# DATA ITEM DESCRIPTION

**Title**:  Electronics Parts/Circuits Tolerance Analysis Report

**Number:**  DI-SESS-81734                **Approval Date:**  20 DEC 2006
**AMSC Number:**  7689                     **Limitation:**  N/A
**DTIC Applicable:**  No                  **GIDEP Applicable:**  No
**Office of Primary Responsibility:**  NS/I1S4
**Applicable Forms:**  N/A

**Use/Relationship**:  This report documents the effects of extreme conditions of environmental and component tolerance for which the circuit or subsystem has been analyzed.  It details the nature of failures and corrective action required.

The analysis provides documentation from which the Government procuring activity can make a determination as to how effectively circuits and subsystems are meeting specifications under all required system conditions.

This Data Item Description (DID) contains the format and content preparation instructions for the data product generated by the specific and discrete task requirements as delineated by the contract.

**Requirements:**

1.  Reference Documents.  None

2.  Format.  Analysis shall be in the contractor's own format.

3.  Content.  The content of this analysis shall include the following:

    1.  List of parts/circuits analyzed and discussion of how they meet specified criteria for their selection.

    2.  An analysis disclosure of the most severe immediate environment in the space surrounding the components, circuits, or subsystems, as opposed to the specified general environment of the entire system.

    3.  Component tolerances, input power and signal tolerances, and input/output impedance tolerances.

        3.1 These analyses shall verify that, given reasonable combinations of within-specification characteristics and parts tolerance buildup, the circuitry being analyzed will perform within specification performance.  In making these analyses the contractor shall examine the effect of component parasitic

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parameters, input signal and power tolerances, and impedance tolerances on electrical parameters, both at circuit nodes (component interconnections) and at input and output points.  Since all of the stated factors may not be significant to all circuits, only the critical factors for that circuit shall be considered.

3.2 Component characteristics, (life-drift and temperature) shall be factored into the analyses.  These characteristics or values shall include resistance, capacitance, transistor, gain, relay opening or closing time, et cetera.

3.3 The inductance of wire-wound resistors, parasitic capacitance, and any other similar phenomena shall be taken into account, where appropriate.  Maximum variations in input signal or power supply voltage, frequency, bandwidth, impedance, phase, et cetera shall be used in the analyses.  The impedance characteristics of the load shall be considered as well.  Circuit node parameters (including voltage, current, phase, and waveform), circuit element rise time, timing or sequential events, circuit power dissipation, and circuit-load impedance matching under worst case conditions shall also be considered.  These parameters shall be analyzed for their effect on the performance of circuit components.

4.  Nature of circuit failures or effects under worst case conditions.

5.  Recommended corrective action.

4.  END OF DI-SESS-81734