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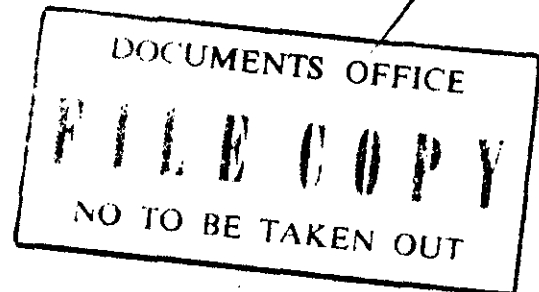
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BENEFITS ACCRUING FROM THE EXCHANGE OF  
CARTOGRAPHIC SOURCE MATERIALS AND  
TECHNICAL INFORMATION

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Agenda Item 13

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CARTOGRAPHIC SOURCE MATERIALS AND TECHNICAL INFORMATION

by

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# BENEFITS ACCRUING FROM THE EXCHANGE OF CARTOGRAPHIC SOURCE MATERIALS AND TECHNICAL INFORMATION

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The business of making maps is more complex today than ever before. The technology of the 60's changes almost daily and the impact of new equipment, techniques, and methods of operation are felt at every turn. The successful cartographer must be aware of the research and development under way in industry and the sciences. He must evaluate each new item in terms of its contribution to his ultimate goals and arrange to make use of those he considers most valuable. This is no simple task and the modern cartographer must make use of every means at his disposal to meet the challenge. With these facts in mind, I want to talk of some of the major problems the map maker faces and discuss the advantages of one method that will aid in the solution.

Regardless of purpose, today's cartographic program must make use of highly specialized techniques and processes. As I said a moment ago, this requires keeping up to date with related research and development projects. Then there are the problems of finding and using the best source materials; of keeping well informed regarding other cartographic activities in the world; and of scheduling production to make use of new materials in preparation in other agencies.

I think you all would agree that it would be virtually impossible for any mapping agency to secure the best solutions to all the problems of cartographic production solely through its own resources. It is this realization which has prompted many agencies to initiate cooperative arrangements -- the practice of exchanging cartographic source materials and technical information.

An arrangement or understanding between two agencies to exchange cartographic information may be limited to a simple exchange of printed maps or it may be expanded to include the cooperative preparation of joint-use products. A working arrangement can be used to avoid costly duplication of effort in the participating organizations and it most certainly will contribute to the production of more complete and accurate maps and charts by both groups.

I propose to examine some of the mutual benefits of national participation in cartographic exchange programs. For example, let's look at what happens when a national map series approaches an international boundary. The information shown on the boundary line sheet can end abruptly in the middle of the sheet at the boundary - or it can progress smoothly to the edge of the sheet. Naturally if you are to complete the sheet, you will need information from a neighboring mapping agency. In the process of obtaining the data, production schedules are likely to be discussed. Perhaps the material you need isn't prepared or the neighbor wants information from you to complete sheets at another point along the boundary.

Ideally, such an interchange would lead to an agreement that both of you will concentrate your production along a given segment of the boundary in question and you will exchange compilation drawings. Then you would both be in the enviable position of being able to publish complete and accurate maps. In the event that both of you use the same sheet layout, you might even produce a map and furnish your neighbor with reproduction copy, and vice versa, for printing. This certainly would have the effect of reducing production time and costs for both countries involved.

Unfortunately the ideal cooperation I've just outlined is seldom realized. However, in most instances it is quite practical to exchange information regarding production plans. Then both of you would have a reasonable basis for establishing practical dates for initiating production of the boundary line sheets.

When parties to an exchange agreement share a common area of interest, every effort should be made to include specifications, quality standards, and indexes of geodetic and aerial photographic surveys in the agreement. Such information is very helpful to each agency in the development of individual production schedules. Then too, when a compiler of one agency is using a map of another country as source material for matching detail along the national boundaries he may need to refer to the specifications and quality standards to resolve differences in alignment or match-point features. Variances in road classification, selection of populated places, placement of a shoreline, or the delineation of a swamp area can often be explained by the extent of generalization permitted in the national mapping standards. Indeed, there are many instances where knowledge of specifications is useful to the technician working with foreign compiled source material.

In this same connection, the national geodetic networks of one part may be computed on a different reference ellipsoid than the other party used. Difficulties will be encountered in matching detail where maps based on the two networks meet at the boundary. Furthermore, the plans of one nation for expanding a triangulation network could easily be affected by the plans of a neighboring nation. Mutual

exchange of triangulation indexes along with plans for extending networks should always be an objective of exchange agreements.

Finally, an exchange agreement could be used as a device for securing the edit and correction of compilation copy when neighboring territory is included on a national map. Verification of the spelling of place names and the delineation of roads and city outlines are not difficult or expensive services especially when they are measured against the good will and cooperation which is generated.

Most agencies are pleased to exchange their printed maps and map catalogues. Such reciprocity is a normal courtesy extended among national cartographic agencies. Eventually, the maps go to a national map reference file for public use. However, they are studied very carefully first for indications of new specifications and improved cartographic techniques. The maps indicate the level of professionalism achieved by the producers and any new techniques which can be identified are evaluated by receiving agencies for use in their own production. The spirit of friendly competition generated in this sort of exchange is very desirable because it keeps cartographers alert to developments in their profession and furnishes an incentive for improved capabilities.

As I pointed out earlier, the task of remaining abreast of technological development is tremendous. Here again, exchange agreements can provide channels for technical information regarding the experimentation and improvements inaugurated by other agencies. Cartographers are drawing ideas, devices, materials, and techniques from a variety of technologies and often the seminars and conventions held by such professional organizations as the International Society of Photogrammetry, the International Union of Geodesy and Geophysics, the International Cartographic Association furnish an opportunity for the exchange of technical information. The specialized equipment which manufacturers usually display at conventions is also a means of keeping current on research and development in that field.

The scientific societies I just mentioned direct their efforts toward improving the professional cartographer. The exchange of information through society sponsored seminars and conventions promotes the idea of individual achievement and personal contact. They serve as clearing houses of information which can be drawn upon by participating members - - working level and supervisory. Technical personnel are always seeking new ideas and they enjoy contacts with their counterparts in other agencies and the meetings of local chapters of the societies serve as a forum for the exchange of ideas and accomplishments.

The major cartographic agencies of the world have well established programs for the production of technical reports regarding processes or techniques which they have developed. These are available on request and any organization planning an effective mapping plant should obtain as many as possible. Plant managers, planning staffs, compilers, drafting departments, and printers will all benefit in one way or another from the exchange of this type of information.

And quality control is one of the newest and most promising techniques which might be included in an exchange arrangement. The color of inks -- which has long been measured by the eye of the pressman -- can now be controlled accurately by electronic devices. The line width on a printed chart is controlled by the size of the cutting head on the scribing tool and the length of exposure during the plate making stage. Here again, the skilled eye of the technician once determined the exposure length, but electronics has taken over. All sorts of information concerning the equipment and machinery for these purposes are available for the asking through exchange with other agencies and from manufacturers.

Are you having difficulties in obtaining paper of a suitable quality? Does humidity cause your drawings to go out of registration? Perhaps your photo processing is not yielding sharp negatives. Very likely other cartographic agencies have experienced identical problems and would be pleased to tell you how they solved them.

Any discussion of benefits to be gained through exchanging information would not be complete without discussing the international agencies working toward the standardization of cartographic products -- such as the International Civil Aviation Organization (ICAO) and the International Hydrographic Bureau. Very often these groups will act as intermediaries for establishing cooperative mapping or charting production agreements. Through their status as internationally accepted groups for standardization, they can delegate areas of mapping responsibility. In instances where a state cannot meet its responsibility they will be assisted in the designation of an alternate production office. Further, through specification standardization programs, these organizations can call international conferences. The representatives of cartographic organizations who are present at the conferences act as agents of their governments and the agreements made become formal commitments.

I said when I started that I wanted to discuss the benefits of exchanging cartographic information. I have by no means exhausted the subject and, as you develop these arrangements, you will undoubtedly realize many other advantages. It seems to me that the real value of the arrangement lies in the fact that both parties gain. It is a mutual process which can only develop good will and further cooperative effort. It is an important phase of the development of the professional stature of an organization because it provides a way for you to keep

up with the developments in your business. It furnishes the opportunity to display your accomplishments. It promotes efficiency through the increased competency of your technical staff. When production schedules can be included, it will help you to achieve more effective schedules and better production management. And it surely leads to good international relationships.

The negotiation of an exchange arrangement -- agreement if you like -- is very simple when it is approached informally on an agency to agency basis. A simple arrangement is preferable where large quantities of materials are involved.

I firmly believe that the exchange of cartographic materials and technical information among the national mapping agencies of the world represents the most comprehensive method of solving the complicated problems of modern cartography. It is a practice which should be exploited to the fullest extent possible.