

TERMINAL REPORT

RP = FRG NATIONAL CARTOGRAPHY CENTER PROJECT

I - Introduction

The RP-FRG National Cartography Center Project which was initially undertaken by the defunct National Cartography Authority (NCA) and continued by the National Mapping and Resource information Authority (NAMRIA) ended last 30 June 1992, after 11 years of implementation. Upon expiration of project, NAMRIA was able to acquire modern mapping equipment for topographic map production. as well as avail of expert and training assistance from the Federal Republic of Germany (FRG), through the German Agency for Technical Cooperation (GTZ).

This final report shall present a comprehensive summary of the different components of the project, evaluate its results and significance to future mapping activities in the country.

II - Historical Background

The RP-FRG National Cartography Center Project started on 10 April 1981 with the signing of the Loan and Project Agreement, under the Financial Cooperation Program between the Philippines and the Federal Republic of Germany, dated 29 August 1980.

A. Project Goal

The project aims to enable the Philippine government to establish self-reliance for sustainable production of updated topographic maps.

B. Project Components

To attain the project goal, German assistance was provided to the former NCA consisting of two (2) major components:

1. Loan in two (2) packages, in the total amount of 6.5 M Deutsche Marks, for purchase of mapping equipment, facilities and services for the production of updated topographic maps, broken down as follows:

Portion I	-	Financial Cooperation	-	DM 3.0 Million
Portion II	-	Export Credit	-	DM 3.5 Million

2. Technical assistance through training of personnel in FRG in the different fields of mapping, and provision of experts/consultants to the project.

3. Obligations of GOP and FRG to the Project.

The NCA, as Project Sponsor, was tasked to implement the project.

Pursuant to the agreement, it shall:

- a. Coordinate cartographic activities in the Philippines and publish uniform regulation and standards for map production;
- b. Construct a building to house mapping equipment to be procured from loan proceeds, including technical personnel to be hired by NCA;
- c. Effect transfer of UNDP equipment from the then Bureau of Coast and Geodetic Survey (BCGS) to NCA: &
- d. Develop and implement a National Mapping Program.

The FRG Government, on the other hand, committed the following contributions to the project:

- a. Provide consultancy assistance to the project in the fields of management, photogrammetry, geodesy, cartography, and reprography and printing; and
- b. Provide training of technical personnel in FRG on various disciplines of mapping.

4. Construction of NCA Building and Equipment Delivery Construction of the NCA building started in 1982 and initial delivery of mapping equipment commenced in 1984. However, considerable delay was encountered in the completion of the building, which precluded equipment installation and the operationalization of NCA.

C. Project Implementation Under NAMRIA

With the government reorganization in 1987 and merging of NCA into NAMRIA, the latter took over the implementation of the project.

During this period, the building was finally completed, and installation of initially delivered mapping equipment were facilitated and later used in undertaking regular projects of the agency.

From thereon, delivery and installation of programmed equipment was expedited, until the map production line of NAMRIA was established. The loan proceeds were exhausted in 1989.

Being the unit primarily responsible for base map production, the Mapping and Reprography Department (MRD) of NAMRIA was the main recipient of the project proceeds. The Coast and Geodetic Surveys Department on the other hand, was supported by the project in undertaking its geodetic survey activities.

III - Project Extensions and Additional Assistance

The National Cartography Center Project, originally planned to end on 31 December 1985 or after five (5) years of implementation, was extended three times, once with the NCA and twice under NAMRIA.

A. First Extension

The project was first extended from 1 January 1986 to 30 June 1987, due to continued delay in the completion of the NCA building which hindered installation of mapping equipment. The agreement was signed on 24 October 1986, with the FRG committing to provide the following additional technical assistance:

- | | | |
|-----------------------|---|---------------|
| 1. Experts Assistance | - | 36 man-months |
| 2. Training in FRG | - | 36 man-months |

B. Second Extension

The second project extension was signed on 23 August 1988, for the period 01 July 1987 to 30 June 1990, or a total of three (3) years, with the FRG committing the following assistance:

- | | | |
|-----------------------|---|----------------------------------|
| 1. Experts Assistance | - | 132 man-months (long-term) |
| | | <u>4 man-months (short-term)</u> |
| | | <u>136 man-months</u> |

- 2. Training in FRG - 220 man-months
- 3. Equipment - 3 project vehicles
- 1 personal computer

C. Final Extension

On 14 March 1991, the project was granted a final two-year extension, covering the period 01 July 1990 to 30 June 1992, with the following FRG commitments:

- 1. Experts assistance - 80 man-months
- 16 man-months
- Total 96 man-months
- 2. Equipment and materials - amounting to DM 617,000.00

IV - Result of Project

A. Utilization of Loan Proceeds

Photogrammetric instruments and systems from ZEISS company comprised the bulk of equipment acquisition through the loan proceeds, totaling DM 4.369.827 or 67% of total loan amount. It covered the entire Loan Portion II with the balance taken from Portion I. The remainder of Portion I was used in procuring reprographic and printing equipment, cartographic tools (See Annex) and to defray cost of services which include aerial photography of the Pilot Project in Dimiao, Bohol. including 2-year maintenance of photogrammetric equipment.

B. Training of NCA/NAMRIA Personnel in ERG

Under NCA in 1981, the project sent a total of 14 personnel to the International Training Center for Photogrammetric Operators (IPO) in Stuttgart, Germany for a 7-month-course in photogrammetry. They were the first batch of trainees of the center when it was inaugurated.

From 1987 until end of the project, the NAMRIA was able to send a total of 18 trainees in FRG totaling 185 man-months, broken down as follows:

<u>Field</u>	<u>No. of Trainees</u>	<u>No. of Man-Months</u>
Photogrammetry	3	36 *
Cartography	8	100
Reprography and Printing	3	36
Photogrammetric Equipment		
Maintenance	2	10
Management	<u>2</u>	<u>3</u>
TOTAL	18	185

* Under first project extension.

The above total fell short of the 220 man-months FRG committed for the second project extension. GTZ stated that during the financial accounting conducted towards the end of the project, it was found out that the technical assistance allotment for the project was already over-subscribed. As a result, programmed training for geodesy and reprographic equipment maintenance were cancelled.

C. Consultancy

The Team Leader of the German experts assumed his duty with the project starting November 1981 and subsequently, a photogrammetry expert and a geodesy expert were also assigned. The German Team Leader remained with the project during its entire duration.

It was after the assumption of a new NCA management in the middle of 1986 that the experts were effectively utilized. Completion of the NCA building was expedited and the Photogrammetric equipment was initially installed. The first batch of technical personnel were recruited and trained by a new photogrammetry expert.

Subsequently under NAMRIA, geodesy, cartography, and reprography and printing experts arrived to assist in the installation of mapping equipment and training of technical personnel.

Between 1987 to end of project, the photogrammetry and geodesy experts were able to undertake continuous training and consultancy assistance in NAMRIA.

However, two (2) reprography and printing experts were assigned one after the other. The cartography expert stayed only up to end of second project extension. But since the geodesy expert is also an experienced cartographer, he was designated as both geodesy and cartography expert.

A total of 248 man-months of expert assistance were provided by FRG to the project since 1987 until its termination.

D. Additional Equipment and Services

In the last project phase, the capability of NAMRIA in digital mapping was further enhanced with the upgrading of its photogrammetric equipment and systems. Photogrammetric processing can now be undertaken under AUTOCAD environment, and the Planicomp C100 analytical plotter was converted to the more modern P-2 of the Planicomp series. In addition, the DZ -7 plotting tables were equipped with tangetial heads to allow films scribing that would facilitate cartographic processing.

Additional reprographic equipment were also acquired by NAMRIA, sourced from unused project funds before 1985. These include: a) one (1) KLIMSCH reprographic camera, and b) one (1) GEVATONE half tone film processor. Portion of the fund was also utilized in rehabilitating and transferring five (5) WILD analogue photogrammetric stereo plotters acquired by the former BCGS through the UNDP. They were transferred from the NAMRIA Binondo branch to the Fort Bonifacio office.

V -Discussion of Results

A. Attainment of Project Goal

Upon completion of the RP-FRG National Cartography Center Project, the country has acquired the technology and skills for continuous production of topographic maps. The NAMRIA now possesses an array of modern mapping equipment in the various phases of its production line -in photogrammetry, field survey, cartography, reprography and printing.

B. Compliance of GOP and FRG to the Bilateral Agreement

1. GOP:

a. Coordination of cartographic activities in the country and formulation and publication of uniform regulations and standards for map production. With the merger of various mapping agencies into NAMRIA in the government reorganization of 1987, the agency became the central authority in formulating regulations and standards for the production of topographic maps. The Mapping and Reprography Department of the Authority has developed their standards and specifications with the assistance of the German experts.

However, these standards cover only those for topographic map production. Since other agencies of the government produce other thematic maps in line with their specific fields or disciplines, they have developed their own standards for these maps. The primary concern of NAMRIA is to provide adequate and uniform standards for topographic base maps from which other types of maps are being derived.

b. Construction and building to house project equipment and personnel –

The building which formed part of GOP counterpart of the project under the then NCA, is now the main office of the NAMRIA. In addition to mapping equipment installed by the project, it also houses equipment proceeds from other foreign-assisted projects being implemented by the agency.

c. Transfer and rehabilitation of UNDP-procured equipment from the former BCGS –

Due to lack of GOP counterpart and insufficiency of the regular budget of NAMRIA, repair and transfer of the WILD photogrammetric equipment were effected through the assistance of FRG, in December 1990.

However, limited funding of GTZ precluded repair of two (2) other WILD equipment: an A8 and AMH stereo plotters.

d. Development and implementation of a National Mapping Program -

The NAMRIA has developed a base mapping program aimed at revising the 1:50,000 topographic maps covering about 21 million hectares or about 2/3

of the land area of the country. The area represents the portion not covered by S701 series revised by the United States Defense Mapping Agency (USDMA) in the early 19801s. It is estimated that implementation of the 10-year program shall cost about P 200 M. Due to the high budgetary requirements, it will be proposed for legislative enactment to assure adequate and continuous funding.

2. FRG:

a. Expert Assistance -

The FRG provided the expert assistance requirement of the project as stated in the bilateral agreement. The 248 man-months total expert assistance provided to the project since 1987 significantly contributed in training NAMRIA technical personnel in the production of maps and identifying mapping equipment that would form the map production line of the agency.

b. Training of NAMRIA technical personnel in FRG -

For reasons mentioned earlier, the 220 man-months of scheduled training under the second extension was not completed, since more funds have been channeled for the purchase of mapping equipment.

Training in photogrammetry at IPO, Stuttgart and in cartography at the ITC. Netherlands have been most effective since they are reknowned academic institutions in the field of mapping.

c. Provision of Additional Equipment and Materials -

Most important among additional assistance provided was upgrading of the photogrammetric hardware and software which would allow NAMRIA to produce digital topographic maps at various scales with high level of accuracy.

VI -Significance of the RP-FRG National Cartography Center Project

Through the project, the country was able to establish an institution with modern equipment and computer software, including the technical skills for map production.

The NAMRIA can therefore contribute immensely in development planning for the country by providing the map requirements of the government and the private sector, through the following:

1. Updating of topographic base maps 1:50,000 and 1:250,000;
2. Production of large scale topographic maps, e.g. 1:1,000; 1:5,000; 1:10.000 for urban areas;
3. Production of images/orthophotos at various scales;
4. Application of photogrammetry in Geographic Information System (GIS).

VII - Recommendations

In order to sustain benefits gained from RP-FRG National Cartography Center Project, adequate funding support should be provided to NAMRIA since map production is an inherently cost-intensive activity.

Given sufficient funding, the NAMRIA will be able to continuously provide the country's requirement for accurate and up-to-date maps and ensure adequate maintenance of mapping equipment procured from the project.

LIST OF MAJOR MAPPING EQUIPMENT PROCURED THROUGH
RP-FRG NATIONAL CARTOGRAPHY CENTER PROJECT

<u>a. Field Survey</u>	<u>No.</u>
N12 Automatic Engineer's Level	2
N13 Automatic Engineer's Level	8
Elta-3 Electronic Tacheometer	4
TH-2 Theodolite	2
MRA7 Tellurrometer	2
<u>b. Photogrammetry</u>	
PLANICOMP C100 Analytical Plotter	1 *
HP-1000P Mini-Computer	3 * *
DZ7-P Digital Tracing Table	1
DZ7 Digital Tracing Table	2
D3 PLANIMAT Analog Stereo Plotter	1
E3 PLAN I CART Analog Stereo Plotter	3
ORTHOCOMP Z2 Rectifier	1
DTM-3	4
ECOMAT-12	4
Software:	
PAT-M	Advancelink
PAT-B	MS-Windows
HIFI-PC	DRAFTMASTER
PANI-AS	PCAP
AUTOCAD	
DAT-EM	
* Upgraded to P2	
** 1 Computer Upgraded to HP-1000A	
<u>c. Cartography/Reprography</u>	
SEG 6 Rectifier	1
KG30 Contact Printer	1
KLIMSCH Copy Camera	1
KLIMSCH Film Dryer	1
PAKO Film Processor	1
GEVATONE Half-Tone Film Processor	1
CR Tronics 100 Photolab Unit	1
KINDERMANN Photolab Unit	1
KLIMSCH Register Punch	1
<u>d. Printing</u>	
KLIMSCH Printing Down-Frame Machine	1
KLIMSCH Plate Processing Unit	1
FAG 104 Offset Press	1
DUFA VII Offset Press	1