DATA ITEM DESCRIPTION

Form Approved
OMB No. 0704-0188

1. TITLE	2. IDENTIFICATION NUMBER
Integrated Circuit Design Analysis Report	DI-EDRS-81509

3. DESCRIPTION/PURPOSE

3.1 The Integrated Circuit Design Analysis Report shall document the electrical analysis performed and the rationale for the analysis performed to insure that the integrated circuit has been created with adequate design margins to meet the requirements of the intended end use and specifications.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY (OPR)	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
960307	G/Y271		

7. APPLICATION/INTERRELATIONSHIP

7.1 This DID contains the format and content preparation instructions for the data product generated by specific and discrete task requirements as delineated in the contract.

7.2 This DID is used in conjunction with other integrated circuit data items. This DID should be used when integrated circuits are developed. This DID is related to DI-EDRS-81339.

7.3 This DID supersedes DI-R-5467.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER
		G7183

10. PREPARATION INSTRUCTIONS

10.1 Format. The report shall document the electrical analysis performed and the rationale for the analysis to insure the integrated circuit being designed has adequate design margins to meet the requirements of the circuit's intended end use and speci-tions. The report shall be prepared on 8" X 10 1/2" or 8" x 11" paper (use larger sheets for circuit drawings and computer listings where required) using nonfading ink suitable for reproduction. The report shall be bound together to avoid separation of the pages.

10.2 Content. The report shall include but not be limited to the following sections as descrubed below:

a. Title page
b. Index
c. Design Requirements
d. Design Analysis Approach
e. Design Analysis
f. Design Analysis
g. Design Analysis Results
h. Description of Circuti Models and Equiation and Parameter Values used in the Design Analysis.

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11. DISTRIBUTION STATEMENT

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

Block 10. Preparation Instructions (Continued)

10.3 Title Page. The title page shall contain the following information:

a. Contract Number.
b. Contract Short Title (if applicable.)
c. Contractor Name and Address.
d. Part Number and Name of Circuit.
e. Date Prepared.

10.4 Index. An index referenced by page number shall be prepared to facilitate location of sections of the report.

10.5 Design Requirements. This section shall describe or reference electrical specification drawings, which describe the electrical requirements and temperature range over which the integrated circuit being designed is required to operate. Parameters such as voltage supply limits, acceptable input and output levels, source of sink currents or sink currents for outputs, output loads, clock and input signal waveforms and voltage levels, etc., shall be described to define the limits over which the integrated circuit being designed must perform. The required timing relationships between internal and external signals shall be described. Use of waveform pictorials or sketches shall be used to accurately define all timing relationships and reference points at which voltage levels are determined. These requirements are expected to be those which will appear in the device's specifications and testing requirements, and approved by the Contracting Officer's Representative (COR).

10.6 Design Analysis Approach. This sections shall describe the approach to be taken to insure the circuit will meet the requirements described in the previous section. One approach could detail the use of the performance curves of a standard cell family. It shall be required under this approach that data described in Data Item Description DI-EDRS-81339; if also called out under the contract, would be the source of expected performance data to be used in the analysis. If the performance data were not applicable or the design involves custom cells functional sub-blocks the modeling (see para. 10.10) or other approaches to be used shall be detailed.

10.7 Design Analysis Approach. Assumptions made during the design analysis should be detailed in this section. These assumptions shall include the definition of worst case parameter values selected for voltages, signals as well as the semiconductor process electrical parameters required for models used. The choice of input stimuli and loading assumptions shall be detailed. This selection of critical timing paths for analysis and the rationale for elimination of other timing paths within the integrated circuit being designed shall be described. Any assumptions made because of the lack of detailed information about interface requirements, semiconductor process specifications, and circuit performance requirements shall be specifically noted.

10.8 Design Analysis. This section shall describe and detail the analysis that was actually performed. Circuit schematics, logic diagrams or other sketches or drawings used in the analysis shall be presented in this section. There shall be a means of cross-referencing these diagrams on a one for one basis to computer modeling input data an results presented in the next section. Information which will aid in the interpretation of the results shall also be contained in this section.

10.9 Design Analysis Results. The results of the design analysis performed shall be documented in this section. Where the volume of computational or computer modeling results prohibits inclusion of results within the covers of this report summary data or separate submission or both shall be determined by the Contracting Officer's Representative.

Narrative shall be included detailing how the results obtained demonstrate that adequate margin has been designed into the integrated circuit to meet the circuit's electrical performance requirements.

10.10 Description of Circuit Models and Equations and Parameter Values Used in the Design Analysis. Where circuit models and equations are used in the design analysis for various elements of the emigrated circuit they shall be described in this section. Parameter values and their definitions shall be clearly noted. User manuals for computer modeling programs along with program listings shall be supplied to facilitate interpretation of results and input data. Data supporting the validation of models used in the analysis shall be presented in this section.

10.11 General Comments. It is intended that the sections outlined represent the engineering approach and information required to be known during a typical integrated circuit design analysis. where significant deviation in the above is expected a suitable alternate format should be determined the COR.