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A PROJECT PROPOSAL

"Soviet Capabilities in Foreign and Domestic Mapping to Include Geodesy, Aerial Photography, and Photogrammetry"

I. Objectives of the Proposed Project

II. An Outline of the Research Agency

III. Background of Negotiations

IV. Justification

V. Cost Estimates and Request for Approval

THE MAP DIVISION
OFFICE OF REPORTS AND ESTIMATES

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I. OBJECTIVE OF THE PROPOSED PROJECT

As a result of a series of meetings held between members of the Map Division, CIA and representatives of the [redacted] 25X1A5a1 25X1A5a1 [redacted] a specific project has been submitted by the [redacted] to undertake 25X1A5a1 a comprehensive study of the Soviet geodetic and cartographic establishment, and to prepare national intelligence estimates of Soviet capabilities in foreign and domestic mapping which underlie the requirements of intercontinental guided missile warfare.

The Soviet Union possesses a geodetic and cartographic establishment believed to be second to none in the world. It has made important contributions in scientific research and has been responsible for transforming the vast area of the Soviet Union from one of the poorest mapped countries to one of the best in the short space of 33 years. Very little is known of its highly complex structure and organization. Almost nothing is known in the United States of its achievements in higher geodesy. Absolutely nothing is known of Soviet capabilities to solve problems in higher geodesy to meet the requirements for intercontinental guided m ssile warfare. No agency in the entire world is attempting any counter-intelligence research on Soviet knowledge of US and other foreign developments in geodesy and mapping. No agency in the world is conducting any intelligence research on Soviet capabilities to attack and solve geodetic and mapping problems in areas outside of the USSR whose solution is essential to guided missle control. For example a recent bit of information suggests that the Soviets have succeeded in bridging the geodetic gap in eastern Europe between the Potsdam and Pulkovo (Soviet) datums. If so, then the Soviets have at least a two-year advantage over present US

progress in the solution of this problem for map production purposes.

25X1A5a1 [redacted] has concluded, in a project report for the USAF, that a common world datum is not essential for guided missile control. But no attempt is being made in the IAC structure to determine Soviet cognizance of this thesis. This knowledge of Soviet intelligence could be significant factors in estimating their aggressive capabilities and timing. The proposed project as outlined in detail in Appendix A will attempt to provide the best possible national intelligence estimates of Soviet current as well as future capabilities on the basis of currently available information. The project will at least provide a comprehensive collection of information and related estimates on the basis of which further intelligence requirements may be refined and estimates of future Soviet developments and achievements revised.

The original proposal was augmented to include the interests of the Office of Scientific Intelligence, CIA, as outlined in Appendix B. Since the field of geodesy and cartography is related to the broad field of geophysics and geography in Soviet scientific organization, it is expected that research will extend into numerous sources on geophysics and geography. Significant materials and information on developments, trends, new theories and techniques, in the fields outlined in Appendix B, located in the course of research on Soviet geodesy and cartography will be noted for the attention of OSI.

The proposed project will produce a variety of products. The most siginificant product will be fully coordinated national intelligence estimates for the National Security Council, the Joint Chiefs of Staff, and the Research and Development Board. Special

intelligence notes concerning developments, trends, theories and techniques on topics outlined in Appendix B will be prepared for OSI, CIA . Significant items selected by OSI will be made available to the Research and Development Board and other interested governmental agencies. Data cards and map overlays of data of pertinent geodetic, cartographic and geographic information will be provided to the interested components of CIA and the appropriate technical areas of the military establishment.

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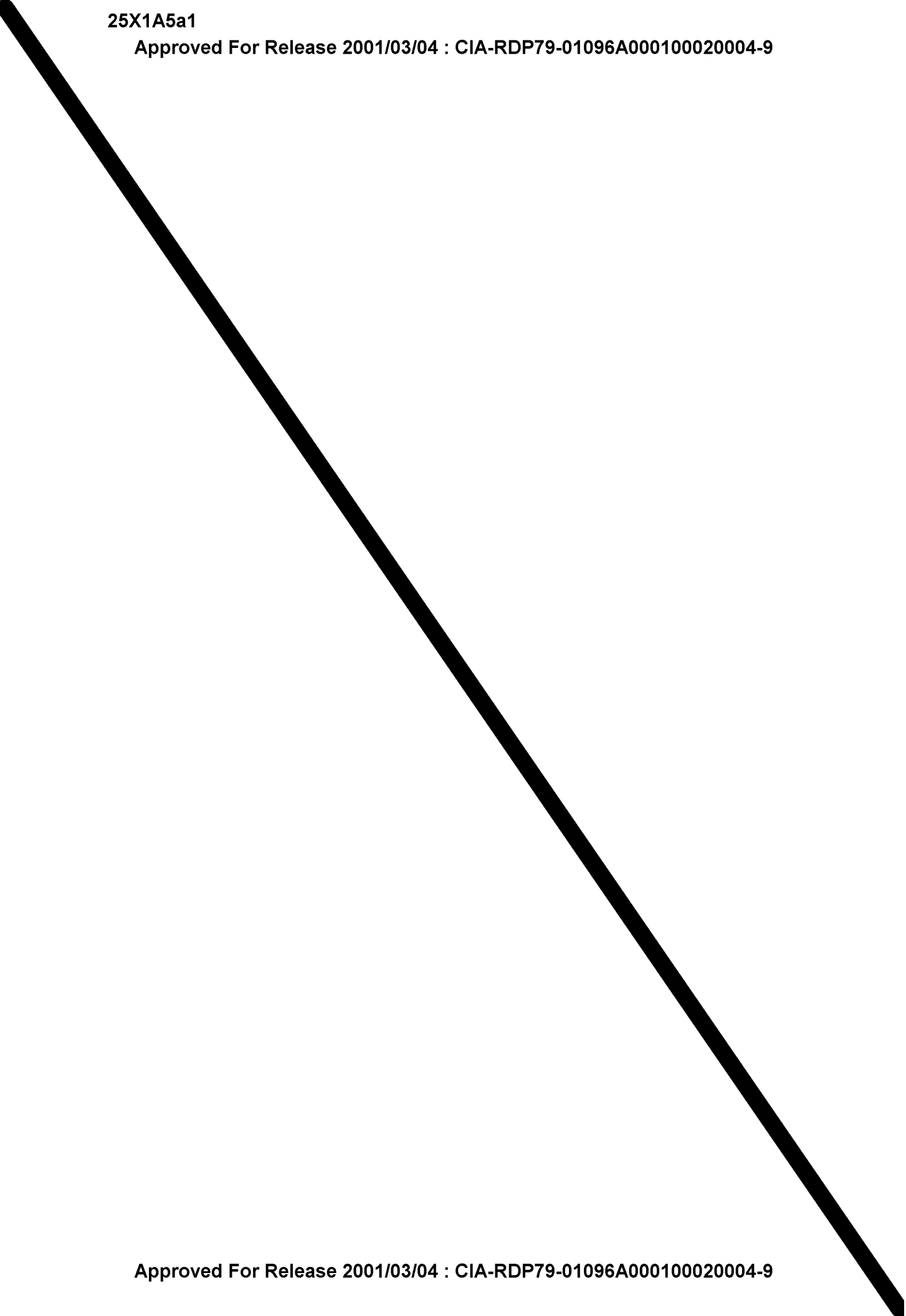

III. BACKGROUND OF NEGOTIATIONS 25X1A5a1

The initial contact with the [redacted] was established January, 1948 through the Aeronautical Chart Service when a representative of the Map Division assisted in working out some of the technical details for the ACS project, and coordinated the operation with CIA operations (FDD and Map Division). The Map Division continued to provide consultant services to the project through the requests of the Aeronautical Chart Service. The relationship proved to be of mutual benefit. The Map Division in its first contact established a procedure for the preparation of a special card ~~serial~~ use on locating valuable special maps in little-known Soviet publications. Through this medium over 2,300 maps have been located, most of them being unique and valuable. In addition bibliographical/abstract cards were prepared for 1,200 publications on mapping and the earth sciences ~~were uncovered~~ found in collections scattered throughout the U.S. This extremely valuable information was received at the cost to CIA of one trip to the

25X1A5a1 [redacted]

In the course of these working-level contacts between the Map

25X1A5a1 Division and the [redacted] it was determined that the production requirements of the ACS contracts limited the scope of research and prevented the consummation of a systematic and comprehensive research study of Soviet mapping organizations, facilities, activities, and capabilities. This deficiency has been a factor in the formulation which of this proposed project and led to informal discussions for the formulation of a project proposal.

On August 10, 1950 a member of the Map Division explored in-

25X1A5a1 formally with the Director the [redacted] capability and interest in undertaking the proposed project. After extended discussions in ORE between members of the Map Division and the Plans and Policy Staff it was

agreed to hold an informal exploratory meeting with working members
25X1A5a1 of the [redacted] to discuss the technical details of the scope of the project. This meeting took place 25 August 1950 and included two representatives of the Plans and Policy Staff, three members of
25X1A5a1 the Map Division, and two members of the [redacted] (the technical and assistant technical supervisors proposed for the contract).

As a result of this meeting a project proposal dated 30 August was submitted via the office of the Director of Central Intelligence for formal consideration. After further study within the Map Division and the Plans and Policy Staff, a series of meetings were held between
25X1A5a1 members of the [redacted] — including its Director and the two previous conferees — and four members of CIA — including one
25X1A9a member, [redacted] of the Administrative Staff. Office of Business and Management. In addition one session, 21 September 1950, was devoted to a conference between the Staff of the Office of Scientific Intelligence, a representa-
25X1A5a1 tive of the Map Division, and the three representatives of the [redacted]

The meeting explored OSI's interest in the proposed project. As a consequence of the discussion OSI indicated a wholehearted support of the project, particularly when it was agreed to broaden the proposed project in accordance with Appendix B.

IV. JUSTIFICATION

A. The Soviet Union in the short span of thirty-three years was capable of transforming itself from one of the poorest surveyed and mapped countries in the world to one of the best. Considering the vastness of the area, this massive scientific achievement is phenomenal. The implications ~~to~~ of scientific mapping capabilities inherent in this tremendous accomplishment is a prime intelligence target in an age which finds itself on the threshold of developing intercontinental guided missiles.

Moreover, their capabilities must be compared with US capabilities in order to assist high-level technical areas to shape developmental policy concerning geodetic methods, and surveying and mapping programs. Such a need has been expressed to the Chief of the Map Division from a representative of the Joint Staff, JCS.

B. Specifications of the project call for the collection of a staff consisting of personnel who combine technical qualifications and linguistic skills in Russian as well as English. This will be the first massing of such a thoroughly equipped staff to focus on this highly technical research problem. As an academic and

25X1A5a1 non-governmental body the [redacted] can make the fullest utilization of personnel who are not available to the government (DP and defectors, as well as individuals in private or academic occupations not inclined to government work).

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25X1A5a1 C. In the course of the [redacted] past work on Air Force contracts involving hundreds of thousands of dollars, the [redacted] 25X1A5a1 has accumulated a file of data, bibliographical information, as well as background knowledge which have been insufficiently exploited for

intelligence purposes because of the limited scope of the Air Force contracts. This proposed contract will provide a complete exploitation of a resource created through previous government expenditures which otherwise might not be made available as intelligence.

D. Contributions to the NIS Study of Soviet mapping and map coverage received from the map and chart organizations of the military establishments reveal serious gaps and inadequacies in information concerning Soviet geodesy and cartography; particularly developments and capabilities. Efforts of the Map Division to correct these deficiencies have not been successful because the producing agencies concerned have not been able to undertake the broad research program as envisaged in Appendix A. The compartmentalized responsibilities of the mapping agencies of the US Military establishments limit research in Soviet technical literature to data required for the production of maps and charts. This compartmentalized knowledge of Soviet geodesy and cartography when taken together as in the NIS study, results in a wholly inadequate appraisal of the highly integrated and broad mapping activities of the Soviet geodetic and cartographic establishments. The policy levels of the US military and security establishments cannot command the necessary resources within the governmental structure to undertake the study and the production of estimates proposed in Appendix A.

E. Available British reports on Soviet mapping are extremely superficial and generally inferior to US information. The reasons for this were partially explained by a survey of principal British map installations made by the [redacted] (the technical supervisor designated for this proposed project) for the Aeronautical Chart Service project. Large amounts of unprocessed Soviet and

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other sources were found. In some instances the small and hopelessly inadequate staffs are incapable or unqualified to exploit the available materials.

In another instance, the Royal Observatory, Greenwich, had much unprocessed material was still in such disarray and postwar confusion that much material remained unprocessed. Moreover, a letter in Russian, dated 1946, from the important Geophysical Observatory at Leningrad requesting an exchange of information with the Royal Observatory remained unopened. The incident was brushed off with an excuse that no one could have read it anyway.

At the present time there are no other adequate facilities or projects within the US Government on the topics included in Appendix A that will integrate materials on Soviet mapping now held in European files with American-held data into a ~~truly~~ comprehensive study and estimate.

V Request

~~IV~~. Request is made for the approval of the proposed project as outlined in Appendix A and the approval of an allocation of funds to cover the costs for a two-year continuing contract, as itemized ~~broken down~~ in Appendix C.

The estimate of costs submitted has been carefully examined and is recommended as reasonable within the scope of the outlined project. The staff proposed for the project is, in fact, believed to be conservative in relation to the large volume of source materials to be located, studied and analyzed. The salary scales and wage rates indicated are also conservative relative to the rare combination of skills which will be provided.

The project would be under the professional supervision of the Map Division, ORE. The planned close monitoring of the project

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EXHIBIT I

Outline of Organization, History, and

Operations of the [redacted] 25X1A5a1

25X1A5a1 [redacted]

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APPENDIX A

Outline of Proposed Research Contract

to determine

"SOVIET CAPABILITIES IN FOREIGN AND DOMESTIC MAPPING, TO INCLUDE GEODESY, AERIAL PHOTOGRAPHY, AND PHOTOGRAMMETRY."

1. Organizational study of Russian science in these and related, closely allied and contributory fields.
   a. Major research institutes, production establishments and associated organizations, to include list, history and status of work and publications.
   b. Key personnel and evaluation of capabilities.
   c. Educational programs, quality and extend of training of personnel, number of personnel.
   d. Availability of Russian material and publications.
   e. Russian cognizance of U.S. methods, procedures and equipment.
2. Technical developments in each of related fields.
   a. Control
      (1) Evaluation of Russian triangulation methods (5 classes)
         (a) Sampling computational and adjustment procedure along transcontinental arc in at least four approximately equal spaced loops.
         (b) Comparison between accuracies, speed and instrumentation used with U.S. procedures and results.
         (c) Correlation of Russian "classes" with international "orders" of accuracy.
         (d) Extent of triangulation of all classes and location.
         (e) Estimates of future developments, current and long-term.
      (2) Evaluation of Russian leveling methods (9 classes)
         (a) Sampling computational and adjustment procedure on at least four equally spaced level net loops.

Appendix A - continued

(b) Comparison between accuracies, speed and instrumentation used with U.S. procedures and results.

(c) Correlation of Russian "classes" with international "orders" of accuracy.

(d) Extent of leveling of all classes and location.

(e) Estimates of future developments, current and long-term.

(3) Study of Russian triaxial ellipsoid and its possible effect upon any or all U.S. mapping procedures.

(4) Russian methods of effecting inter-continental ties of geodetic control -- east and west.

(a) Estimates of future developments, current and long-term.

(5) Study of Russian claims and procedures involving use of gravity and astronomical data to determine geodetic positions. Relative accuracy of their methods. Possible value of this study to facilitate U.S. mapping program.

(6) Study to determine feasibility of tying in independent Russian triangulation systems to their main geodetic network.

(7) Russian astronomical methods in application to geodetic problems.

(8) Russian studies in terrestrial magnetism affecting cartography.

b. Russian electronic control and mapping methods; comparative status with U.S. and British developments.

(1) Shoran

(2) Loran

(3) Radar

(4) Decca and others

Appendix A - continued

c. Aerial photography for mapping and charting.

(1) Extent of coverage and how used.

(2) Equipment, types and performance compared with U.S.

d. Photogrammetry

(1) Equipment, type and comparison with U.S., Swiss, German and British.

(2) Methods, comparison with generally accepted procedures in U.S.

(3) Product, extent of work and relative accuracy of results.

3. Analysis of Russian cartography.

a. Russian cartographic establishments and practice.

b. Projections and grids.

c. Evaluation of Russian maps and charts.

d. Russian map coverage.

4. Incidental Geographical and Cartographic Intelligence obtained in the course of securing other data required in this proposal.