

METRIC**MIL-I-89014****AMENDMENT 3****30 November 1992****SUPERSEDING****AMENDMENT 2****11 August 1992****MILITARY SPECIFICATION****INTERIM TERRAIN DATA (ITD)/PLANNING INTERIM TERRAIN DATA (PITD)**

This amendment forms a part of MIL-I-89014, dated 30 November 1990, and is approved for use by all Departments and Agencies of the Department of Defense.

The attached insertable replacement pages listed below are replacements for stipulated pages. When new pages have been entered in the document, insert the amendment as the cover sheet to the specification.

<u>Replacement page</u>	<u>Page replaced</u>
1	Reprinted without change
2	2
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* Add as new line 3.8.1b.(2a):

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Preparing activity:
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(project MCGT-0103)

METRIC

MIL-I-89014
30 NOVEMBER 1990

MILITARY SPECIFICATION

INTERIM TERRAIN DATA (ITD)/PLANNING INTERIM TERRAIN DATA (PITD)

This specification is approved for use by all
Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope.

a. This specification establishes the first edition military specification requirements for the Defense Mapping Agency's (DMA) Interim Terrain Data (ITD) and Planning Interim Terrain Data (PITD). This document specifies the format, content, and product design of ITD and PITD, which are unsymbolized digital data sets. They are based on the level of detail represented, in the case of ITD, in the 1:50,000/1:100,000 scale Tactical Terrain Analysis Data Base (TTADB) or, in the case of PITD, in the 1:250,000 scale Planning Terrain Analysis Data Base (PTADB). Both ITD and PITD have an enhanced transportation network, and are provided in a standardized digital format. ITD and PITD are portrayals of analyzed attributes of terrain features (both natural and man-made) that are of significance to tactical (ITD) and planning (PITD) military operations.

b. The DMA Terrain Analysis Program is a dynamic program. This manual identifies specifications encountered in the production of the ITD and PITD thematic files. Supplementary instructions may need to be generated as this product evolves. Modifications will be handled through Configuration Management procedures.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to : Director, Defense Mapping Agency, ATTN: PR, 8613 Lee Highway, Fairfax, VA. 22031-2137 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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1.2 Purpose. Conformance to these specifications will assure uniformity of treatment among all mapping and charting elements engaged in a coordinated production and maintenance program for this product.

1.3 Security.

1.3.1 Security classification. The security classification of the products generated by the use of these specifications will be the lowest category practicable. When it is necessary to assign a security classification to the product, it will be accomplished in accordance with established national security procedures.

1.4 Applicability.

- * a. For the remainder of this document, the term ITD will be used generically to describe both ITD and PITD. Where it is important to distinguish between the two, this document will do so. Likewise, the term TADB will be used generically to describe both TTADB and PTADB.
- * b. These specifications apply to all ITD produced by the Defense Mapping Agency and those produced for the Defense Mapping Agency as a result of either government contract or unit tasking.
- * c. These specifications apply to all activities involved in the preparation and maintenance of ITD.

1.5 ITD design.

- * a. ITD is a product developed to satisfy the armed services short-term and mid-term requirements for digital terrain analysis data.
- * b. In the case where TADBs are used as the primary source, ITD will reflect the specification current at the time of TADB collection. In all other cases, the currently configured baselined TADB specification will be used.
- * c. ITD is designed to use the Defense Mapping Agency Feature File (DMAFF) coding scheme (see 2.1.2.b.), and the DPS Standard Linear Format (SLF) for Digital Cartographic Feature Data (see 2.1.2.a.), for data format and structure.
- * d. ITD is independent of the method of its production. The production methods result in a standard product that meets the requirements of this specification.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the current Department of Defense Index of Specifications and Standards (DODISS) and the supplement thereto, cited in the solicitation (see 6.2).

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SPECIFICATIONS

MILITARY

- MIL-D-89000 - Digital Topographic Elevation Data (DTED)
Level I
- MIL-J-89100 - Joint Operation Graphics Series 1501A (AIR)
and 1501 (GROUND) (JOG A/G)
- MIL-T-89301 - 1:50,000 Scale Topographic Maps of Foreign Areas
- MIL-T-89304 - Tactical Terrain Analysis Data Base (TTADB)
Scale 1:50,000/1:100,000
- MIL-P-89305 - Planning Terrain Analysis Data Base (PTADB)
Scale 1:250,000

STANDARDS

MILITARY

- MIL-STD-600004 - MC&G Geographic Names
- MIL-STD-600010 - DMA Stock Number Bar Coding

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099).

2.1.2 Other government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

a. DPS Standard Linear Format (SLF) for Digital Cartographic Feature Data, 17 November 1988.

b. Second Edition, DMA Feature File (DMAFF), August 1989.

c. Datums, Ellipsoids, Grids, and Grid Reference Systems, DMA TM 8358.1,
* DMA Stock No. DMATM83581TEXT.

(Copies of the above are available from the Defense Mapping Agency, ATTN: PR, 8613 Lee Highway, Fairfax, VA. 22031-2137.)

2.2 Non-Government publications. This paragraph is not applicable to this specification.

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets, or MS standards) the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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3. REQUIREMENTS

3.1 Accuracy.

3.1.1 Horizontal accuracy. The horizontal accuracy of ITD is based on the accuracy of the source materials and the production system constraints.

3.1.2 Thematic file relationships.

a. ITD thematic files, shall be prepared such that when the files of a given geographic area are registered together (combined/stacked), they shall bear the same geographic relationship to each other that exists in the source from which they were digitized.

b. Common Open Water (COW) bodies are areal drainage features that meet the minimum size requirements for inclusion in the TADB thematic overlays.

(1) COW bodies are common to four thematic files of a given data set (Surface Configuration, Vegetation, Surface Materials, and Surface Drainage).

(2) COW bodies will be digitized once and replicated into the remaining three files. When digitization is from TADB source, the Surface Drainage COW will be the one digitized.

(3) Subsequent processing of the files may result in slight differences in the final shape of the COW bodies on the four files.

3.2 Datum.

3.2.1 Horizontal datum. Horizontal datum of ITD files shall be the current World Geodetic System - 1984 (WGS 84), or a local datum from DMA TM 8358.1 when no conversion to WGS 84 exists and the source material is an existing TADB on the local datum.

3.2.2 Vertical datum. Vertical datum shall be Mean Sea Level.

3.3 Data density levels.

a. ITD/PITD data is collected at a density of detail that approximates that of the TTADB/PTADB overlays, respectively.

b. Based on its data collection density, if ITD or PITD are to be output in hardcopy form, the appropriate scale for this output is 1:50,000 for ITD and 1:250,000 for PITD.

3.4 Data set size. The geographic area of the ITD or PITD data set is based on the 1:50,000 or 1:250,000 topographic line map sheet lines, respectively.

3.5 Continuity (adjoining data set match).

a. Each ITD file area joins the adjacent ITD file area to form a continuous data base with no gaps between files. No file area overlap exists between adjacent files.

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b. Features crossing file boundaries shall be continuous, i.e., a feature's geographic position which is located on a file boundary is common to all adjacent files. The only exceptions to this rule are when more current source is used and the feature on the ground has changed (e.g. new road), or when the mismatch is due to different TADB specifications. In these cases, there may be a discontinuity along a file boundary.

3.6 Dimensions.

3.6.1 Unit of measure. The Unit of Measure for the ITD/PITD is Metric.

3.6.2 Minimum sizes. The minimum and maximum sizes of features digitized in most of the thematic files are stated in the TADB specifications current at the time of collection. The features may be digitized as points, lines, or areas depending on the measured values from the source.

3.7 Feature and attribute coding system. ITD feature and attribute coding shall be in accordance with the DMAFF reference (see 2.1.2.b.).

3.8 ITD file. ITD will be produced in the DPS SLF format, which provides a standard format for digital cartographic feature data. Refer to the DPS SLF Specification (see 2.1.2.a.), for more detail on SLF format and structure.

* Appendix XVI to the SLF provides specific guidance for the implementation of ITD.

3.8.1 Magnetic tape media.

a. Physical characteristics - ITD will be distributed on 9 track, 1600 BPI unless requested at 6250 BPI, 1/2 inch magnetic tapes.

b. Magnetic tape label - The magnetic tape label shall be affixed to the side of the magnetic tape. At a minimum the label shall contain:

- (1) Name of the type of data (e.g., ITD).
- (2) Date and edition of data.
- (3) Area identifier.
- (4) Production center tape number
- (5) Tape density
- (6) Blocking of data
- (7) Number of records
- (8) Security classification of the tape contents

c. Refer to DPS SLF (see 2.1.2.a.), for further information.

3.9 Thematic file sequence.

a. The respective digital ITD files will be referred to as "thematic files".

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b. The ITD shall be produced as a set of six segregated thematic files, duplicating the content of the six TADB thematic overlays, with the addition of enhanced transportation.

c. The six segregated thematic files are listed below and will be stored or written to tape in this order:

SURFACE CONFIGURATION (SLOPE)
VEGETATION
SURFACE MATERIALS
SURFACE DRAINAGE
TRANSPORTATION
OBSTACLES

3.10 ITD/PITD features and attributes.

a. Except as noted in paragraphs 3.11 to 3.16, the features and attributes carried in the ITD thematic files, as per Appendix A, are the same as those required by the TTADB specifications (MIL-T-89303). See that specification for feature and attribute definitions, minimum sizes, usage limitations, placement rules, etc.

b. See Appendixes A and B for a listing of the features, feature codes, and their associated attributes, attribute codes, and attribute value meanings allowable for the ITD thematic files.

* c. All features in the ITD thematic files will carry an Overlay Category (OVC) attribute code value corresponding to the particular thematic on which it appears. If a feature appears on more than one overlay, i.e., common open water, it will have that thematic's particular OVC code in each file in which it appears. OVC attribute values are shown in Appendix B.

3.11 Surface Configuration (Slope). This section provides the basic guidance for the production of the Surface Configuration (Slope) thematic file for ITD.

3.11.1 General slope information.

a. Information contained in this file represents the maximum slope of the surface at each point on the ground, expressed as percent slope (tangent of the slope angle $\times 100$), rather than in degrees. Slope is defined as (1) ground whose surface forms an angle with the plane of the horizon (a natural or artificial incline), or (2) the degree or extent of deviation from the horizontal. Although there are an infinite number of slope values at a given point, the maximum slope is the critical limiting value for tactical military operations.

b. See Appendix A for a listing of features and their attributes permitted.

* c. Areal extent. Whereas surface configuration is represented by an areal file, all areas within the data set boundary must be labeled with a feature code. There will be no void areas in the file.

d. All features in the Surface Configuration thematic file will carry the OVC attribute code of "1".

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3.13.4 Surface roughness classification and coding.

a. Surface roughness is synonymous with microrelief and covers the expression of the land surface or surface geomorphic features which are less than the contour interval of the base map in height. Surface roughness is that aspect of the microrelief on the land surface (boulder fields, hummocky ground, gullies, rugged bedrock, etc.) which reduces the rate of cross country movement for vehicles or foot troops.

b. Surface Roughness Qualifier (SRQ=0-98) (attribute/value numbers). Surface roughness is classified and coded in the surface materials thematic file by a project-tailored set of sequential numbers designating the surface roughness type. Each separate surface roughness type found in the project area is assigned a Surface Roughness Qualifier or type number. The only surface material types not assigned surface roughness type numbers are the Not-Evaluated and COW features.

c. Surface Roughness Qualifier (SRQ=0-98) (attribute value meaning descriptors).

(1) Each surface roughness type identified and number coded in the project is given a corresponding surface roughness descriptor.

(2) The surface roughness descriptors are a set of generalized statements about the small-scale differences in relief (natural and/or cultural) that are not normally shown or interpretable on a regular topographic map. These descriptors shall detail the surface roughness within specific mapping units rather than combining several different and separately occurring surface roughness descriptions together.

(3) The actual surface roughness descriptions associated with each Surface Roughness Qualifier are stored in the ITD SLF text record (Surface Roughness Table).

(4) The surface roughness type numbers 0, 1, and 2 are standardized. Refer to the T/PTADB specifications and the DPS SLF-A, Appendix XVI.

(5) The remaining surface roughness type numbers and descriptors (SRQ=03-98) are the analyst tailored types and are formatted as described in DPS SLF-A, Appendix XVI.

(6) General Roughness Categories 1-5 (GR1-GR5). Along with each surface roughness qualifier and description in the Surface Materials thematic file, there is an associated set of five surface or general roughness category (GRC) factor values. Each GRC factor value corresponds to one of the five categories of vehicle types or classes for which surface roughness is considered for the ITD (only GR1s are used for the PITD):

- (a) GR1 - Large and Medium Tanks.
- * (b) GR2 - Large Wheeled Vehicles.
- * (c) GR3 - Small Wheeled Vehicles.

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* (d) GR4 - Small Tracked Vehicles.

(e) GR5 - Foot Troops.

NOTE: See Appendix B for possible GR1 - GR5 values.

ITD/PITD - for a SRQ = 1: GR1 through GR5 = 1.00

ITD - for a SRQ = 2: GR1 through GR5 = 0.00

(7) These factors are estimated numerical values reflecting the degradation of the rate of vehicular and foot troop movement due to travel over a particular surface roughness type on horizontal ground. The factors can be any numeric value from 0.00 to 1.00 in 0.05 increments.

3.14 Surface Drainage. This section provides the basic guidance for the production of the Surface Drainage thematic file for ITD.

3.14.1 General Surface Drainage information.

a. See Appendix A for a listing of features and their attributes permitted for the Surface Drainage thematic file. See TADB specifications for specific inclusion conditions.

b. Linear and areal extent. Whereas Surface Drainage is represented by a combination of feature types (mostly linear with some point and areal features) most of the area within the data set boundary of the covered area is not assigned a feature and/or attribute codes.

c. All features in the Surface Drainage thematic file will carry the OVC attribute code of "4".

* 3.14.2 Miscellaneous Surface Drainage features. Additional Surface Drainage features may be encountered which are of major significance to military operations, especially river and channel crossings and/or landings. In some environments, features such as intermittent lakes, washes/wadis, anastomosing streams, elevated aqueducts, tidal flats, weirs, features under construction, etc., may be of operational and landmark significance. Unique and significant Surface Drainage features not found in the specification will be shown as DMAFF Miscellaneous Graphic Features (9D010) and described (along with any new measurements made for the features) in the ITD SLF text record of the file.

3.15 Transportation. This section provides the basic guidance for the production of the Transportation thematic file for the ITD.

3.15.1 General Transportation Information.

a. The features and attributes in this thematic file represent transportation features over which troops and supplies can be moved during a tactical military operation. The transportation thematic file consists of features required in TADB specifications in addition to the enhanced transportation guidelines as outlined in this section.

b. If associated attributes for a feature are unknown, guidelines presented in DMAFF specifications should be followed.

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(4) The fourth column labeled "F Type" designates which feature types are allowable for this feature, that is: point, line, or area.

(5) The fifth column labeled "F At. No." is the field attribute number, which is the feature header field (location) in the digital data where this attribute is stored.

(6) The sixth column labeled "At. Code" contains the attribute code. This is the three character alphanumeric designation of the different attribute codes which the particular feature can have.

(7) In the seventh column labeled "Values" are the allowable values that the attribute code can have.

(8) In the eighth column labeled "Attribute" is the name of the attribute code designated in column six.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspections required (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of paragraphs 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements; however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

5. PACKAGING This section is not applicable to this specification.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory).

6.1 Intended use. ITD is a product developed to satisfy the armed services short-term and mid-term requirements for digital terrain analysis data.

6.2 Supersession. This section is not applicable to this specification.

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6.3 Classification and special handling of ITD thematic files.

a. The classification of the final ITD files will be determined by the appropriate security section responsible for the final classification. The lowest possible classification of the final product is desired.

b. Even though the final thematic files might be unclassified, a handling caveat could be required. Some NATO and other countries have mapping and other agreements which dictate the handling of materials produced over their country. Security elements should check for caveat requirements at the beginning of each project.

* 6.4 Acquisition requirement. When this specification is used in
* acquisition, the applicable issue of the DODISS must be cited in the solicitation
* (see 2.1.1).

* 6.5 Subject term (key word) listing. This paragraph contains an alpha-
* betical listing of subject terms (key words) that allow for identification of the
* document during retrieval searches. Note subject terms do not repeat words from
* the title of this document, "Military Specification, Interim Terrain Data (ITD)/
* Planning Interim Terrain Data (PITD)".

* Bridges/Bridge Spans
* Enhanced Transportation
* Miscellaneous Features
* Obstacles
* Planning Terrain Analysis Data Base (PTADB)
* Railroads
* Roads
* Surface Configuration (Slope)
* Surface Drainage
* Surface Materials (Soils)
* Surface Roughness
* Tactical Terrain Analysis Data Base (TTADB)
* Thematic Files
* Transportation
* Tunnels
* Vegetation

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APPENDIX B

ITD attribute code name and attribute values (Continued)

Attribute Code	Attribute Values	Value Meaning
UBD	Underbridge	Clearance-Decimeters
	0	Unknown
	1	1 Decimeter
	.	
	.	
	998	998 Decimeters
UGD	Undergrowth	Density Category
	0	Unknown
	1	None to sparse
	2	Medium to Dense
VEG	Vegetation	Characteristics
	0	Unknown
	1	Dry Crops
	2	Shifting (cultivation/usage)
	3	Terraced
	4	Rice Paddy
	5	Agriculture With Scattered Forests
	8	Grassland
	9	Grassland w/Scatt. Trees & Scrub Growth
	13	Deciduous
	14	Evergreen
	15	Mixed
	17	Palm
	19	Mangrove
	24	Forest Clearing
WDA	Water Depth	Average
	0	Unknown
	1	<0.8 meters
	2	>0.8 - 1.6 m
	3	>1.6 - 2.4 m
	4	>2.4 m
	5	<1.2 m
	6	>1.2 m - 2.4 m
WDD	Width-Decimeters	
	0	Unknown
	1	1 Decimeter
	.	

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ITD attribute code name and attribute values (Continued)

Attribute Code	Attribute Values	Value Meaning
WID	Width	
	0	Unknown
	1	1 Meter
	.	
	.	
	998	998 Meters
WTC	Weather Type Category	
	0	Unknown
	1	All weather
	2	Fair/Dry Weather
WVA	Water Velocity Average	
	0	Unknown
	1	<=1.5 m/sec.
	2	>1.5 m/sec.

*

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CONCLUDING MATERIAL

* Custodian:
DMA - MP

Preparing activity:
DMA - MP

* Review activities:
Army - PO
Air Force - 09
Navy - NO

(project MCGT-0017)