the scope of the accreditation assessment.¹⁸ The User can also find it useful for comparing candidates during legacy simulation selection.

Simulation Selection Report

¹⁶ See the core documents on the V&V Agent role for additional information.

¹⁷ See the special topics on Requirements and Measures for additional information.

¹⁸ See the core document on The Accreditation Agent Role in the VV&A of Legacy Simulations for additional information.

A [simulation selection report](#) [p. 18] is useful in legacy simulation reuse when multiple candidates are under consideration. It is generally prepared by the User or Accreditation Agent but it may require input from Developers and V&V Agents.¹⁹ The simulation selection process provides a vehicle by which the risks associated with using each candidate in the intended use can be assessed. The resulting report, which documents the selection decision and rationale, provides information used in the accreditation assessment.

Risk Assessment Report

A [risk assessment report](#) [p. 19] should be prepared by whomever is responsible for conducting the risk assessment.²⁰ Risk assessments may be conducted by the User, Accreditation Agent, M&S PM, or V&V Agent to identify different risks associated with the overall program, risks associated with using the simulation in the intended use, and even risks associated with performing or not performing specific V&V and testing activities. These risk assessments are then used during the accreditation process to determine priorities to be applied to the assessment of the simulation's fitness for the intended use.

Accreditation Decision

The [accreditation decision](#) [p. 20] is prepared by the Accreditation Authority or the User.²¹ It documents the User's accreditation decision (i.e., full accreditation, conditional accreditation, simulation modification needed, additional information needed, no accreditation), the rationale behind the decision, and all the constraints placed upon the simulation's use in the intended application. If the accreditation decision is to conduct additional work to modify the simulation or to obtain additional information (e.g., conduct additional testing or V&V), this document should detail what steps are to be taken. This document, often prepared as a memorandum of record (MOR) is usually maintained as an insert in the Accreditation Report.

VV&A Product Templates

The templates in this section (listed in the following table) identify the types of products produced in a VV&A effort and the types of information that should be considered for inclusion in each. Each template is organized as a main document and a series of attachments. When information to be included in a product is already included in

¹⁹See the core documents on The User Role and The Accreditation Agent Role in the VV&A of Legacy Simulations for additional information.

²⁰See the special topic on Risk Assessment and Its Impact on VV&A for additional information.

²¹ See the core documents on the Accreditation Agent role for additional information.

another, that product should be referenced or included as an attachment.²² These templates are intended to be comprehensive, not prescriptive. The products produced and the information included in each should be determined by the needs of the specific application.

<u>Accreditation Templates</u> [p. 10])
• Accreditation Plan [Appendix A]
• Accreditation Report [Appendix D]
• Acceptability Criteria Report [p. 10]
<u>V&V Templates</u> [p. 10]
• V&V Plan [Appendix B]
• V&V Report [Appendix C]
• M&S Requirements Verification Report [p. 10]
• Simulation Conceptual Model Validation Report [p. 11]
• Design Verification Report(s) [p. 12]
• Implementation Verification Report [p. 13]
• Results Validation Report [p. 14]
• Data V&V Reports [p. 16]
<u>Supporting Document Templates</u> [p. 17]
• M&S Requirements Matrix [p. 17]
• Referent Information [p. 17]
• Simulation Capability Report [p. 18]
• Simulation Selection Report [p. 18]
• Risk Assessment Report [p. 19]
• Accreditation Decision [p. 20]

²²While it is usually desirable to have necessary information pulled together in one location, it is normally not feasible; however, care should be taken to ensure other products referenced (and not included as attachments) do exist and are current and available upon request.

Supplemental Accreditation Template

Acceptability Criteria Report
A. Intended Use
<ol style="list-style-type: none"> 1. Program name 2. Problem statement 3. Program sponsor, user, or responsible agency 4. Program objectives
B. M&S Requirements, Measures and Acceptability Criteria (Requirements are grouped by area of interest and by priority)
<ol style="list-style-type: none"> 1. Requirement area description (repeat for each requirement area) 2. Verified M&S requirement (repeat for each M&S requirements in the specified area of interest) <ol style="list-style-type: none"> a. Definition b. M&S requirement priority c. M&S requirement measures²³ d. Associated acceptability criteria 3. List of objects, functions, and behaviors impacted by the requirement
Attachments:
<ol style="list-style-type: none"> 1. M&S Requirements Matrix [p. 17] 2. Documentation for problem and user domain requirements provided by User or Accreditation Agent ²⁴ 3. Documentation for simulation domain requirements provided by User, M&S PM, or M&S Proponent 4. Pointer to referent information 5. References 6. Acronyms and definitions 7. Distribution list

Supplemental V&V Templates

M&S Requirements Verification Report
A. Executive Summary
<ol style="list-style-type: none"> 1. Name of program 2. Problem statement and objectives

²³ See the special topic on Measures for additional information.

²⁴ See the special topic on Requirements for additional information.

M&S Requirements Verification Report	
3.	Dates of activity
4.	Participants
5.	List of tasks performed (1 through n)
6.	Results
7.	Recommendations
B. Task Descriptions	
1.	Task 1
a.	Approach
	<ul style="list-style-type: none"> • Description of item under test • Techniques used • Method of measuring results
b.	Information and data sources used
c.	Resources (equipment, SMEs, tools, etc.) used
d.	POC
e.	Results
f.	Recommendations
2.	Repeat B for each task performed
C. Summary	
1.	Conclusions
2.	Recommendations
Attachments:	
1.	M&S Requirements Matrix [p. 17] (including verified requirements)
2.	Acceptability Criteria Report [p. 10]
3.	Pointer to referent
4.	References
5.	Acronyms and definitions
6.	Distribution list

Simulation Conceptual Model Validation Report	
A. Executive Summary	
1.	Name of program
2.	Problem statement and objectives
3.	Name and version of simulation involved
4.	Dates of activity
5.	Participants
6.	List of tasks performed (1 through n)
7.	Results

Simulation Conceptual Model Validation Report
8. Recommendations
B. Task Descriptions
1. Task 1
a. Approach
• Hypothesis tested
• Techniques used
• Method of measuring results
b. Information and data sources used
c. Resources (equipment, SMEs, tools, etc.) used
d. POC
e. Results
g. Recommendations
2. Repeat 1 for each task performed
C. Summary
1. Conclusions
2. Recommendations
Attachments:
1. M&S Requirements Verification Report [p. 10]
2. Pointer to referent
3. Pointer to validated simulation conceptual model
4. M&S Requirements Matrix [p. 17]
5. Acceptability Criteria Report [p. 10]
6. Pointers to data sets and sources
7. References
8. Acronyms and definitions
9. Distribution list

Design Verification Reports (Repeat for each major design iteration [e.g., high level design; detailed design])
A. Executive Summary
1. Name of program
2. Problem statement and objectives
3. Name and version of simulation involved
4. Dates of activity
5. Participants
6. List of tasks performed (1 through n)
7. Results

Design Verification Reports (Repeat for each major design iteration [e.g., high level design; detailed design])
8. Recommendations
B. Task Descriptions
1. Task 1
a. Approach
• Hypothesis tested
• Techniques used
• Method of measuring results
b. Method of measuring results
c. Information and data sources used
d. Resources (equipment, SMEs, tools, etc.) used
e. POC
f. Results
2. Repeat 1 for each task performed
C. Summary
1. Conclusions
2. Recommendations
Attachments:
1. M&S Requirements Matrix [p. 17]
2. M&S Requirements Verification Report [p. 10]
3. Acceptability Criteria Report [p. 10]
4. Simulation Conceptual Model Validation Report [p. 11] and pointer to validated simulation conceptual model
5. Pointer to verified design(s)
6. Pointers to previous design verification reports
7. Pointers to data sets and sources
8. Acronyms and definitions
9. Distribution list

Implementation Verification Report
A. Executive Summary
1. Name of program
2. Problem statement and objectives
3. Name and version of simulation involved
4. Dates of activity
5. Participants
6. List of tasks performed (1 through n)

Implementation Verification Report
7. Results
8. Recommendations
B. Task Descriptions (repeat for each task performed)
1. Approach
a. Hypothesis tested
b. Techniques used
c. Method of measuring results
2. Section(s) of code involved
3. Information and data sources used
4. Resources (equipment, SMEs, tools, etc.) used
5. POC
6. Results
7. Recommendations
C. Summary
1. Conclusions
2. Recommendations
Attachments:
1. M&S Requirements Matrix [p. 17]
2. M&S Requirements Verification Report [p. 10]
3. Acceptability Criteria Report [p. 10]
4. Simulation Conceptual Model Validation Report [p. 11] and pointer to validated simulation conceptual model
5. Design Verification Reports [p. 12] (High Level and Detailed) and pointer to verified designs
6. Pointers to data sets
7. References
8. Acronyms and definitions
9. Distribution list

Results Validation Report
A. Executive Summary
1. Name of program
2. Problem statement and objectives
3. Name and version of simulation involved
4. Dates of activity
5. Participants

Results Validation Report	
6.	List of requirements addressed and their associated measures and acceptability criteria used
7.	List of tasks performed (1 through n)
8.	Results
9.	Recommendations
B. Task Descriptions	
1.	Task 1 definition
a.	Approach
	<ul style="list-style-type: none"> • Hypothesis tested (including M&S requirements addressed) • Techniques used • Method of measuring results (measures and acceptability criteria used)
b.	Sections of code, components involved
c.	Validation data used
d.	Resources (equipment, SMEs, tools, etc.) used
e.	POC
f.	Results
g.	Recommendations
2.	Repeat 1 for each task performed
C. Summary	
1.	Conclusions
2.	Recommendations
Attachments:	
1.	M&S Requirements Matrix [p. 17]
2.	M&S Requirements Verification Report [p. 10]
3.	Acceptability Criteria Report [p. 10]
4.	Simulation Conceptual Model Validation Report [p. 11] and pointer to validated simulation conceptual model
5.	Design Verification Reports [p. 12] (High Level and Detailed) and Pointer to verified designs
6.	Implementation Verification Report [p. 13]
7.	Pointer to referent
8.	Pointer to test documentation and data
9.	Pointer to validation data
10.	Pointer to data sets
11.	References
12.	Acronyms and definitions
13.	Distribution list

Data V&V Report (Repeat for each data set evaluated)
A. Executive Summary
1. Data description
2. Program and simulation(s) involved (name and version)
3. Data source
4. Date obtained
5. Use of data in simulation(s)
6. V&V approach
7. Results
8. Recommendations
B. Program information
1. Problem statement and objectives
2. Name and version of simulation involved
C. Data V&V Activities
1. Schedule
2. Participants
3. List of tasks performed (1 through n)
D. Task Descriptions (repeat for each task performed)
1. Approach used
2. Algorithms involved
3. Related simulation V&V tasks
4. Resources (equipment, SMEs, tools, etc.) used
5. POC
6. Results and recommendations
C. Summary
1. Conclusions
2. Recommendations
Attachments:
1. V&V Plan [Appendix B]
2. Pointers to validation data
3. Pointers to algorithms
4. Pointers to tests
5. Pointers to related simulation V&V reports
6. Pointers to data sets
7. References
8. Acronyms and definitions
9. Distribution list

Supporting Product Templates

M&S Requirements Matrix									
Requirements			Requirement Tracing						
Rank / Class	Def	Measures, Criteria	Conceptual Model	HL D	Detailed Design	Code	Testing	Validation	Data
1.	xxx								
2.	xxx								
Attachments:									
1. Program background information									
2. Simulation background information									
3. References									
4. Acronyms and definitions									
5. Distribution list									

Referent Information
A. Simulation background information
1. Simulation name and version
2. POC information
3. Dates of most recent usage
4. List of capabilities and representations involved (1 through l)
B. Program background information
1. Name of program
2. Problem statement and objectives
3. POC information
C. Referent source (repeat for each major capability area (1 through k))
1. Subject (object, behavior, characteristic, etc. being represented)
2. Source of written information (repeat for each source used)
a. Reference information (title, publisher, date, passages, etc.) including location if archived
b. Format (e.g., book, article, diagram)
c. Reference authority (justification for source's selection)
d. VV&A activity(s) during which information is used
3. Subject matter expert (repeat for each SME)
a. POC information
b. Qualifications

Referent Information
c. Area(s) of expertise provided, method involved (e.g., survey, face validation, interview) and activity in which it is used (repeat for each individual involvement)
Attachments:
1. Acronyms and definitions
2. Distribution list

Simulation Capability Report
A. Simulation background information
1. Simulation name and version
2. POC information
3. Dates of most recent usage
4. List of major capability areas (1 through k)
B. Simulation capability information (repeat for each major capability area (1 through k))
1 Description
1 Objects represented
1 Functions performed
1 Behaviors represented
Attachments:
1. Simulation conceptual model
2. Simulation documentation (M&S specifications, user manuals, etc.)
3. Acronyms and definitions
4. Distribution list

Simulation Selection Report
A. Program
1. Problem statement
2. Purpose for simulation selection
3. List of M&S requirements to be addressed
4. List of candidates under consideration
B. Individual candidate evaluation (for candidate 1 through n)
1. Identify capabilities or prepare Simulation Capability Report [p. 18]
2. Compare candidate's capabilities to M&S requirements of intended use
3. Additional considerations (availability, costs, resource requirements, etc.)
C. Candidate comparison
1. Candidate comparison

Simulation Selection Report	
2.	Conclusions and recommendations
3.	Rationale
Attachments:	
1.	Simulation Candidate Background Information (for each candidate 1 through n)
a.	Simulation name and version
b.	POC information
c.	Dates and applications of most recent usage
d.	Resource requirements (equipment, personnel, data, costs, etc)
e.	List capabilities or Simulation Capability Reports [p. 18] (1 through n)
2.	M&S Requirement definitions and priorities
3.	Acronyms and definitions
4.	Distribution list

Risk Assessment Report²⁵	
A. Executive Summary	
1.	Purpose of the assessment
2.	Persons and organizations participating in the assessment
3.	Approach
4.	Results (risks identified)
5.	Recommendations
B. Information needed for assessment	
1.	Information about the intended use
a.	Name
b.	Sponsor or responsible agency
c.	Problem statement
d.	Objectives
e.	Intended M&S use in the program (e.g., importance of M&S involvement, impact on the decision process, integration with other methods being used)
f.	Programmatics (e.g., program organization, budget, milestones, schedule, criticality, security considerations)
2.	Information on verified M&S requirements (or attach or reference M&S Requirements Verification and Acceptability Criteria Reports)
3.	Simulation capability characterization(s) (or attach or reference [validated] simulation conceptual model(s) or Simulation Capability Report (s) [p. 18]) ²⁶

²⁵ See the special topic on Risk Assessment and Its Impact on VV&A for additional information.

²⁶Used in legacy simulation reuse.

Risk Assessment Report²⁵	
C. Risk assessment	
1.	Comparison of simulation capabilities and verified M&S requirements
a.	Existing simulation capabilities needed for intended use
b.	Existing simulation capabilities not needed for intended use
c.	M&S requirements not addressed by M&S capabilities
d.	Major simulation limitations for each object and function
e.	Risks associated with using the designated simulation(s)
2.	Risks associated with program features (e.g., resource requirements, scheduling, etc.)
3.	Risks associated with program objectives
D. Assessment results	
1.	List of program risks identified
2.	List of verified M&S requirements assessed
a.	Risks associated with each
b.	Priorities of each
3.	List of simulation capabilities (functions, behaviors, objects) assessed
a.	Risks associated with each
b.	Priorities of each
4.	Summary
5.	Conclusions and recommendations
Attachments:	
1.	Acceptability Criteria Report [p. 10]
2.	Simulation Capability Report(s) [p. 18] or pointer to simulation conceptual model(s)
3.	M&S Requirements Matrix [p. 17]
4.	M&S Requirements Verification Report [p. 10] (when available)
5.	Acronyms and definitions
6.	Distribution list

Accreditation Decision	
A. Application Background	
1.	Name of program and reference information
2.	Problem statement and objectives
3.	Purpose of accreditation
B. M&S Background	
1.	Name and version of M&S
2.	POC information

3. List of capabilities addressed by this accreditation (1 through l)
C. Accreditation Decision (select 1 of the 5 possible accreditation decisions listed)
1. Full accreditation – the simulation produces results that are sufficiently credible to support the application
2. Conditional accreditation – the simulation is limited in how it can be used to support the application:
a. List of constraints (1 through k)
b. Rationale for each constraint
3. Accreditation is deferred for modification – the simulation’s capabilities are insufficient to support either full or conditional accreditation; the simulation should be modified as follows:
a. List of modifications to be made (1 through n)
b. Rationale for each modification
c. List of tests and V&V tasks to be done (1 through m)
d. Rationale for each task
4. Accreditation is deferred for information – the information provided was insufficient to support an accreditation decision; additional information is needed as follows:
a. List of information needed (1 through i)
b. Rationale for each item
c. Method for obtaining each item
d. Resources and schedule for
5. No accreditation – the results of the assessment show that the simulation is not fit to support the intended use and corrections are economically infeasible
D. Rationale for Decision
Attachments:
1. Accreditation Report (if accreditation decision is not itself an accreditation report insert)
2. Acronyms and definitions
3. Distribution list

References

DoD VV&A Documentation Standard (draft), May 2006.

DoD VV&A Documentation Tool (draft), September 2006.

Joint Accreditation Support Activity (JASA), Accreditation Information Requirements Guide (AIRGuide): A Guide for Determining the Type Scope and Depth of Evidence that is Needed to Support M&S Accreditation (draft), November 2000.

Muessig, P. R., Laack, D. R. and Wroblewski, J. J., "Optimizing the Selection of VV&A Activities A Risk/Benefit Approach." Proceedings of the 1997 Summer Computer Simulation Conference. Arlington VA. pp 855-860.

Muessig, P.R., Laack, D.R., and Wroblewski, J.J., An Integrated Approach to Evaluating Simulation Credibility. Proceedings, Summer Computer Simulation Conference, Vancouver, BC, July 2000

RPG References in This Document

select menu: *RPG Core Documents*, select item: "Accreditation Agent Role in the VV&A of Legacy Simulations"

select menu: *RPG Core Documents*, select item: "Accreditation Agent Role in the VV&A of New Simulations"

select menu: *RPG Core Documents*, select item: "V&V Role in the VV&A of New Simulations"

select menu: *RPG Core Documents*, select item: "V&V Agent Role in the VV&A of New Simulations"

select menu: *RPG Special Topics*, select item: "Conceptual Model Development and Validation"

select menu: *RPG Special Topics*, select item: "Data V&V for Legacy Simulations"

select menu: *RPG Special Topics*, select item: "Data V&V for New Simulations"

select menu: *RPG Special Topics*, select item: "Fidelity"

select menu: *RPG Special Topics*, select item: "Measures"

select menu: *RPG Special Topics*, select item: "Requirements"

select menu: *RPG Special Topics*, select item: "Risk Assessment and Its Impact on VV&A"

select menu: *RPG Special Topics*, select item: "Validation"

select menu: *RPG Templates*, select item: "Draft Standard Accreditation Plan Template – May 06"²⁷

select menu: *RPG Templates*, select item: "Draft Standard Accreditation Report Template – May 06"

select menu: *RPG Templates*, select item: "Draft Standard V&V Plan Template – May 06"

select menu: *RPG Templates*, select item: "Draft Standard V&V Report Template – May 06"

²⁷The Draft Standard VV&A Documentation Templates originate from and will be replaced by DoD VV&A Documentation Standard upon issuance.

Draft Standard Accreditation Plan

Accreditation Plan Title Page

This title page should include the following information, although the arrangement of the information on the title page is left to the discretion of the organization preparing it:

1. Date of the Document
2. Identification of Program/Project/Exercise/Study
3. Document Title
 - a. M&S Name and Version
 - b. Document Type (i.e., Accreditation Plan, V&V Plan, V&V Report, Accreditation Report) and Version
4. Identification of document preparer
5. Distribution Statement (if required)
6. Classification (if required)

Document Version

Version no.	Date	Changes
Draft 1	1 Sep 01	First draft

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ACCREDITATION PLAN EXECUTIVE SUMMARY

The executive summary provides an overview of the Accreditation Plan. It should be a synopsis, two to four pages in length, of the major elements from all sections of the document, with emphasis on accreditation scope, M&S requirements, acceptability criteria, accreditation methodology, and accreditation issues.

1. PROBLEM STATEMENT

This section describes the problem the M&S is expected to address. The problem statement serves as the foundation for the definition of requirements, acceptability criteria, and ultimately the accreditation assessment by documenting:

- the question(s) to be answered and/or the particular aspects of the problem that the simulation will be used to help address
- the decisions that will be made based on the simulation results
- the consequences resulting from erroneous simulation outputs

The information included in the subsections below is common to all four core documents.

1.1 Intended Use

This subsection describes the problem to be addressed by the M&S, including the system or process being represented and the role it plays in the overall program.

1.2 M&S Overview

This subsection provides an overview of the M&S for which this plan is written and discusses the level of configuration control that currently exists for the M&S. Detailed M&S information is provided in Appendix A.

1.3 M&S Application

This subsection describes how the M&S will be used in the overall program and lists the program objectives the M&S must meet in order to fulfill the intended use.

1.4 Accreditation Scope

This subsection describes the scope of the accreditation effort based on the assessment of the risk of using the M&S and the availability of resources.

2. M&S REQUIREMENTS AND ACCEPTABILITY CRITERIA

This section describes the M&S requirements defined for the intended use, the derived acceptability criteria that must be met to satisfy the requirements, the quantitative and qualitative metrics used to measure their success, and the order of their priority. The relationship between the requirements and the acceptability criteria can be shown either in text or in a table as below.

#	M&S Requirement	Acceptability Criteria
1		1.1
		1.n
2		2.1
		2.n
n		n.1

3. M&S ASSUMPTIONS, CAPABILITIES, LIMITATIONS, & RISKS/IMPACTS

This section describes factors that constrain the development and/or use of the M&S or that impede the VV&A effort, including the assumptions, capabilities, limitations, and risk factors affecting M&S development and risks associated with using the M&S for the intended use.

3.1 M&S Assumptions

This subsection describes the known assumptions about the M&S and the data used in support of the M&S in the context of the problem.

3.2 M&S Capabilities

This subsection describes the known capabilities of the M&S.

3.3 M&S Limitations

This subsection describes the known constraints and limitations under which the M&S will be developed, tested, and used, including constraints on M&S development that result in limitations in M&S capability, as well as constraints on M&S testing and evaluation that result in inadequate information regarding M&S capability (e.g., inadequate resource, inadequate subject matter and technical knowledge expertise, unavailable data, inadequately defined M&S requirements and methodologies, inadequate test environments).

3.4 M&S Risks/Impacts

This subsection describes the risks associated with developing and/or using the M&S for the intended use including the risks resulting from identified constraints and limitations and the risks associated with doing and/or not doing various VV&A tasks as well as the impacts associated with those risks.

4. ACCREDITATION METHODOLOGY

This section describes the methods to be used in the accreditation assessment.

4.1 Accreditation Information Needs

This subsection describes the information needed to conduct the accreditation assessment, e.g., the information expected from the V&V effort, information expected from the development testing effort, information from the M&S developers, and information from the application.

4.2 Information Collection Plan

This subsection describes how, when, and from whom the information is to be obtained, the form in which the information is to be provided, and the priority of each item.

4.3 Assessment Plan

This subsection describes the assessment events, including the assessment techniques to be used and the specific roles and responsibilities of the participants, the milestones to be achieved, and the products to be produced.

5. ACCREDITATION ISSUES

This section describes issues associated with the accreditation effort that may arise due to

resourcing, scheduling, development, or data problems. The section identifies the issue, the likelihood of its occurrence, contingency plans for addressing it, and the probability of success.

6. KEY PARTICIPANTS

This section identifies the participants involved in the VV&A effort as well as the roles that they are assigned and their key responsibilities within that role. Roles and key responsibilities are defined during initial planning; names and contact information of the actual participants are added when they are determined. For each person serving as a Subject Matter Expert (SME), include a listing of the person's qualifications.

6.1 Accreditation Participants

This subsection lists the participants involved in the accreditation effort, including their contact information, assigned role, and the key responsibilities associated with that role. Typical accreditation roles include Accreditation Authority, Accreditation Agent, Accreditation Team, and Subject Matter Experts (SMEs).

6.2 V&V Participants

This subsection lists the participants involved in the V&V effort, including their contact information, assigned role, and the key responsibilities associated with that role. Typical V&V roles include M&S Proponent, V&V Agent, V&V Team, Validation Authority, SMEs, and Data Source.

6.3 Other Participants

This subsection identifies the members of the application program and model development effort with V&V or accreditation responsibilities as well as others who have a role in the VV&A process. The information should include their position or role, contact information, and VV&A responsibilities. Typical roles include M&S Program Manager, Application Sponsor/User, M&S Developer, Data Source, Milestone Decision Authority, Program Office, M&S Development Team, User Group, Configuration Control Board, and Subject Matter Experts.

7. PLANNED ACCREDITATION RESOURCES

7.1 Resource Allocations

This subsection identifies the resources needed to accomplish the accreditation. The information provided here should include the name of the activity, task, or event, the list of required resources (e.g., SMEs, equipment, TDY funding) needed to accomplish it, milestones, deadlines, and the POC. The activities, tasks, and events, and their associated milestones, products, and deadlines should be consistent with information provided elsewhere in this plan.

7.2 Accreditation Milestones and Timeline

This subsection provides a chart of the overall program timeline with program, development, V&V, and accreditation milestones.

APPENDIX A M&S DESCRIPTION

This appendix contains pertinent detailed information about the M&S being assessed.

A.1 M&S Overview

This section provides a description of the M&S including the type of model (e.g., stochastic, deterministic, high resolution, low resolution, human in the loop [HITL], hardware in the loop [HWIL], stand-alone, engineering, aggregated), and what types of problems it is intended to support (e.g., training, force structure analysis, command and control, experimentation, system analysis, analysis of alternatives).

A.2 M&S Development and Structure

This section provides information about how the M&S is organized and/or constructed (e.g., the M&S design), hardware and software specifics, and technical statistics (e.g., runtime speed, capacity, bandwidth). For M&S under development, this section includes the M&S development plan, including the development paradigm being followed (e.g., spiral development, model-test-model), and basic assumptions about its execution.

A.3 M&S Capabilities and Limitations

This section summarizes the capabilities and the limitations of the M&S.

A.4 M&S Use History

This section describes how and when the model has been used in the past as well as references relevant historical use documents.

A.5 Data

A.5.1 Input Data

This subsection identifies the data required to populate and execute the M&S, including input data sets, hard-wired data (constants), environmental data, and operational data. Descriptive metadata, metrics, and authoritative or approved sources are provided for each.

A.5.2 Output Data

This subsection identifies the M&S output data, including a definition, the unit of measure, and the range of values for each data item.

A.6 Configuration Management

This section includes a description of the M&S configuration management program, lists the M&S artifacts and products that are under configuration management, identifies documentation and reporting requirements that impact the VV&A effort, and provides contact information.

APPENDIX B M&S REQUIREMENTS TRACEABILITY MATRIX

This appendix traces (e.g., in a table) the acceptability criteria and their measures and metrics to each M&S requirement. The M&S Requirements Traceability Matrix provides a visual demonstration of the degree to which a relationship can be established between the M&S requirements and associated acceptability criteria for accreditation (and eventually will visually demonstrate the totality of evidence collected during V&V implementation). As the M&S requirements provide the backbone of accreditation and its associated V&V effort, the clearer the articulation and detailed level of requirements and acceptability criteria, the more accurate and relevant the V&V. In this light, an M&S Requirements Traceability Matrix can be an invaluable tool in capturing the “one to one” tie between the Acceptability Criteria and the M&S Requirements.

APPENDIX C BASIS OF COMPARISON

This appendix describes the basis of comparison used for validation. The basis for comparison serves as the reference against which the accuracy of the M&S representations is measured. The basis of comparison can come in many forms, such as the results of experiments, theory developed from experiments, validated results from other M&S, and expert knowledge obtained through research or from SMEs.

APPENDIX D REFERENCES

This appendix identifies all of the references used in the development of this document.

APPENDIX E ACRONYMS

This appendix identifies all acronyms used in this document.

APPENDIX F GLOSSARY

This appendix contains definitions that aid in the understanding of this document.

APPENDIX G ACCREDITATION PROGRAMMATICS

This appendix contains detailed information regarding resource allocation and funding that can be used to track VV&A expenditures.

Planned Resource Allocations and Funding						
Accreditation Activity	Required Resources	Funding Source	FY/Q \$K	\$ FY/Q \$K	FY/Q \$K	FY/Q \$K

APPENDIX H DISTRIBUTION LIST

Draft Standard V&V Plan

V&V Plan Title Page

This title page should include the following information, although the arrangement of the information on the title page is left to the discretion of the organization preparing it:

7. Date of the Document
8. Identification of Program/Project/Exercise/Study
9. Document Title
 - a. M&S Name and Version
 - b. Document Type (i.e., Accreditation Plan, V&V Plan, V&V Report, Accreditation Report) and Version
10. Identification of document preparer
11. Distribution Statement (if required)
12. Classification (if required)

Document Version

Version no.	Date	Changes
Draft 1	1 Sep 01	First draft

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V&V PLAN EXECUTIVE SUMMARY

The executive summary provides an overview of the V&V Plan. It should be a synopsis, two to four pages in length, of the major elements from all sections of the document, with emphasis on V&V scope, M&S requirements and acceptability criteria, V&V methodology, and V&V issues.

1. PROBLEM STATEMENT

This section describes the problem the M&S is expected to address. The problem statement serves as the foundation for the definition of requirements, acceptability criteria, and ultimately the accreditation assessment by documenting:

- the question(s) to be answered and/or the particular aspects of the problem that the simulation will be used to help address
- the decisions that will be made based on the simulation results
- the consequences resulting from erroneous simulation outputs

The information included in the subsections below is common to all four core documents.

1.1 Intended Use

This subsection describes the problem to be addressed by the M&S, including the system or process being represented and the role it plays in the overall program.

1.2 M&S Overview

This subsection provides an overview of the M&S for which this plan is written and discusses the level of configuration control that currently exists for the M&S. Detailed M&S information is provided in Appendix A.

1.3 M&S Application

This subsection describes how the M&S will be used in the overall program and lists the program objectives the M&S must meet in order to fulfill the intended use.

1.4 Accreditation Scope

This subsection describes the scope of the accreditation effort based on the assessment of the risk of using the M&S and the availability of resources.

1.5 V&V Scope

This subsection describes the scope of the V&V effort based on the assessment of M&S requirements, acceptability criteria, and the availability of resources.

2. M&S REQUIREMENTS AND ACCEPTABILITY CRITERIA

This section describes the M&S requirements defined for the intended use, the derived acceptability criteria that must be met to satisfy the requirements, the quantitative and qualitative metrics used to measure their success, and the order of their priority. The relationship between the requirements and the acceptability criteria can be shown either in text or in a table as shown below.

#	M&S Requirement	Acceptability Criteria
1		1.1
		1.2
		1.n
2		2.1
		2.n
n		n.1

3. M&S ASSUMPTIONS, CAPABILITIES, LIMITATIONS, & RISKS/IMPACTS

This section describes factors that constrain the development and/or use of the M&S or that impede the VV&A effort, including the assumptions, capabilities, limitations, and risk factors affecting M&S development and risks associated with using the M&S for the intended use.

3.1 M&S Assumptions

This subsection describes the known assumptions about the M&S, the M&S capabilities, the data used in support of the M&S, and any constraints placed upon the M&S by the context of the problem.

3.2 M&S Capabilities

This subsection describes the known capabilities of the M&S.

3.3 M&S Limitations

This subsection describes the known constraints and limitations under which the M&S will be developed, tested, and used, including constraints on M&S development that result in limitations in M&S capability, as well as constraints on M&S testing and evaluation that result in inadequate information regarding M&S capability (e.g., inadequate resource, inadequate subject matter and technical knowledge expertise, unavailable data, inadequately defined M&S requirements and methodologies, inadequate test environments).

3.4 M&S Risks/Impacts

This subsection describes the risks associated with developing and/or using the M&S for the intended use including the risks resulting from identified constraints and limitations and the risks associated with doing and/or not doing various VV&A tasks as well as the impacts associated with those risks.

4. V&V METHODOLOGY

The core of the V&V Plan lies in a step-by-step road-mapping of how the V&V tasks will be performed. V&V tasks should be tailored according to need, valued added, and resources. In this section, describe what V&V tasks are planned, as well as each task's objectives, assumptions, constraints, criteria, methodology, and how they will be measured and evaluated. Identify what performance metrics will be used.

4.1 Planned Data V&V Tasks/Activities

4.1.1 Data Verification Tasks/Activities

This subsection describes the overall approach for verifying the data within the context of how it is used in the M&S.

4.1.2 Data Validation Tasks/Activities

This subsection describes the overall approach for validating the data within the context of how it is used in the M&S.

4.1.3 Required Validation Data

This subsection describes/identifies the data that are needed to implement the tasks. It also describes the coordination mechanism and schedule for obtaining the needed data.

4.2 Planned Conceptual Model Validation Tasks/Activities

This subsection describes the overall approach for validating the conceptual model. It should correlate specific segments of the conceptual model to the M&S requirements and acceptability criteria as well as identify which authoritative resources will be used to establish the validity, including subject matter experts, reference documents, and reference data. For each subject matter expert, the following information should be provided:

1. name and contact information (e.g., address, phone number, email)
2. agency
3. summary of relevant experience
4. education credentials
5. relevant publications

4.3 Planned Design Verification Tasks/Activities

This subsection describes the overall approach for verifying the M&S design. It should correlate specific segments of the design to the conceptual model and to the acceptability criteria as well as cite applicable standards, codes, best practices, etc. to which the design should adhere and how adherence will be evaluated.

4.4 Planned Implementation Verification Tasks/Activities

This subsection describes the overall approach for verifying the M&S implementation. It should describe how the M&S development documentation (installation guide, user's manual and so on) will be reviewed and evaluated as well as state how completeness, correctness, and consistency of functional requirements will be measured.

This subsection should include a discussion of the planned scenarios, test cases, and sample size required for the simulation tests designed to verify that the software code is error free and to verify that there is successful integration of all components into a single simulation system, system of systems, or federation. This subsection should discuss what organization will run the tests, what organization will analyze the results, the time required to do so, and the schedule for accomplishing the runs. An example of the type of information to document follows:

Implementation Verification Test Description:

1. Identify the test by name, date and time.
2. Identify test conductor's name, organization, phone and email address.
3. Describe the hardware/software architecture.
4. State purpose relative to the acceptability criteria.
5. Provide brief description.
6. Identify any prerequisite conditions that must be established prior to performing the test case.
7. Describe test inputs necessary for the test case.
8. Identify all expected results (pre-test predictions) for the test case
9. Define the test procedure for the test case.
10. Identify any assumptions made or constraints imposed in the description of the test case.
11. Identify the verification technique to be used.

4.5 Planned Results Validation Tasks/Activities

This subsection describes the overall approach for validating the M&S results. It should correlate M&S results with acceptability criteria and M&S requirements as well as Identify all authoritative resources to be used in evaluating the M&S results, including subject matter experts; mathematical or statistical techniques; and data resources. It should state how the resources are to be applied and how the results are to be evaluated. For subject matter experts, it should describe the specialized skills or knowledge that is needed.

For the simulation tests designed to validate the results, this subsection should include a discussion of the planned scenarios, test cases, sample size, and data required. As well as a discussion of what organization will run the tests, which organization will analyze the results, the time required to do so, and the schedule for accomplishing the runs. An example of the type of information to document follows:

Results Validation Test Description:

1. Identify the test by name, date and time.
2. Identify test conductor's name, organization, phone and email address.
3. Describe the hardware/software architecture.
4. State purpose relative to the acceptability criteria.
5. Provide brief description.
6. Identify any prerequisite conditions that must be established prior to performing the test case.
7. Describe test inputs necessary for the test case.
8. Identify all expected results (pre-test predictions) for the test case
9. Define the test procedure for the test case.
10. Identify any assumptions made or constraints imposed in the description of the test case.
11. Identify the validation technique to be used.

4.6 Planned V&V Reporting Tasks/Activities

This subsection describes the plans for producing and delivering the V&V Report and Accreditation Package.

5. V&V ISSUES

This section discusses the important unresolved issues relevant to this stage of the VV&A effort, including administration, coordination, and execution. Report activities underway to address these issues and the probability of each activity's success. As the V&V effort is both iterative and dependent on the products of the M&S development process, the V&V process will most likely uncover several unresolved issues throughout the VV&A effort. Although these open-ended areas of concern are common, it is important to document all issues early on and formulate what activities are being executed, or will be conducted, to address each issue, along with the probability of their success.

6. KEY PARTICIPANTS

This section identifies the participants involved in the VV&A effort as well as the roles that they are assigned and their key responsibilities within that role. Roles and key responsibilities are defined during initial planning; names and contact information of the actual participants are added when they are determined. For each person serving as a Subject Matter Expert (SME), include a listing of the person's qualifications.

6.1 Accreditation Participants

This subsection lists the participants involved in the accreditation effort, including their contact information, assigned role, and the key responsibilities associated with that role. Typical accreditation roles include Accreditation Authority, Accreditation Agent, Accreditation Team, and Subject Matter Experts (SMEs).

6.2 V&V Participants

This subsection lists the participants involved in the V&V effort, including their contact information, assigned role, and the key responsibilities associated with that role. Typical V&V roles include M&S Proponent, V&V Agent, V&V Team, Validation Authority, Data Source, and Subject Matter Experts.

6.3 Other Participants

This subsection identifies the members of the application program and model development effort with V&V or accreditation responsibilities as well as others who have a role in the VV&A process. The information should include their position or role, contact information, and VV&A responsibilities. Typical roles include M&S Program Manager, Application Sponsor/User, M&S Developer, Data Source, Milestone Decision Authority, Program Office, M&S Development Team, User Group, Configuration Control Board, and Subject Matter Experts.

7. PLANNED V&V RESOURCES

This section discusses the resources planned for the V&V effort, such as man-hours, materials, and funding. As with any programmatic effort, the documentation of schedule, manpower, and funding plans is not only wise, but required. Fiscal responsibility for V&V dictates careful planning. Thus, the V&V Plan should include a definition of tasks and their associated resource

requirements so that Program Managers can carefully budget for V&V in their resource allocations. For clarity, it is beneficial to map out the schedule, manpower, and funding requirements in tables and to identify any resource shortfalls.

7.1 Planned V&V Tasking and Funding

This subsection identifies the resources needed to accomplish the verification and validation planned. The information provided here should include the name of the activity, task, or event, the list of required resources (e.g., SMEs, equipment, TDY funding) needed to accomplish it, milestones, deadlines, and the POC. The activities, tasks, and events, and their associated milestones, products, and deadlines should be consistent with information provided elsewhere in this plan.

7.2 Planned V&V Timeline

This subsection identifies when each key event described in the V&V Tasking and Funding subsection should be met.

APPENDIX A M&S DESCRIPTION

This appendix contains pertinent detailed information about the M&S being assessed.

A.1 M&S Overview

This section provides a description of the M&S including the type of model (e.g., stochastic, deterministic, high resolution, low resolution, human in the loop [HITL], hardware in the loop [HWIL], stand-alone, engineering, aggregated), and what types of problems it is intended to support (e.g., training, force structure analysis, command and control, experimentation, system analysis, analysis of alternatives).

A.2 M&S Development and Structure

This section provides information about how the M&S is organized and/or constructed (e.g., the M&S design), hardware and software specifics, and technical statistics (e.g., runtime speed, capacity, bandwidth). For M&S under development, this section includes the M&S development plan, including the development paradigm being followed (e.g., spiral development, model-test-model), and basic assumptions about its execution.

A.3 M&S Capabilities and Limitations

This section summarizes the capabilities and the limitations of the M&S with respect to the intended application.

A.4 M&S Use History

This section briefly describes how and when the model has been used in the past as well as references relevant historical use documents.

A.5 Data

A.5.1 Input Data

This subsection identifies the data required to populate and execute the simulation, including input data sets, hard-wired data (constants), environmental data, and operational data. Descriptive metadata, metrics, and authoritative or approved sources are provided for each.

A.5.2 Output Data

This subsection identifies the M&S output data, including a definition, the unit of measure, and the range of values for each data item.

A.6 Configuration Management

This section includes a brief description of the M&S configuration management program, lists the M&S artifacts and products that are under configuration management, identifies documentation and reporting requirements that impact the VV&A effort, and provides contact information.

APPENDIX B M&S REQUIREMENTS TRACEABILITY MATRIX

This appendix traces (e.g., in a table) the acceptability criteria and their measures and metrics to each M&S requirement. The M&S Requirements Traceability Matrix provides a visual demonstration of the degree to which a relationship can be established between the M&S requirements and associated acceptability criteria for accreditation (and eventually will visually demonstrate the totality of evidence collected during V&V implementation). As the M&S requirements provide the backbone of accreditation and its associated V&V effort, the clearer the articulation and detailed level of requirements and acceptability criteria, the more accurate and relevant the V&V. In this light, an M&S Requirements Traceability Matrix can be an invaluable tool in capturing the “one to one” tie between the Acceptability Criteria and the M&S Requirements.

APPENDIX C BASIS OF COMPARISON

This appendix describes the basis of comparison used for validation. The basis for comparison serves as the reference against which the accuracy of the M&S representations is measured. The basis of comparison can come in many forms, such as the results of experiments, theory developed from experiments, validated results from other M&S, and expert knowledge obtained through research or from SMEs.

APPENDIX D REFERENCES

This appendix identifies all of the references used in the development of this document.

APPENDIX E ACRONYMS

This appendix identifies all acronyms used in this document.

APPENDIX F GLOSSARY

This appendix contains definitions that aid in the understanding of this document.

APPENDIX G V&V PROGRAMMATICS

This appendix contains detailed information regarding resource allocation and funding.

Planned Resource Allocations and Funding						
V&V Activity	Required Resources	Funding Source	FY/Q \$K	FY/Q \$K	FY/Q \$K	FY/Q \$K

APPENDIX H DISTRIBUTION LIST

This appendix provides the distribution list for hardcopies of the approved document.

APPENDIX I ACCREDITATION PLAN

This appendix provides a copy of or a reference to the Accreditation Plan for the simulation for which this document has been prepared.

Draft Standard V&V Report

V&V Report Title Page

This title page should include the following information, although the arrangement of the information on the title page is left to the discretion of the organization preparing it:

13. Date of the Document
14. Identification of Program/Project/Exercise/Study
15. Document Title
 - a. M&S Name and Version
 - b. Document Type (i.e., Accreditation Plan, V&V Plan, V&V Report, Accreditation Report) and Version
16. Identification of document preparer
17. Distribution Statement (if required)
18. Classification (if required)

Document Version

Version no.	Date	Changes
Draft 1	1 Sep 01	First draft

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V&V REPORT EXECUTIVE SUMMARY

The executive summary provides the executive with an overview of the V&V Report. It should be a synopsis, two to four pages in length, of the major elements from all sections of the document, with emphasis on V&V scope, M&S requirements and acceptability criteria, V&V task analysis, and V&V recommendations.

1. PROBLEM STATEMENT

This section describes the problem the M&S is expected to address. The problem statement serves as the foundation for the definition of requirements, acceptability criteria, and ultimately the accreditation assessment by documenting:

- the question(s) to be answered and/or the particular aspects of the problem that the simulation will be used to help address
- the decisions that will be made based on the simulation results
- the consequences resulting from erroneous simulation outputs

The information included in the subsections below is common to all four core documents.

1.1 Intended Use

This subsection describes the problem to be addressed by the M&S, including the system or process being represented and the role it plays in the overall program.

1.2 M&S Overview

This subsection provides an overview of the M&S for which this plan is written and discusses the level of configuration control that currently exists for the M&S. Detailed M&S information is provided in Appendix A.

1.3 M&S Application

This subsection describes how the M&S will be used in the overall program and lists the program objectives the M&S must meet in order to fulfill the intended use.

1.4 Accreditation Scope

This subsection describes the focus of the accreditation effort based on the assessment of the risk of using the M&S and the availability of resources.

1.5 V&V Scope

This subsection describes the scope of the V&V effort based on the assessment of M&S requirements, acceptability criteria, and the availability of resources.

2. M&S REQUIREMENTS AND ACCEPTABILITY CRITERIA

This section describes the M&S requirements defined for the intended use, the derived acceptability criteria that must be met to satisfy the requirements, the quantitative and qualitative metrics used to measure their success, and the order of their priority. The relationship between the requirements and the acceptability criteria can be shown either in text or in a table as shown below.

#	M&S Requirement	Acceptability Criteria
1		1.1
		1.2
		1.n
2		2.1
		2.n
n		n.1

3. M&S ASSUMPTIONS, CAPABILITIES, LIMITATIONS, & RISKS/IMPACTS

This section describes factors that constrain the development and/or use of the M&S or that impede the VV&A effort, including the assumptions, capabilities, limitations, and risk factors affecting M&S development and risks associated with using the M&S for the intended use.

3.1 M&S Assumptions

This subsection describes the known assumptions about the M&S, the M&S capabilities, the data used in support of the M&S, and any constraints placed upon the M&S by the context of the problem.

3.2 M&S Capabilities

This subsection describes the known capabilities of the M&S.

3.3 M&S Limitations

This subsection describes the known constraints and limitations under which the M&S will be developed, tested, and used, including constraints on M&S development that result in limitations in M&S capability, as well as constraints on M&S testing and evaluation that result in inadequate information regarding M&S capability (e.g., inadequate resource, inadequate subject matter and technical knowledge expertise, unavailable data, inadequately defined M&S requirements and methodologies, inadequate test environments).

3.4 M&S Risks/Impacts

This subsection describes the risks associated with developing and/or using the M&S for the intended use including the risks resulting from identified constraints and limitations and the risks associated with doing and/or not doing various VV&A tasks as well as the impacts associated with those risks.

4. V&V TASK ANALYSIS

This section provides an overview of the results of the V&V inspection and testing activities, as outlined below. Included are details regarding any deviations from the V&V Plan and the justification for each change as well as all sources of data and any applicable quality-assurance documentation.

4.1 Data V&V Task Analysis

4.1.1 Data Verification Task Analysis

This subsection describes the results of each data verification task.

4.1.2 Data Validation Task Analysis

This subsection describes the results of each data validation task.

4.2 Conceptual Model Validation Task Analysis

This subsection describes the results of each conceptual model validation task.

4.3 Design Verification Task Analysis

This subsection describes the results of each design verification task.

4.4 Implementation Verification Task Analysis

This subsection describes the implementation verification test results. An example of the type of information to document follows:

Test Results:

1. Record results for each step of the test procedure executed and describe any unresolved anomalies or discrepancies of any kind encountered during the execution of the test. Identify the verification technique(s) used.
2. Correlate the pre-test predictions with the test results. Describe and analyze anomalies.
3. Include or reference amplifying information that may help to isolate and correct the cause of any discrepancy.
4. Provide an assessment by the test conductor as to the cause of each discrepancy and a means of correcting it.

4.5 Results Validation Task Analysis

This subsection describes the results validation test results. An example of the type of information to document follows:

Test Results:

1. Record results for each step of the test procedure executed and describe any unresolved anomalies or discrepancies of any kind encountered during the execution of the test. Identify the validation technique(s) used.
2. Correlate the pre-test predictions with the test results. Describe and analyze anomalies.
3. Include or reference amplifying information that may help to isolate and correct the cause of any discrepancy.

4. Provide an assessment by the test conductor as to the cause of each discrepancy and a means of correcting it.

4.6 V&V Reporting Task Analysis

This subsection describes how the V&V activities were documented and what documentation was delivered.

5. V&V RECOMMENDATIONS

This section discusses any unresolved issues relevant to the V&V effort and reports activities undertaken to address these issues and associated recommendations. This section also describes: the conclusions of the M&S fidelity as drawn from the V&V process and the articulation of any unresolved issues. These issues should be enumerated along with any processes undertaken for their resolution, and recommendations relevant to M&S development, V&V process, accreditation, and/or M&S use

6. KEY PARTICIPANTS

This section identifies the participants involved in the VV&A effort as well as the roles that they are assigned and their key responsibilities within that role. The roles involved in the VV&A effort and the key individuals associated with each. Roles and key responsibilities are defined during initial planning; names and contact information of the actual participants are added when they are determined. For each person serving as a Subject Matter Expert (SME), include a listing of the person's qualifications.

6.1 Accreditation Participants

This subsection lists the participants involved in the accreditation effort, including their contact information, assigned role, and the key responsibilities associated with that role. Typical accreditation roles may include Accreditation Authority, Accreditation Agent, Accreditation Team, and Subject Matter Experts (SMEs).

6.2 V&V Participants

This subsection lists the participants involved in the V&V effort, including their contact information, assigned role, and the key responsibilities associated with that role. Typical V&V roles may include M&S Proponent, V&V Agent, V&V Team, Validation Authority, Data Source, and Subject Matter Experts.

6.3 Other Participants

This subsection identifies the members of the application program and model development effort with V&V or accreditation responsibilities as well as others who have a role in the VV&A process. The information should include their position or role, contact information, and VV&A responsibilities. Typical roles may include M&S Program Manager, Application Sponsor/User, M&S Developer, Data Source, Milestone Decision Authority, Program Office, M&S Development Team, User Group, Configuration Control Board, and Subject Matter Experts.

7. ACTUAL V&V RESOURCES

This section updates the resources information estimated in the V&V Plan with actual costs. The preparer should identify any planned areas that were not funded. The V&V Report should

include a definition of the tasks and resource requirements that were used to complete each phase of the V&V process. For clarity, the preparer should map out the schedule, manpower, and funding expenditures in tables.

7.1 Planned V&V Tasking and Funding

This subsection identifies the resources that were used to accomplish the verification and validation activities. The information provided here should include the name of the activity, task, or event, the list of required resources (e.g., SMEs, equipment, TDY funding) used to accomplish it, milestones, deadlines, and the POC. The activities, tasks, and events, and their associated milestones, products, and deadlines should be consistent with information provided elsewhere in this plan.

7.2 Actual V&V Timeline

This subsection identifies when each key event described in the V&V Tasking and Funding subsection was met.

8. V&V LESSONS LEARNED

The development and fulfillment of any successful and streamlined process necessarily includes adjustments to its steps. This section provides a summary of the adjustments and lessons learned during the V&V implementation

APPENDIX A M&S DESCRIPTION

This appendix contains pertinent detailed information about the M&S being assessed.

A.1 M&S Overview

This section provides a description of the M&S including the type of model (e.g., stochastic, deterministic, high resolution, low resolution, human in the loop [HITL], hardware in the loop [HWIL], stand-alone, engineering, aggregated), and what types of problems it is intended to support (e.g., training, force structure analysis, command and control, experimentation, system analysis, analysis of alternatives).

A.2 M&S Development and Structure

This section provides information about how the M&S is organized and/or constructed (e.g., the M&S design), hardware and software specifics, and technical statistics (e.g., runtime speed, capacity, bandwidth). For M&S under development, this section includes the M&S development plan, including the development paradigm being followed (e.g., spiral development, model-test-model), and basic assumptions about its execution.

A.3 M&S Capabilities and Limitations

This section summarizes the capabilities and the limitations of the M&S.

A.4 M&S Use History

This section describes how and when the model has been used in the past as well as references relevant historical use documents.

A.5 Data

A.5.1 Input Data

This subsection identifies the data required to populate and execute the M&S, including input data sets, hard-wired data (constants), environmental data, and operational data. Descriptive metadata, metrics, and authoritative or approved sources are provided for each.

A.5.2 Output Data

This subsection identifies the M&S output data, including a definition, the unit of measure, and the range of values for each data item.

A.6 Configuration Management

This section includes a description of the M&S configuration management program, lists the M&S artifacts and products that are under configuration management, identifies documentation and reporting requirements that impact the VV&A effort, and provides contact information.

APPENDIX B REQUIREMENTS TRACEABILITY MATRIX

This appendix traces (e.g., in a table) the acceptability criteria and their measures and metrics to each M&S requirement. The M&S Requirements Traceability Matrix provides a visual demonstration of the degree to which a relationship can be established between the M&S requirements and associated acceptability criteria for accreditation (and eventually will visually demonstrate the totality of evidence collected during V&V implementation). As the M&S requirements provide the backbone of accreditation and its associated V&V effort, the clearer the articulation and detailed level of requirements and acceptability criteria, the more accurate and relevant the V&V. In this light, an M&S Requirements Traceability Matrix can be an invaluable tool in capturing the “one to one” tie between the Acceptability Criteria and the M&S Requirements.

APPENDIX C BASIS OF COMPARISON

This appendix describes the basis of comparison used for validation. The basis for comparison serves as the reference against which the accuracy of the M&S representations is measured. The basis of comparison can come in many forms, such as the results of experiments, theory developed from experiments, validated results from other M&S, and expert knowledge obtained through research or from SMEs.

APPENDIX D REFERENCES

This appendix identifies all of the references used in the development of this document.

APPENDIX E ACRONYMS

This appendix identifies all acronyms used in this document.

APPENDIX F GLOSSARY

This appendix contains definitions that aid in the understanding of this document.

APPENDIX G V&V PROGRAMMATICS

This appendix contains detailed information regarding resource allocation and funding.

Planned Resource Allocations and Funding						
V&V Activity	Required Resources	Funding Source	FY/Q \$K	FY/Q \$K	FY/Q \$K	FY/Q \$K

APPENDIX H DISTRIBUTION LIST

This appendix provides the distribution list for hardcopies of the approved document.

APPENDIX I V&V PLAN

This appendix contains the V&V Plan in its most current iteration.

APPENDIX J TEST INFORMATION

This appendix contains information on scenarios, data, setup, etc.

Draft Standard Accreditation Report

Accreditation Report Title Page

This title page should include the following information, although the arrangement of the information on the title page is left to the discretion of the organization preparing it:

19. Date of the Document
20. Identification of Program/Project/Exercise/Study
21. Document Title
 - a. M&S Name and Version
 - b. Document Type (i.e., Accreditation Plan, V&V Plan, V&V Report, Accreditation Report) and Version
22. Identification of document preparer
23. Distribution Statement (if required)
24. Classification (if required)

Document Version

Version no.	Date	Changes
Draft 1	1 Sep 01	First draft

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ACCREDITATION REPORT EXECUTIVE SUMMARY

The executive summary provides an overview of the Accreditation Report. It should be a synopsis, two to four pages in length, of the major elements from all sections of the document, with emphasis on accreditation scope, accreditation assessment, and the accreditation recommendations.

1. PROBLEM STATEMENT

This section describes the problem the M&S is expected to address. The problem statement serves as the foundation for the definition of requirements, acceptability criteria, and ultimately the accreditation assessment by documenting:

- the question(s) to be answered and/or the particular aspects of the problem that the simulation will be used to help address
- the decisions that will be made based on the simulation results
- the consequences resulting from erroneous simulation outputs

The information included in the subsections below is common to all four core documents.

1.1 Intended Use

This subsection describes the problem to be addressed by the M&S, including the system or process being represented and the role it plays in the overall program.

1.2 M&S Overview

This subsection provides an overview of the M&S for which this plan is written and discusses the level of configuration control that currently exists for the M&S. Detailed M&S information is provided in Appendix A.

1.3 M&S Application

This subsection describes how the M&S will be used in the overall program and lists the program objectives the M&S must meet in order to fulfill the intended use.

1.4 Accreditation Scope

This subsection describes the scope of the accreditation effort based on the assessment of the risk of using the M&S and the availability of resources.

2. M&S REQUIREMENTS AND ACCEPTABILITY CRITERIA

This section describes the M&S requirements defined for the intended use, the derived acceptability criteria that must be met to satisfy the requirements, the quantitative and qualitative metrics used to measure their success, and the order of their priority. The relationship between the requirements and the acceptability criteria can be shown either in text or in a table as shown below.

#	M&S Requirement	Acceptability Criteria
1		1.1
		1.2
		1.n
2		2.1
		2.n
n		n.1

3. M&S ASSUMPTIONS, CAPABILITIES, LIMITATIONS, & RISKS/IMPACTS

This section describes factors that constrain the development and/or use of the M&S or that impede the VV&A effort, including the assumptions, capabilities, limitations, and risk factors affecting M&S development and risks associated with using the M&S for the intended use.

3.1 M&S Assumptions

This subsection describes the known assumptions about the M&S, the M&S capabilities, the data used in support of the M&S, and any constraints placed upon the M&S by the context of the problem.

3.2 M&S Capabilities

This subsection describes the known capabilities of the M&S.

3.3 M&S Limitations

This subsection describes the known constraints and limitations under which the M&S will be developed, tested, and used, including constraints on M&S development that result in limitations in M&S capability, as well as constraints on M&S testing and evaluation that result in inadequate information regarding M&S capability (e.g., inadequate resource, inadequate subject matter and technical knowledge expertise, unavailable data, inadequately defined M&S requirements and methodologies, inadequate test environments).

3.4 M&S Risks/Impacts

This subsection describes the risks associated with developing and/or using the M&S for the intended use including the risks resulting from identified constraints and limitations and the risks associated with doing and/or not doing various VV&A tasks as well as the impacts associated with those risks.

4. ACCREDITATION ASSESSMENT

This section describes the methods used in the accreditation assessment.

4.1 Accreditation Information Needs

This section describes the information used to conduct the accreditation assessment. It should map to subsection 4.1 of the Accreditation Plan.

4.2 Information Collection

This subsection describes how, when, and from whom the information was obtained and references the appendix, document, or archive where the actual information can be found.

4.3 Assessment

This subsection describes the assessment events, including assessment techniques used, participants involved, milestones achieved, and the resulting products.

5. ACCREDITATION RECOMMENDATIONS

This section describes the accreditation recommendations to be forwarded to the Accreditation Authority and provides the rationale for each.

6. KEY PARTICIPANTS

This section identifies the participants involved in the VV&A effort as well as the roles that they are assigned and their key responsibilities within that role. Roles and key responsibilities are defined during initial planning; names and contact information of the actual participants are added when they are determined. For each person serving as a Subject Matter Expert (SME), include a listing of the person's qualifications.

6.1 Accreditation Participants

This subsection lists the participants involved in the accreditation effort, including their contact information, assigned role, and the key responsibilities associated with that role. Typical accreditation roles include Accreditation Authority, Accreditation Agent, Accreditation Team, and Subject Matter Experts (SMEs).

6.2 V&V Participants

This subsection lists the participants involved in the V&V effort, including their contact information, assigned role, and the key responsibilities associated with that role. Typical V&V roles include M&S Proponent, V&V Agent, V&V Team, Validation Authority, Data Source, and Subject Matter Experts.

6.3 Other Participants

This subsection identifies the members of the application program and model development effort with V&V or accreditation responsibilities as well as others who have a role in the VV&A process. The information should include their position or role, contact information, and VV&A responsibilities. Typical roles include M&S Program Manager, Application Sponsor/User, M&S Developer, Data Source, Milestone Decision Authority, Program Office, M&S Development Team, User Group, Configuration Control Board, and Subject Matter Experts.

7. ACTUAL ACCREDITATION RESOURCES

7.1 Resource Allocations

This subsection identifies the resources used to accomplish the accreditation. The information provided here should include the name of the activity, task, or event, the list of required resources (e.g., SMEs, equipment, TDY funding) used to accomplish it, milestones, deadlines, and the POC. The activities, tasks, and events, and their associated milestones, products, and deadlines should be consistent with information provided elsewhere in this report.

7.2 Accreditation Milestones and Timeline

This subsection provides a chart of the overall program timeline with program, development, V&V, and accreditation milestones.

8. ACCREDITATION LESSONS LEARNED

The development and fulfillment of any successful and streamlined process necessarily includes adjustments to its steps. This section provides a summary of the adjustments and lessons learned during the accreditation process.

APPENDIX A M&S DESCRIPTION

This appendix contains pertinent detailed information about the M&S being assessed.

A.1 M&S Overview

This section provides a description of the M&S including the type of model (e.g., stochastic, deterministic, high resolution, low resolution, human in the loop [HITL], hardware in the loop [HWIL], stand-alone, engineering, aggregated), and what types of problems it is intended to support (e.g., training, force structure analysis, command and control, experimentation, system analysis, analysis of alternatives).

A.2 M&S Development and Structure

This section provides information about how the M&S is organized and/or constructed (e.g., the M&S design), hardware and software specifics, and technical statistics (e.g., runtime speed, capacity, bandwidth). For M&S under development, this section includes the M&S development plan, including the development paradigm being followed (e.g., spiral development, model-test-model), and basic assumptions about its execution.

A.3 M&S Capabilities and Limitations

This section summarizes the capabilities and the limitations of the M&S.

A.4 M&S Use History

This section describes how and when the model has been used in the past as well as references relevant historical use documents.

A.5 Data

A.5.1 Input Data

This subsection identifies the data required to populate and execute the M&S, including input data sets, hard-wired data (constants), environmental data, and operational data. Descriptive metadata, metrics, and authoritative or approved sources are provided for each.

A.5.2 Output Data

This subsection identifies the M&S output data, including a definition, the unit of measure, and the range of values for each data item.

A.6 Configuration Management

This section includes a description of the M&S configuration management program, lists the M&S artifacts and products that are under configuration management, identifies documentation and reporting requirements that impact the VV&A effort, and provides contact information.

APPENDIX B M&S REQUIREMENTS TRACEABILITY MATRIX

This appendix traces (e.g., in a table) the acceptability criteria and their measures and metrics to each M&S requirement. The M&S Requirements Traceability Matrix provides a visual demonstration of the degree to which a relationship can be established between the M&S requirements and associated acceptability criteria for accreditation (and eventually will visually demonstrate the totality of evidence collected during V&V implementation). As the M&S requirements provide the backbone of accreditation and its associated V&V effort, the clearer the articulation and detailed level of requirements and acceptability criteria, the more accurate and relevant the V&V. An M&S Requirements Traceability Matrix can be an invaluable tool in capturing the “one to one” tie between the Acceptability Criteria and the M&S Requirements.

APPENDIX C BASIS OF COMPARISON

This appendix describes the basis of comparison used for validation. The basis for comparison serves as the reference against which the accuracy of the M&S representations is measured. The basis of comparison can come in many forms, such as the results of experiments, theory developed from experiments, validated results from other M&S, and expert knowledge obtained through research or from SMEs.

APPENDIX D REFERENCES

This appendix identifies all of the references used in the development of this document.

APPENDIX E ACRONYMS

This appendix identifies all acronyms used in this document.

APPENDIX F GLOSSARY

This appendix contains definitions that aid in the understanding of this document.

APPENDIX G ACCREDITATION PROGRAMMATICS

This appendix contains detailed information regarding resource allocation and funding that was used to track VV&A expenditures.

Planned Resource Allocations and Funding						
Accreditation Activity	Required Resources	Funding Source	FY/Q \$K	FY/Q \$K	FY/Q \$K	FY/Q \$K

APPENDIX H DISTRIBUTION LIST

APPENDIX I ACCREDITATION PLAN

This appendix contains the Accreditation Plan in its most current iteration.

APPENDIX J V&V REPORT

This appendix contains the V&V Report in its most current iteration.

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