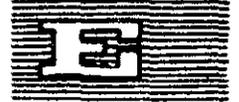


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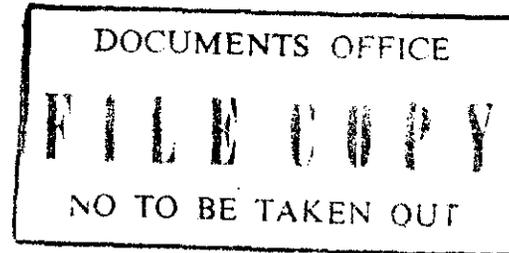
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LIMITED



E/CN.14/CART/C.2/1
E/CONF.43/C.2/1
10 July 1963

Original: ENGLISH

UNITED NATIONS REGIONAL CARTOGRAPHIC
CONFERENCE FOR AFRICA
Nairobi (Kenya) 1-13 July 1963



DRAFT REPORT OF COMMITTEE II

- (a) Aerial photography, photogrammetry
and topographical mapping
- (b) Cadastral surveying

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(b) Cadastral surveying

1. Aerial photography

The Committee discussed the following papers: E/CN.14/CART/5,
E/CN.14/CART/18 and E/CN.14/CART/75.

The need for accurate meteorological information was stressed in the discussions. The Committee was given to understand that this information would soon become available from weather satellites.

A remark was made to the effect that small aircraft were best suited for photographic work at the large scales because it could be based near the area. For small scale photography, however, the use of large aircraft was necessary, in view of the requirements of range and stability. No comments on the suitability of different types of aircraft were made.

Super-wide angle lenses had proved valuable for topographical mapping at small scales. Infra-red film had been successfully used in Africa for topographical mapping as well as for topical mapping.

Experience in Africa indicated that the use of poly-ester film base for precise photogrammetry work sometimes gave rise to difficulties.

No views were expressed on the use of filters.

It was noted that electronic navigational devices had been successfully used in Africa but difficulties were reported to have arisen on account of excessive dust in the air.

2. Ancillary apparatus

The Committee discussed the following papers:- E/CN.14/CART/18, E/CN.14/CART/26, E/CN.14/CART/75 and E/CN.14/CART/95.

The Committee noted that the use of the aerial profile recorder gave good results in Africa. The precision attainable depended on the circumstances of its use, particularly as regards the general topography of the area.

Horizon cameras had been used in a photographic mission in Africa. A detailed report would be published.

Early applications in Africa of the solar periscope had previously been published. No recent applications in Africa were reported.

Satisfactory application of gyroscopically stabilized camera mounts was reported. The need for experienced handling and for the careful maintenance of such equipment was emphasized.

Observers' reports indicated that highly precise inertia systems for the determination of tip and tilt and for its recording on aerial film were being developed.

3. Aerial triangulation

The Committee discussed the following papers:- E/CN.14/CART/5, E/CN.14/CART/18, E/CN.14/CART/75 and E/CN.14/CART/83.

Aerial triangulation, possibly making use of ancillary apparatus, was still considered the only method for supplying control where ground operations were difficult or expensive.

Analytical aerial triangulation was faster and possibly more accurate. Careful handling and experience were needed in connexion with the use of modern comparators.

Observers reported on the recent development of monocular comparators and indicated advantages of easier operation and lower cost, but no quantitative information was given.

The use of modern electronic computers was necessary for the efficient employment of aerial triangulation. Such computers were however expensive and their programming elaborate. Furthermore they are in continuous development.

4. Ground control

Trilateration and traversing using electronic distance measuring equipment were extensively and successfully used in Africa in connexion with the provision of ground control.

The possibility of using passive and flashing satellites was brought to the attention of the Committee. Development work was reported to be in progress and practical tests were expected in the near future. The Committee was given to understand that the programmes of these satellites were to be announced in advance.

5. Application of photogrammetry to topographical mapping

The Committee discussed the following papers:- E/CN.14/CART/8,
E/CN.14/CART/16, E/CN.14/CART/18, E/CN.14/CART/51, E/CN.14/CART/58,
E/CN.14/CART/70, E/CN.14/CART/75, E/CN.14/CART/95.

Aerial photogrammetry was used exclusively for topographical surveying at the small scales. The super-wide angle lenses and infra-red photography were of great assistance on many occasions when the mapping of large areas at these scales was required.

Aerial triangulation and the use of ancillary apparatus was advisable to reduce cost and time of field operations.

The merits of the use of the standard plotting machines and the simpler methods for drawing the planimetry and sketching of contours were discussed.

Most plotting machines could be used for smaller scale mapping when they were not needed for plotting on large scales. The less expensive devices were suitable for small scale work in Africa.

6. Application of photogrammetry to large scale mapping

The Committee noted the following papers:- E/CN.14/CART/5, E/CN.14/CART/15, E/CN.14/CART/74, E/CN.14/CART/75 and E/CN.14/CART/85.

Successful applications of photogrammetry for development projects and town planning were reported by many delegates.

Pre-marking of the ground control was advisable. The type of marking should suit the terrain and the type of vegetation.

Cadastral surveys were speeded up by the employment of photogrammetry which was the only acceptable method when speed was the primary requirement. The pre-marking of the plot boundaries was necessary. In one case, the difficulty arising from vegetation cover was overcome by clearing the boundary lines. It was noted that infra-red photography improved the interpretation.

The use of aerial photography in cadastral work had the further advantage of enabling contour lines to be drawn on the cadastral sheets, thus increasing their value to the planning of economic development.

General conclusions

It was generally agreed that the use of aerial photography was essential for the execution of topographical mapping of large areas, a great help in large scale mapping for development projects and advantageous in cadastral surveying.

Good professional training, the expert selection of the techniques and the furthering of international exchange of technical information would lead to greater efficiency and increase the usefulness of aerial surveying in the national cartographic units.

It was essential to apply the most up-to-date techniques in order to ensure that the extensive mapping programmes needed for economic development in Africa would be carried out in good time. It was suggested that this might best be achieved through regional or sub-regional technical co-operation of the African countries, with help provided by multi-lateral agreements and international organizations.