

## DATA ITEM DESCRIPTION

### **Title: ENGINE CONTROL SYSTEM COMPONENT TEST REPORT DOCUMENTATION REQUIREMENTS**

**Number: DI-NDTI-81897**

**AMSC Number: 9340**

**DTIC Application: No**

**Office of Primary Responsibility: AV PA**

**Applicable Forms: N/A**

**Approval Date: 20130415**

**Limitation: N/A**

**GIDEP Applicable: No**

**Use/relationship:** The Engine Control System Component Test Report Documentation Requirements describe the format and content of deliverable information from the environmental qualification testing of engine control system components. It provides clear and complete instructions for the preparation of qualification substantiation data products to be submitted for approval by the airworthiness authority, resulting from applicable tasks delineated in the solicitation.

This DID is applicable when the Contractor is tasked to prepare and submit evidence of component testing for airworthiness substantiation.

#### **Requirements:**

1. Reference Documents; None.
2. Cover
  - a. Title, number, and date.
  - b. Contractor's Name.
  - c. Contract Number.
3. Title Page
  - a. Title, number, and date.
  - b. Contractor's Name.
  - c. Name(s) of the author(s).
  - d. Contract Number
4. Abstract.
  - a. Objective of the plan.
  - b. Brief statement of the contents of the plan.
5. Table of Contents.

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## 6. List of Tables.

- a. When used in a separate series, tables shall be given Roman numerals.

## 7. List of Illustrations.

- a. Figure numbers and captions of all illustrations.
- b. Photographs, charts, and graphs shall be treated as illustrations and given figure numbers.

## 8. Applicable documents.

## 9. Introduction.

## 10. Component Description.

- a. System Description
- b. Unit Construction and Assembly
- c. Component Non-Conformances.

Any non-conformances should be described here, with reference to Appendix A for the actual documentation of such. Airworthiness Authority approval of the non-conformances should also be mentioned and included in Appendix A. Non-conformances should be described in detail, including any corrective action taken. The report shall explain the rationale for testing a nonconforming part or reworked part. The test report shall provide evidence of government approval for using any nonconforming part during a test.

## 11. Test Plan

Explanation that there is a single test plan, that it specifies the order of testing, includes the individual test procedures, and the pass/fail criteria, etc.

- a. Test Plan Summary - Summarize the test plan in a table, including the order of testing, the name of the test, the test procedure, and the test plan paragraph number.
- b. Plan Approval - Specify when/how the Airworthiness Authority approval of the test plan was provided, and include in Appendix B the documentation of such. Specify when/how contractor approval (if required) of the test plan was provided, and include in Appendix B the documentation of such.
- c. Deviation of the Test Plan (Global) - Explain any global deviations (applicable to all tests) that had to be made to the test plan and reference Appendix B for the documentation of the deviations, along with Airworthiness Authority approval.

## 12. Test Readiness Review (TRR)

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Provide text indicating that a TRR was held. Provide information on whom, when and where, and the outcome of the TRR

- a. Include documentation of Airworthiness Authority approval to test.
- b. Include TRR materials in Appendix C.

## 13. Test Summary

Include a table similar to the one illustrated below\* :

Test Name UUT S/N	Test Order	Test Plan # Paragraph	Date of Test	Result	Pre-Test ATP		Test Report #	Section #	Post-Test ATP	
					Date	Appendix			Date	Appendix
Test 1 Name Test 1 UUT S/N	1			Pass						
Test 2 Name Test 2 UUT S/N	2			Pass						
Test 3 Name Test 3 UUT S/N	3									
Test 4 Name Test 4 UUT S/N	4									
Test 5 Name Test 5 UUT S/N	5									
Test 6 Name Test 6 UUT S/N	6									
Test 7 Name Test 7 UUT S/N	N/A		By Analysis	N/A	N/A				N/A	
Test 8 Name Test 8 UUT S/N	N/A		By Analysis	N/A	N/A				N/A	

\* Acronyms in the table above are defined as follows:

ATP - Acceptance Test Procedure

N/A - Not applicable

S/N - Serial Number

UUT - Unit Under Test

## 14. Individual test summaries.

For each of the tests listed in the table of paragraph 12, provide in separate test subparagraphs, each beginning at the top of a new page, the following information. These summaries are typically 1 to 3 pages in length each, but may be exceeded as necessary.

- a. Significant events that occurred or relevant observations
- b. Test procedure errors made or deviations taken
- c. The effect, if any, of (a) and (b) on the test outcome or results
- d. Pass/Fail criteria that were not met and the significance of the failure
- e. Proposed remedies or design changes as a result of failures
- f. Any other relevant information
- g. Statement on whether or not the Unit Under Test (UUT) met its qualification test objectives.

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## 15. Disassembly and Inspection

- a. Each disassembled part or subcomponent should be discussed in detail as to: condition with respect to a new part, continued usability, and likelihood of impending failure.
- b. Photos of each part or subcomponent must be clear and in color; photocopied pictures are not acceptable if they do not provide adequate detail.

## 16. Conclusion

## 17. Appendix A – Component Non-Conformance

- a. Include all material discrepancy actions, plus any other documentation of unit non-conformance.
- b. Documentation of Airworthiness Authority approval

## 18. Appendix B – Test Plan Documentation

- a. Documentation of Airworthiness Authority approval
- b. Documentation of Contractor approval

## 19. Appendix C – Test Readiness Documentation

- a. Documentation of Airworthiness Authority approval
- b. TRR presentation or other material

## 20. Appendix D – ATPs or Calibrations Conducted During Testing

## 21. Appendix E - Individual test reports and results.

Individual reports should be included in separate ‘tabbed’ sections. Note that these reports should not duplicate any of the information provided in 2 through 14, unless absolutely necessary.

- a. The report should be organized to generally follow the approved test procedure.
- b. Test equipment and all test setups should be photographed.
- c. All environmental test conditions should be documented.
- d. Detail the conduct of the test, including a chronological history of events and incidents connected with the test.
- e. A complete analysis of results should be included, as should any pertinent performance/calibration data for illustration purposes.
- f. Clearly highlight (as illustrated in the table below, including reference to applicable data sheets) and discuss in detail any test anomalies, and propose any remedies, if necessary.
- g. Tables and charts should be utilized to clearly present and/or summarize the test data. Data for an entire test, presented in the example tabular format below, has been deemed acceptable in most cases.

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Parameter	Set-Point	Limit	Actual	Min Value	Max Value	Mean	Std. Deviation	Low Limit	High Limit	Pass/Fail

- h. Component condition at test completion should be detailed or discussed, and conclusions and recommendations rendered.
- i. State in the test report whether component performance and function are within established limits. State in the report whether the component under test exhibited any fluid leakage and if fluid leakage is of a nature and rate specified in the engine or component specification. Hang-ups or hesitations of any component, if any, should be stated in the report.
- j. State in the report if recalibrations indicate that no component has changed its calibration beyond allowable service limits.
- k. State in the test report if the component teardown inspection shows indication of failed, excessively worn, and distorted parts. Measurements shall be taken and compared with engineering drawing dimensions and tolerances or with similar measurements made prior to the test.

22. End of DI-NDTI-81897.