

STANDARDS FOR MAP SCALES AND MAP PROJECTIONS

Introduction

The National Statistical Coordination Board (NSCB) issued NSCB Memorandum Order No. 01-93 creating and Inter-Agency Task Force on Geographic Information.

One of the activities as stated in the memorandum is to develop and recommend minimum standards for Geographic Information System interchange, and standard methodologies and concepts and definitions for universal adoption by all government agencies in the generation of geographic information.

Another activity is to create technical working groups (TWG's) as may be needed for specific purposes subject to the approval by the Secretary General of the NSCB. One of this TWG's is the TWG for Lands and Surveys (TWGLS).

The function/task of the TWGLS is come up with standards or at least an agreement with member agencies on the scales of maps and the type of map projection to be used by each agency.

Present Situation and Issues

It was observed that when integrating and overlaying data from maps of different agencies, it was always a difficulty doing spatial analysis since most of the maps used are of different scales much more if the maps produced were compiled using different projections.

With the availability of computer techniques to handle reducing and enlarging of maps, the above is not much of a problem these days. But there are still a lot of agencies that rely and produces paper maps.

DENR in its pursuit for a continuing organizational development, improvement and in order to further enhance the capability, efficiency, and the effectiveness of the DENR's survey verification and monitoring functions and in meeting the ever increasing demands for varied land maps in the implementation of the Comprehensive Agrarian Reform Program and other related technical services of numerous land based undertakings of both the government and the private sector issued Administrative Order (AO) 72, Series of 1990. AO 72 establishes Survey Standard Instrumentation and Procedures in the Verification and Approval of Maps in the Department of Environment and Natural Resources.

Recommended Solutions:

It is the intention of TWGLS to come up with agreed map scales to ease up overlaying procedures. The following table shows the map scales to be used:

RECOMMENDED MAP SCALES by TECHNICAL WORKING GROUP FOR LANDS AND SURVEYS TASK FORCE FOR GEOGRAPHIC INFORMATION		
MAP SCALE	PROJECTION	GEOGRAPHICAL LIMITS
1:1,500,000	CONICAL (0')	LONG 116 ⁰ -128 ⁰ LAT 04 ⁰ - 20 ⁰
1: 250,000	UTM	1 ⁰ x 1.5 ⁰
1: 100,000	UTM	30' x 30'
1: 50,000	UTM	15' x 15'
1: 25,000	UTM	7.5' x 7.5'
1: 10,000	UTM	3' x 3'
1: 5,000	PTM	1.5' x 1.5'
1: 4,000	PTM	1' x 1'
1: 2,000	PTM	30" x 30"
1: 1,000	PTM	15" x 15"
1: 500	PTM	7.5" x 7.5"

The scale of the map should permit representation of needed details with reasonable precision. The size or positioning of the smallest detail should fall within the allowable accuracy of the map (i.e. 0.2 mm for X and Y/planimetric coordinates at map scale at the smallest/thinnest line that can be plotted at map scale, and 1/3 the contour interval in Z/elevation coordinates). As an example, a 1:10,000 map has an accuracy

of 2.00 meters in x and Y ground coordinates and 3.00 meters in elevation (if contour interval is 10.00 meters). This means that a feature may have an allowable error of 2 meters in X and Y and 3 meters in Z from its exact position.

Suggested scales to be used in the various levels and nature of planning are as follows:

National Planning	1:1,500,000
Regional Planning	1:250,000
Provincial Planning	1:50,000
Metropolitan Planning	1:25,000
City/Town Planning	
a. General Use	1:5,000/1:10,000
b. Urban Use	1:2,000/1:4,000

In the production of the maps, the Transverse Mercator Projection shall be used except for maps at scales 1:1,500,000 which is in a Conical Projection where the reference latitude will be the equator (lat 0°).

The Universal Transverse Mercator (UTM) projection shall be used for all maps with scales smaller and equal to 1:10,000.

To abide with the DENR Administrative Order No. 72-1 Series of 1990, a pair of Philippine Transverse Mercator (PTM) lines shall be shown to topographic maps of aid local surveyors and other users familiar with the use of the Philippine Plane Coordinate System (PPCS).

The following tables shows the use of the UTM with the two zones usually used in the Philippines. Only the maps of Palawan at scales 1:250,000 shall use Zone 50 (117), the rest will be in Zone 51 (123).

UNIVERSAL TRANSVERSE MERCATOR PROJECTION		
CLARK SPHEROID OF 1866		
SCALE FACTOR AT CENTRAL MERIDIAN : 0.9996		
CONSTANTS: A = 6378206.40 m		
 E² = 0.00676858		
ZONE NO.	CENTRAL MERIDIAN	EXTENT OF ZONE
50	117	114-00 TO 120-00
51	123	120-00 TO 126-00

For maps on scales larger 1:10,000, this system (PPCS) shall remain to be used. These maps shall follow the specifications stated in the Manual for Land Surveys in the Philippines (Lands Administrative Order No. 4 dated 3 July 1980).

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| d. | Region No. III (Central Luzon) | |
| | 1.) Bataan | Zone No. III |
| | 2.) Bulacan | -do- |
| | 3.) Nueva Ecija | -do- |
| | 4.) Pampanga | -do- |
| | 5.) Tarlac | -do- |
| | 6.) Zambales | -do- |
| e. | National Capital Region | |
| | 1.) Metro Manila | Zone No. III |
| f. | Region No. IV-A (Southern Tagalog) | |
| | 1.) Aurora | Zone No. III |
| | 2.) Batangas | -do- |
| | 3.) Cavite | -do- |
| | 4.) Laguna | -do- |
| | 5.) Marinduque | -do- |
| | 6.) Occidental Mindoro | -do- |
| | 7.) Oriental Mindoro | -do- |
| | 8.) Palawan | |
| | a. Municipalities West
of 118°E longitude | Zone No. I |
| | b. Calamian Group | Zone No. III |
| | c. Cuyo Islands | -do- |
| | d. Main Islands East
of 118°E longitude | Zone No. II |
| | 9.) Quezon | |
| | b. Municipalities East
of 122°E longitude | Zone No. IV |
| | c. Municipalities West
of 122°E longitude | Zone No. III |
| | c. Polillo Islands | -do- |
| | 10.) Rizal | -do- |
| | 11.) Romblon | Zone No. IV |
| g. | Region No. V (Bicol) | |
| | 1.) Albay | Zone No. IV |
| | 2.) Camarines Norte | -do- |
| | 3.) Camarines Sur | -do- |
| | 4.) Catanduanes | -do- |
| | 5.) Masbate | -do- |
| | 6.) Sorsogon | -do- |
| h. | Region No. VI (Western Visayas) | |
| | 1.) Aklan | Zone No. IV |
| | 2.) Antique | -do- |
| | 3.) Capiz | -do- |
| | 4.) Iloilo | -do- |
| | 5.) Negros Occidental | -do- |

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| i. | Region VII (Central Visayas) | |
| | 1.) Bohol | Zone No. V |
| | 2.) Cebu | Zone No. IV |
| | a. Camotes Islands | Zone No. V |
| | 3.) Negros Oriental | Zone No. IV |
| | 4.) Siquior | -do- |
| j. | Region No. VIII (Eastern Visayas) | |
| | 1.) Eastern Samar | Zone No. V |
| | 2.) Leyte | -do- |
| | 3.) Northern Samar | -do- |
| | 4.) Samar (Western Samar) | -do- |
| | 5.) Southern Leyte | -do- |
| k. | Region IX (Western Mindanao) | |
| | 1.) Basilan | Zone No. IV |
| | 2.) Zamboanga del Sur | -do- |
| | 3.) Zamboanga del Norte | -do- |
| l. | Region X (Northern Mindanao) | |
| | 1.) Agusan del Norte | Zone No. V |
| | 2.) Agusan del Sur | -do- |
| | 3.) Bukidnon | -do- |
| | 4.) Camiguin | -do- |
| | 5.) Misamis Occidental | Zone No. IV |
| | 6.) Misamis Oriental | Zone No. V |
| | 7.) Surigao del Norte | -do- |
| m. | Region XI (Southern Mindanao) | |
| | 1.) Davao (Davao del Norte) | Zone No. V |
| | 2.) Davao del Sur | -do- |
| | 3.) Davao Oriental | -do- |
| | 4.) South Cotabato | -do- |
| | 5.) Surigao del Sur | -do- |
| n. | Region XII (Central Mindanao) | |
| | 1.) Lanao del Norte | Zone No. V |
| | 2.) North Cotabato | -do- |
| | 3.) Sultan Kudarat | -do- |
| o. | Autonomous Region of Muslim Mindanao (ARMM) | |
| | 1.) Lanao del Sur | Zone No. V |
| | 2.) Maguindanao | -do- |
| | 3.) Sulu | Zone No. III |
| | 4.) Tawi-Tawi | Zone No. II |