

CHAPTER IV

BRITISH-AMERICAN MAPPING POLICY

The following map is relative to this chapter:—

Sketch Map 2. The World.

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When the United States entered the war in December, 1941, the need was recognized for a definite working arrangement regarding the preparation and production of mapping material for a global war. Quite apart from the waste of effort caused by a duplication and overlap of mapping programmes it was essential that, when allied forces were likely to be closely associated in any potential theatre of operations, they should use the same maps.

Colonel M. Hotine (Director of Military Survey, War Office) and Colonel H. B. Loper (Chief of the Intelligence Branch of the Chief of Engineers, U.S. Army) met in Washington in May, 1942, to discuss the mapping situation. As a result they drew up a Memorandum of Agreement on mapping and survey policy between the War Office (G.S.G.S.) and the U.S. Chief of Engineers representing the War Department. The Chief of Engineers was responsible for executive action in connection with map production and supply for the U.S. Army. This agreement, which became known as the Loper-Hotine Agreement, dealt with three main subjects, namely, the division of responsibility for map production, the exchange of mapping material and other survey data, and the selection of military map grids.

The United States assumed complete responsibility for the production and supply of maps and survey data, including the provision of survey units or any necessary reinforcement of existing allied military survey organizations, in the following areas:—

North and South America, Australia, New Zealand, Pacific Ocean Islands, Dutch East Indies, Japan, West Indies, Iceland, Greenland, and Bermuda.

The War Office (G.S.G.S.), either direct or through its representatives in overseas theatres, continued to accept responsibility for initial map preparation in other areas. It was made clear, however, that American help would be required to meet the following contingencies:—

- (a) The reproduction and printing of initial map supplies from material to be supplied by G.S.G.S., for pre-operational use in the United States, and for initial issues to U.S. troops which would proceed direct to an operational theatre without passing through British map supply channels.
- (b) The provision of U.S. survey units and staffs in support of major U.S. army or air forces, and arrangements for the exchange of survey liaison officers where considered advisable.
- (c) The provision of air photographs for mapping purposes, to supplement where necessary the resources of R.A.F. Photo Reconnaissance Units, first priority being given to areas of north-western Europe which were not already covered by reliable large scale maps.

It was agreed that G.S.G.S. would automatically supply to the Chief of Engineers, U.S. Army, colour pulls or other suitable material for rapid reproduction of the following:—

- (a) All new G.S.G.S. publications.
- (b) All current air and strategic maps on a scale of 1/500,000 and smaller.
- (c) All current tactical maps in the area of American mapping responsibility, together with the overlapping areas of Malaya, Thailand, Indo-China, Atlantic Islands, West Africa, N. West Africa, N. West Europe, and the China Coast.
- (d) Any G.S.G.S. maps not included in the above which might be specifically requested.

The Chief of Engineers agreed to reciprocate with regard to U.S. productions.

It was agreed that the Chief of Engineers, U.S. Army, would provide G.S.G.S. with full details of any fresh military grids which would be laid down in the areas of American responsibility. In the case of grids covering Australia, New Zealand, Canada, etc., it was further agreed that the survey authorities in those countries should first be consulted.

The above Agreement formed the original basis on which plans were formulated for the production and provision of maps and other survey data which might be required by the Allied Forces in the various potential operational theatres. As time went on and conditions changed, it naturally became necessary to modify and supplement the details of the Agreement, but the basis of co-operation had been well and truly laid, and during the whole course of the war the relations and spirit of mutual help between the British and American mapping organizations continued to be of the happiest and most satisfactory nature.

The problem of the spelling of place names and the system of grid referencing to be employed was discussed at an International Mapping Conference held at the War Office in March, 1943. It was agreed that the problem was so intimately connected with the business of map production that the map-producing organizations ought to co-ordinate the production of gazetteers and glossaries. They would not, however, necessarily undertake the production themselves, but would use any other organization which was qualified to do the work. The division of responsibility was to follow that which might be agreed on from time to time for the production of the largest scale map series, as these latter would necessarily contain more names than the smaller scale maps, and would be gridded.

It was decided that, in principle, the responsibility for the adoption of a particular transliteration system should go with the area responsibility for map production. At the same time, owing to the fact that the system adopted would affect not only maps, but also all Intelligence and other reports, etc., it was considered most desirable that there should be agreement between British and U.S. organizations on the system to be adopted. This applied particularly to Russia, Japan, China, and Siam.

At this same Conference held at the War Office in March, 1943, a fresh division of area responsibility was agreed on. The principal items agreed on were as follows:—

(a) *Europe.*

The United States accepted a commitment for the 1/100,000 series of Germany except for such blocks of sheets in the west as were already

in preparation by the War Office. They also accepted responsibility for map production in the Iberian Peninsula, and for a new 1/50,000 series of the Balearic Islands.

So far as base production was concerned, the responsibility for preparing all future editions on all scales of French and Spanish Morocco and Algeria passed to the United States.

They assumed responsibility also for the production of a newly drawn and revised 1/25,000 Dutch series, and for a block of 1/100,000 sheets in south and central France.

Except for the above, the War Office retained responsibility for maps of Europe and the Mediterranean Islands.

(b) *Asia, Australia and the Pacific.*

A new dividing line of responsibility for map production on 1/M scale and smaller was agreed on whereby the United States accepted responsibility for areas further to the west than had been previously arranged.

On scales larger than 1/M the United States assumed responsibility for:—

The East Indies, Phillipines, Formosa, Korea, Japan, and all areas lying to the east, North East China, Mongolia, Manchuria, Russia (east of 60° E. and north of Lat. 44° N.), Australia, New Zealand, and islands in the Indian Ocean to the east of 108° E.

The War Office became responsible for:—

India, Burma, Malaya, Siam, Indo-China, South Western China, Afghanistan, Tibet, Persia, Iraq, Arabia, Trans-Jordania, Palestine, Syria, Turkey, and the islands in the Indian Ocean to the west of 108° E.

(c) *Africa.*

The United States accepted responsibility for:—

All Africa west of 6° E. on the 1/2M, 1/M, and 1/500,000 scales.

Algeria. All scales.

French Morocco. All scales.

Spanish Morocco. All scales.

Tangiers.

The War Office continued to be responsible for the remainder of Africa and Madagascar.

(d) *America and the Atlantic.*

The United States accepted complete responsibility for all scales in:—

North and South America, West Indies, Bermuda, Greenland, and Iceland.

The War Office retained responsibility for other Atlantic Islands, e.g., the Falklands, Azores, Canaries, and Cap Verde.

(e) The acceptance of responsibility by the United States signified production either direct by Washington or by decentralization under U.S. arrangements to other countries such as Australia, etc. In the case of War Office responsibility this signified production either direct by G.S.G.S. or by its agencies in the United Kingdom or by decentralization under G.S.G.S. arrangements to overseas Military Survey Directorates or to India.

The arrangements for supply and exchange of mapping and reproduction material were further amplified and clarified.

The design of air maps for use by the Allied Air Forces was attended by certain inevitable complications and difficulties arising from a variety of factors.

In the U.S. Forces there existed a separate Map and Chart Division for the Army Air Corps. This employed the Chief of Engineers and his map production and supply organization on a contract basis only, the latter having nothing to say with regard to air map design. There was also, at that time, a considerable divergence of ideas about air map design between the British and American air forces as is shown below:—

R.A.F. air map policy was based on a requirement for the following types:—

- (a) An outline plotting series, in which topographical features were shown in one colour and in broad outline only, on which pencil track lines could be drawn and be clearly visible.
- (b) Small scale layered maps showing topographical detail, such as the 1/M Ground/Air edition, which could be used for visual fixes in daylight by long range aircraft.
- (c) Maps in full colour on 1/500,000 scale with the topography shown in less detail than on ground maps of comparable scales. It was considered that this normally represented the largest scale on which special air maps were likely to be required.
- (d) Maps on larger scales, such as 1/250,000, which were required in full detail for use as run-up maps. On these maps such features as railways, woods and water were to be emphasized, and the colours so chosen that they would be readily visible under an amber light. The army/air style satisfied the needs of both ground and air forces in this respect.
- (e) Special purpose bombing target maps.

American design tended towards the production of three main series for navigational use:—

- (a) Small scale charts at 1/3M scale for long-range aircraft.
- (b) World air charts at 1/M scale covering all land areas, designed primarily for aerial navigation.
- (c) A skeleton plotting chart series at 1/M scale. For this the Americans accepted the British design.

At meetings held early in 1943, it was agreed generally that the showing of air information should be dealt with as a map production proposition by means of overprints on either the 1/M ground/air edition or on the 1/M plotting series. The information, being regarded as ephemeral, was preferably to be overprinted in the locality where the maps were being used. This would also facilitate security.

With regard to agreement on scales, it was considered that this should be treated on the basis that different areas required different treatment dependent on the density of population, development, etc.

The question of providing fluorescent maps was subjected to considerable investigation by the R.A.F. Amongst other experts whose views were sought, the ophthalmic consultant to the R.A.F. considered that no specific advantages would be obtained from the adoption of fluorescence in maps, and that certain disadvantages in night vision were likely to accrue. Amongst other

disadvantages it appeared that the Perspex windows of the aircraft would fluoresce under the influence of ultra-violet light, and that it would be impossible to see through them under such circumstances. The Air Staff eventually ruled that fluorescent maps would not be adopted by the R.A.F.

Army Air Corps policy in the United States was in direct opposition to that of the R.A.F. After much investigation it had been decreed by the Army Air Force authorities that all aeronautical charts produced for army/air use in the United States were to be suitable for illumination by either daylight, ultra-violet, red or amber light. As this policy differed from that of the British it was a requirement which could not be accommodated in the European and Middle East theatres where all air map supply was through channels controlled by the War Office and the Survey Directorate in the Middle East.

The British and U.S. views on air survey photography were discussed by representatives of the War Office, the Air Ministry and the U.S. Army in March, 1943. The British approach to the problem at that time was as follows:—

- (a) Wherever possible Mosquito IX aircraft should be employed for photography, as they appeared to have sufficient performance to meet existing operational conditions against enemy opposition, and they also had sufficient navigational facilities in combination with such performance.
- (b) The aircraft should preferably be equipped, for simultaneous vertical photography, with Fairchild 6-inch and 12-inch focal length cameras. The object was to obtain complete coverage with the 12-inch camera and that the addition of the 6-inch photography would serve to fill small gaps which would inevitably be found in the 12-inch coverage, and would enable wide-angle Multiplex plotting equipment to be used if so required. It was considered that the 6-inch photographs alone would provide pictures at too small a scale to give adequate interpretation of detail either for mapping or for general Intelligence purposes.
- (c) Arrangements should be made for the levelling and orientation of the cameras in flight, with particular reference to the 6-inch if both cameras were installed.
- (d) If it should prove impossible to install both 6-inch and 12-inch cameras, then the latter should preferably be adopted.

It is emphasized that the above represented the British view *at that time*. With the development of technique, apparatus and other conditions, such policy was of course liable to considerable alteration.

The American approach differed basically from the British in that, if it was possible to install one camera only, then that camera should be the K.17, 6-inch camera, which was designed specially for use in connection with the Multiplex plotting apparatus. They considered it preferable to omit certain minor details of terrain than to sacrifice speed of operation involving an increase in the flying time required for photography.

Apart from this major point of difference, general technical agreement was reached between the British and American representatives.

During the remaining course of the war between 1943 and 1945 there was a constant interchange of views and information between British and U.S. mapping authorities and, by means of exchange of visits, discussions were held on various subjects connected with the preparation and provision of maps and survey data. As operations developed within the various operational

theatres, a fresh orientation of ideas and responsibilities was necessary, and all possible action was taken to put this into effect. It is unnecessary to quote full details of all such changes. Sufficient data have been given above to indicate the scope and magnitude of the problem and the general principles on which the work of the British and American mapping organizations was co-ordinated with such happy results.

