

LFT&E Strategy - Guidance

1.3 System Description

Identify survivability or lethality improvement related features, if applicable.

1.3.7 Previous LFT&E Testing

Any data sources that address Live Fire and can be mapped to the program's LFT&E critical issues should be listed, including data from other programs and contractor tests to the extent possible. Include rationale for the applicability of those data to the DT, OT, and LFT&E program.

2.1.1 T&E Organizational Construct

Among the stakeholder T&E organizations identified in this paragraph, include the LFT&E IPT and their specific responsibilities (such as test planning, provision of test articles, test support, data collection, reporting). Recommend that the user/operator participate in the LFT&E IPT. Provide sufficient information to adequately understand the functional relationships.

2.5 Integrated Test Program Schedule

Include the component- and system-level LFT&E test events in the Integrated Test Program Schedule. For Navy ship and submarine programs, the schedule should also include Component Shock Qualification for Contractor and Government Furnished Equipment (CFE/GFE). [See Figure 2.1.](#)

3.6 Live Fire Test and Evaluation Approach

TEMPs for systems covered by the LFT&E statute ([Title 10 U.S.C. § 2366](#)) must have a LFT&E strategy that supports a lethality/vulnerability/susceptibility evaluation of the munition/platform. If the LFT&E strategy is completed, it may be included in paragraph 3.6 or as an attachment. Prior to Milestone B, a Live Fire Plan must be developed for proper resourcing. Paragraph 3.6 of the TEMP should provide an overview of the system & Live Fire process, purpose of LFT&E, improvements/upgrades relevant to LFT&E, system description/variants, and pertinent background information. Some programs might decide to attach a LFT&E strategy to the TEMP if the strategy is detailed, classified, or not yet completed. Whether there is a LFT&E attachment or not, paragraph 3.6 of the TEMP should provide a LFT&E summary with the elements described below.

LFT&E Strategy – Guidance

Discuss the scope of live fire testing, including [design of experiment](#) considerations, phases and building block approaches, pass/fail or scoring criteria, and evaluation methodology. The evaluation plan should be constructed so that vulnerability results are assessed in the context of overall system survivability and personnel survival. Discuss the authority of the Live Fire integrated product team in the selection process. Note: Typically, this section is substantial and is one of the prime areas for discussion and negotiation. It might be appropriate to put these details in a LFT&E appendix to the TEMP. This section should clearly articulate test and evaluation objectives, describe the testing, M&S, and engineering analysis required to support those objectives.

This section should include:

- A description of data requirements [metrics] to address the critical issues and to support the overall lethality/survivability and force protection evaluation
- Justification for the required test scope. Either DOE methods to justify the test design or other methods to assess the criticality of the required data to complete the evaluation. These details would justify the required test program and the accepted risk.
- A description of tests and identification of test ranges needed to generate the required data.
- A description of specific data analyses and M&S to support the overall evaluation. Describe any unique evaluation methodologies associated with each issue). Describe the required data needed for the M&S and how the data will be folded into final evaluation. M&S Section of the LFT&E Strategy could include these details.

See [Integrated Survivability Assessment](#) and [Force Protection](#) for additional guidance on LFT&E strategy approaches.

3.6.1 Live Fire Test Objectives

3.6.1.1 Critical LFT&E Issues

Develop Critical LFT&E Issues (CLI) in the form of questions that will be addressed. Consider the following generic CLIs and modify them as needed for the system under consideration:

- Susceptibility - What is the system susceptibility to threat weapons; what are the likely hit points to the platform from the threats selected for analysis?
- Vulnerability - What are the weapons effects and resulting platform degradation caused by the selected threats?

LFT&E Strategy – Guidance

- Force Protection - What are the number and type of crew casualties resulting from the selected threats?
- Force Protection - Can the crew evacuate themselves and injured personnel from damaged compartments/areas of the platform?
- Recoverability - How will the crew limit the spread of secondary damage, restore ship's capabilities and systems, reconstitute mission, and treat casualties following damage from a weapon on the threat list?

See [Aircraft System Example](#), [Ground Combat System Example](#), or [Ground Tactical System Example](#).

3.6.1.2 Lethality/Vulnerability Requirements

Summarize any requirements, specifications, or desired capabilities that are relevant to the LFT&E strategy, including (for vulnerability programs) any KKPs that address [force protection](#) or survivability against asymmetric threats. A target/threat matrix table should also be included in the Live Fire strategy and updated as required. The strategy should address all expected targets/threats, regardless of whether or not they are explicitly identified in the requirements. The System Threat Assessment Report (STAR) can be used to identify the targets/threats that will be addressed. ([Example target/threat matrix](#))

3.6.1.3 Schedule, Funding and Resources

Identify schedule, funding and resources (targets/assets) pertaining to LFT&E. Include arena, coupon/component, exploitation/ballistic hull, or sled testing, along with the breakout of all integrated DT/OT tests that support LFT&E. Also include test ranges, targets, modeling, test/evaluation plan preparation, pre-shot predictions and reporting for each test phase. For Navy ship and submarine programs, include Component Shock Qualification for Contractor and Government Furnished Equipment (CFE/GFE). At a minimum, by Milestone B, there should be a Live Fire Plan that can be used for resourcing. See Adequate Test Resources [Guidance](#) and [Examples](#).

3.6.1.4 Document Approval Matrix

Include a table of pertinent Live Fire documents, including pre-shot predictions, analysis/evaluation plans, test plans, and M&S VV&A documentation. The table should list who is responsible for originating/reviewing/signing each document. See Test Planning Documents [Guidance](#) and [Examples](#).

LFT&E Strategy – Guidance

3.6.2 Modeling & Simulation (M&S)

Identify whether M&S will be used to support test planning, pre-test prediction, and/or an evaluation and the M&S tools to be used. Indicate the anticipated inputs (test data) needed by the model(s), and the types of output expected to be provided to support test planning, pre-test prediction, and/or evaluation. If multiple models will be used, the overall M&S "flow" should be described (e.g., where the output of one model will be required as input for another). Discuss means of verification, validation and accreditation for models used and organizational responsibility. See [M&S for T&E Guidance](#) and [M&S LFT&E Examples](#).

3.6.3 Test Limitations

List any test limitations and mitigations. See [Test Limitations Guidance](#) and [LFT&E Test Limitation Examples](#).