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COMPT 81-1034

CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

11 August 1981

MEMORANDUM FOR: [redacted] 25X1
Policy Guidance Staff
Intelligence Community Staff

SUBJECT : CIA Projects Selected for FY 1983-84 Production Enhancement Program (S)

1. Attached are a summary statement for each of the Agency's Production Enhancements, the revised proposals for each enhancement, and my comments on your draft memo to the Interagency Working Group on Production (IWGP). (S)

2. Since I had several suggestions in the draft memo, I have attached both a marked-up copy and a clean-typed version. Many of my comments are editorial in nature and are put forth as suggestions. In paragraph 3 my comments were directed primarily at trying to focus the attentions of the IWGP. In paragraph 4 I have tried to reflect, in stronger language, the consensus of the Committee that a broad interpretation of the purpose of this program is the appropriate one. After much thought, I would propose dropping Paragraph 5, as I believe that the ICS could accomplish what is suggested there without IWGP approval. Further, it would seem to me to be more important to get the working group's views of the Program itself than the mechanics of its operation. These concerns notwithstanding, if you feel strongly that this issue should be raised with the IWGP, I would not object. (S)

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[redacted]
Intelligence Group
Office of the Comptroller

Attachments:
A. List of Production Enhancement Initiatives
B. Production Enhancement Initiatives
C. Draft Memorandum to the IWGP

[redacted] 25X1
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SECRET When Separated
From Attachment

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O/COMPTROLLER/IG/ [redacted] (11 Aug 81)

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8 - IG Chrono File
9 - IG Subject File (Production Enhancements)

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ATTACHMENT A

CIA PRODUCTION ENHANCEMENT INITIATIVES

	Funds (in thousands) FY 83	FY 84
1. Exploiting Political and Social Data		
2. Large Scale Econometric Modeling System		
3.		
4. NonFuel Mineral Supply-Demand Data Base		

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1. Exploiting Political and Social Data

Creates a unique data archive of a rapidly expanding group of files (already numbering over 200) containing political and social information, and an interactive software system to permit ready access to and sophisticated analytical manipulation of the data.

2. Large Scale Econometric Modeling System

Develops models from econometric and mathematical statements and sets of algorithms to obtain efficient solutions to problems with equations and variables too large to be processed in a timely fashion with existing capabilities.

3.

4. NonFuel Mineral Supply-Demand Data Base

Develops and rationalizes disparate data sets to establish, for the first time, a consistent, wide-ranging body of information on the availability of minerals critical to the security of the US and its allies. This data will be available to analysts through the Agency's interactive ADP system, and software will be developed to permit analytical manipulation.

	Funds (in thousands) FY 83	FY 84
5. Advanced Cartographic Support System Develops a cartographic data base management system to expand the support provided to cartographers and analysts, thereby saving workyears while adding functions such as portraying overlapping geographic areas or presenting items identified by other than location, such as all railroads through Leningrad, all cities over 100,000 in Poland, etc.		
TOTAL		

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I. PROJECT TITLE: EXPLOITING POLITICAL AND SOCIAL DATA

Submitting Agency: CIA

II. COSTS (in thousands):

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III. DESCRIPTION OF PROJECT

A. Statement of need:

Intelligence analysis is often constrained by limitations in readily available data. To the degree that information is difficult to identify and manipulate, it will not be incorporated in intelligence production. In practice, this has meant that a vast array of political and social information--on public opinion, social trends, and domestic confict--has remained largely untapped by NFAC analysts. When analysts assess political and social conditions, such as the potential for political instability, the effectiveness of foreign government policies, or support for its foreign policy, they, therefore, often rely on incomplete information.

This situation calls for the creation of a unique intelligence resource: a data archive of important political and social information and the means for analysts to easily use this information in their everyday work.

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To make these data readily accessible by analysts, an extensive interactive computer software system would need to be developed. The result would be an archive more extensive and timely than any that currently exists in either the public or private sector; one with sophisticated retrieval and analysis capabilities that would significantly enhance the depth and quality of NFAC analysis.

B. Current status:

The Intelligence Community is embarking upon an extensive effort to upgrade its capabilities to monitor socioeconomic trends in foreign countries through increased use of external data bases, such as those of the Bureau of the Census, and by more intensive analysis of these data. This is a vital effort. To make the linkage between socioeconomic trends and political events, we need an in-house capability to store, retrieve, and analyse these bodies of data together. For example, the historical relationship between inflation rates and a leader's popularity or the incidence of domestic protest could be quickly measured statistically and graphically. More complex models would lead to forecasts of stability within a country.

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OPA is collecting and computerizing political and social data that will facilitate interpretation of economic, demographic, and electoral trends by NFAC analysts. At present, the OPA Political and Social Data Archive contains approximately 200 data files and we have

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The rapidly-increasing availability of information in computerized formats, the development of analytic aids through ORD's Intelligence Production Laboratory project, and the increaased availability to NFAC analysts of remote terminals and sophisticated graphic systems make a thorough and systematic exploitation of political and social data possible.

C. What is required:

External research funds will be used to hire outside contractors to complete three basic tasks:

1) Development of a computer software system that will allow analysts to query data on their country or issue and conduct simple statistical analyses. This would involve interfacing with computer packages -- including graphics support -- already available on the Agency's computer system or currently under development. The system would permit the analyst to specify a country, region, or issue and receive at the terminal an inventory of available archive date by time period. The analyst would make choices, receive results, process data statistically or graphically; save files, and otherwise manipulate the data interactively. By making the full range of information readily available and easily usable its full benefit will be realized. It is estimated that development of this software will cost over the first two years. 25X1

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3) Transcription of socioeconomic data and election returns from published documents to computerized formats and coding of politically relevant events, such as acts of terrorism, insurgency and government reprisal within countries. Estimated cost of these activities is 25X1

D. Implementation and timing:

These tasks will not be implemented by the same contractor. OPA will have overall responsibility, with the computer software development done in consultation with ODP. It is assumed that major portions of that work will have to be contracted out. External contractors are the most appropriate means for the massive data collection and preparation effort. Once the historical baseline has been developed, the archive will be updated and maintained in-house,

supplemented by a minor investment of office external analysis funds when required.

With the funding of this project, OPA will conduct an ADP requirements study during FY82 and locate, through competitive bidding, contractors able to perform the related tasks, so that there would be no delay in getting started in FY83.

IV. INTELLIGENCE COMMUNITY APPLICABILITY:

The archive will constitute a unique resource within the Intelligence Community that will be used by NFAC analysts but could also support requests from DIA and State. The computer-based system will be developed with the flexibility to permit additional data bases to be added to the system in the future.

V. INTELLIGENCE CONSUMER BENEFITS:

The development of the archive is fundamental to the efforts to improve the quality of analysis in NFAC. It clearly will upgrade the accuracy and timeliness of political reporting on an ever increasing number of countries.

VI. PROBABILITY OF SUCCESS:

There are no known technical or administrative obstacles to the development of this system. It will be, however, large and complex and we anticipate that a significant amount of time would be needed to familiarize analysts with its capabilities and use.

I. PROJECT TITLE: Large Scale Econometric Modeling System

Submitting Agency: CIA

II. COSTS (in thousands):

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III. DESCRIPTION OF PROJECT:

A. Statement of Need:

The volume of data and large number of variables generated and processed for analysis of international economic situations is too great to be handled by existing Agency software. The current Community systems have severe limitations. For example, the Agency system is 1960 vintage and has many design defects which restrict the incorporation of advanced mathematical and economic techniques. The system architecture also seriously restricts the size of problems which can be generated and requires the user to resort to undesirably high levels of data aggregation. The Agency's current system (TROLL) has the capacity to run models with 2,000 equations and 4,000 variables. The high priority OER requirement which this project addresses is a system with the capacity to run models with 10,000 equations and 15,000 variables in the same CPU time and real elapsed time. OER's requirements can be met by a custom-developed system. (S)

B. What will be Developed

The system will consist of two parts. One part will be designed for creating a framework of economic model types. Its purpose will be to generate appropriate models from econometric or mathematical statements and also perform data management tasks. The second part of the system will consist of a set of algorithms designed to solve large scale econometric models, efficiently making use of the Agency's computer processing capability. (S)

The system will be designed in modules so that new algorithmic techniques can be readily incorporated and accessed to solve new problems. As new generations of simulation and optimization software are developed, they will be added to the system to increase its efficiency and to provide faster turnaround times. The accompanying documentation will provide detailed definitions and sample problems, and general information about other applications of the techniques. (S)

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C. Who will Accomplish

This project will be a joint effort by ORD, OER, and ODP. ORD will provide specialized personnel to manage the project. OER will document its experience with the current system and provide personnel to test the system as it is constructed.

D. Time Phasing

This project will last three years and cost [redacted] (The FY 1985 costs will be borne by ORD and OER.) The tasks required and their order are: 25X1

- o feasibility and system design study (FY 1983)
- o prototype software and documentation development (FY 1983-1984)
- o test, evaluation, and refinement (FY 1984-1985)
- o final system development (FY 1985)

IV. INTELLIGENCE COMMUNITY APPLICABILITY

The Agency is currently developing many econometric models to answer requests from the White House, NSC, DOD, State, Treasury, and Commerce. The knowledge attained in the development of such a sophisticated system as that needed to model and solve econometric models of this size will be shared with the community, but it is believed that the primary applicability is to Agency requirements. (S)

V. INTELLIGENCE CONSUMER BENEFITS

This project will provide the intelligence community with a unique modeling system that has been designed to meet the Agency's requirements and specifications. Many of the software systems which the Agency has acquired to date have been developed for industry or academia. The development of a new system will reflect experience in the design, thereby improving the precision and responsiveness of analysis based upon econometric modeling. (S)

VI. PROBABILITY OF SUCCESS

There is a high probability of success for this project. The recent advances in software and hardware have enabled business and research personnel to solve problems that are two or three orders of magnitude larger than those previously solved. The technology and experience to undertake such a project currently exists, but it will require extensive participation on the part of the consumer, OER, and dedicated manpower by the managing office, ORD. (S)

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I. PROJECT TITLE: Nonfuel Mineral Supply-Demand Data Base

Submitting Agency: CIA

II. COSTS IN THOUSANDS:

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III. DESCRIPTION OF PROJECT:

A. Statement of need:

There is a persistent and justifiable Federal policy concern with the vulnerability of the United States and its allies to interruptions in the imports of nonfuel minerals that are critical to the maintenance of defense or essential civilian production or to the general strength of the Western economies. For example, the United States, Western Europe, and Japan all import more than 90 percent of their requirements of such important minerals as manganese, cobalt, chromium, and bauxite. Interruptions in this supply would severely affect steel production, stainless steel output, and the manufacture of jet engines, among other industries. The risks of supply disruption for these and other critical minerals are magnified by their restricted availability and the fact that they are disproportionately distributed among areas that are especially subject to instability or politically motivated supply interruption.

In response to this problem, the Agency has intermittently carried out ad hoc analyses of particular mineral supply or contingency situations. Such efforts, however, are hampered by the lack of a comprehensive, systematically compiled and coordinated governmental and private information base bearing on future nonfuel mineral consumption and supply. This proposal would greatly enhance the potential for quicker, more penetrating, and more reliable evaluative efforts.

B. Who will accomplish:

The proposed data base will be maintained by the Resource Analysis Branch of OGSR after having been established as the result of both staff and contract efforts. It would combine and coordinate those relevant governmental and commercial data bases already in existence or under development as well as raw data and intelligence that is reported currently in a variety of open and classified sources.

C. What is to be developed:

The proposed data base will consist of a variety of separate data sets, both quantitative and narrative, on consumption, capacity, production, inventories, prices, and recycling, as well as

on the relevant economic, political, geographic, institutional, and other determinants of those variables. Predictions made by other authorities will also be included—especially predictions or contingency scenarios that relate to the risk of future supply problems. These data sets will be accessible to analysts through the Agency's interactive system. Software will be developed to provide both machine readable output and printouts suitable for distribution or for inclusion in finished reports. Adjunctive use will also be made of the MAGAS system to provide a variety of graphic displays and cartographic arrays. Under appropriate safeguards, the data sets will be made accessible in part to other government agencies.

The data sets would be established and maintained for each of the important commodity forms of those nonfuel minerals (tentatively, some 15-20) selected for their importance in the general economy and/or their critical defense applications. Particular priority would be given to those minerals characterized by the greatest apparent risk of potential supply problems. Further, they will consist not only of crude statistical and narrative inputs, but will permit those analytical summations and manipulations of the data determined to be useful on a routine basis.

D. Time phasing:

The bulk of the work of establishing the data base can be accomplished, under one or more outside contracts, during the first year of the program, with practical application and "debugging" commencing late that same year. Initial assessments of voids in the data base can then be made. Efforts to eliminate the gaps and bring the system online will continue well into the second year. Costs in succeeding years will be those for maintenance of the system.

In the detailed scheduling, priority will be given to those minerals and those elements of the system that are most relevant to providing assessments of situations with greatest risk and most serious consequences of a supply contingency.

IV. INTELLIGENCE COMMUNITY APPLICABILITY:

The project could lead to the development of new techniques for screening and integrating partially or largely inconsistent reports on the same subject. The most likely contribution will most likely be, however, the establishment of a rigorously derived data base on nonfuel minerals.

V. INTELLIGENCE CONSUMER BENEFITS:

The principal benefit to intelligence consumers will be the enhanced capability both for foreseeing the emergence of potential

mineral supply problems and for evaluating the implications of contingency, policy, and other scenarios affecting mineral supply. These benefits would accrue both from direct evaluation of the entries in the data base and -- especially for longer term problems -- use of the data base in the System Dynamics models that have been developed by CIA.

VI. PROBABILITY OF SUCCESS:

There has by now been a sufficiently large body of successful experience with large data banks -- both numerical and narrative and particularly within the CIA — that the probability of success for the one here proposed is very high. Furthermore, the proposed effort would be a success in terms of its impact on analyst productivity, and the upgraded analysis made possible even if some elements of the project failed to be achieved.

I. PROJECT TITLE: Advanced Cartographic Support System

Submitting Agency: CIA

II. COSTS (in thousands):

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III. DESCRIPTION OF PROJECT:

A. Statement of Need

Many intelligence production activities use geographic information as an intelligence source. They are supported in part by cartographic data bases maintained by OGSR designed to store cartographic features in point or linear form for traditional use in the preparation of maps and charts. (S)

A number of functions of interest to analysts cannot be manipulated easily so support is less than adequate. Examples are overlapping areas such as cities and industrial regions and other geographical features such as rail and water systems, which are part of a larger target complex. (S)

The geographic information systems must be enhanced and expanded to support the needs of Agency personnel. In order to do so, several functions are needed to support and supplement ongoing CIA programs (e.g., NFAC's Analyst Productivity Theme, OGSR's Graphics Automation Upgrade, NPIC's NDS). (S)

One need is a cartographic data base management system that will support basic analytical problems requiring a computer system containing geographic information identified other than by location, e.g., "is this point in France," "is this river a tributary of the Seine." Research must be done to identify the type of information needed by analysts, how the information should be stored, and how existing data bases can be efficiently transformed and enhanced. (S)

A second need is a system which must be able to maintain geographical relationships such that they can be accessed across a variety of applications. The system should be designed to be compatible with the needs and products of other systems (e.g., NPIC's NDS, CAMS). (S)

Additional research is needed on:

- o communication of geographic information among different systems and devices (e.g., graphics shops, television centers)

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- o specialized mapping techniques for showing information, i.e., showing the size of a country according to its population rather than its area

- o raster and vector data merger. (S)

B. Who will Accomplish

The proposed work will be done by ORD with external contractor assistance. ORD will work closely with OGSR graphic and cartographic staff members and other Agency groups on applying the research results to real-world analytical problems and systems. (S)

C. What is to be Developed

We will develop the following products:

- o define and establish the set of analytical requirements for support

- o a system which will integrate the appropriate external software of existing Agency systems (e.g., WORLD DATA BANK, CAM, MAGAS, TACK)

- o define and undertake research and development efforts for which no existing methodologies are sufficient

- o automated digitization and map building

- o specialized mapping techniques

- o query systems for analysts using multiple-source data with geographic data bases

- o formatting techniques, especially for communicating information among different offices and media. (S)

D. Time Phasing

This project builds upon and supports on-going ORD and Agency projects. Most of the groundwork and preliminary analysis will be completed in FY 1982. The first year of the DCI Enhancement will provide for system integration and the first research projects. The second year's funding will be devoted to research and development. (S)

IV. INTELLIGENCE COMMUNITY APPLICABILITY

The project will produce an enhanced World Data Bank, which is a major resource for the Community at large. Insofar as it supports COMIREX and NPIC, it should enhance the Community's capability as well. ORD and OGSR are already working together with NSA and other parts of the Community on graphics and cartography, and we assume that all research performed under this effort will be shared in a like manner. (S)

V. INTELLIGENCE CONSUMER BENEFITS

The project will result in increased capability for analysts, cartographers, and graphic designers. This, in turn, should provide improved analysis and presentation of the analytical product. (S)

VI. PROBABILITY OF SUCCESS

The probability is high for producing a system which will significantly improve geographic/cartography data handling and analysis. It is likely that it will improve the Agency's ability to handle more data with no increase in staffing. (S)

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DRAFT

MEMORANDUM FOR: [redacted] 25X1
Chairman, Interagency Working Group on Production

VIA: Director, Policy Guidance Staff

FROM: [redacted] 25X1

SUBJECT: FY 1983-1984 Production Enhancement Initiatives

1. An informal committee was convened in early July 1981 to review the FY 1983-1984 Production Enhancement Initiatives submitted by the various program offices and to recommend to the Interagency Working Group on Production those initiatives which most deserve funding. The committee has selected the attached list of 16 initiatives submitted by the FBI, State/INR, CIA, GDIP and NSA totaling [redacted] This list is the result of a process of 25X1 give and take among the Program Managers, and represents their interpretation of the objectives of the Production Enhancement Program. The IC Staff chaired the meeting and while it participated to some degree in the selection process, it acted largely as a facilitator. (The attached list of initiatives is presented by funding level, the committee made no attempt to prioritize the list.)

2. This year represents the third anniversary of the program suggesting that a review and evaluation perhaps is in order. It was intended to provide seed money to analytical offices for innovative projects that, because of their speculative nature, could not compete for funding in the normal budget process. A relatively modest amount, [redacted] annually, was established 25X1 as a ceiling; each project was to be funded for no more than two years at

which time it would either be dropped or picked up by the respective program office. In 1979, proposals were received from four program offices and eleven initiatives were approved in the amount of [redacted]-to be expended in FY 81. In 1980, by contrast, proposals were received only from CIAP and GDIP and eleven initiatives were approved in the amount of [redacted]-to be expended in FY 82. The participation by six program offices this year is an encouraging sign that the program is gaining acceptance throughout the Intelligence Community. 25X1 25X1

3. Although a good measure of progress has been made in establishing the Production Enhancement Initiative Program as a serious effort at encouraging innovative ideas, the committee believes that a review of the program by the Working Group would be helpful. There are a number of factors to be evaluated, such as the criteria for selection of initiatives. As more data become available on the initiatives funded in FY 81, future assessments could be made on the value of the program. In any event, the program would benefit from the kind of legitimacy that only a strong endorsement can provide.

4. The nature of the program also has dictated that its scope and objectives be rather broadly interpreted. As a consequence, the committee's selections this year have been diverse in terms of content as well as in their impact on the intelligence production process. The Committee further recommends that the Working Group give serious consideration to this broad interpretation of the program's scope and objectives.

5. The selection committee stands ready to provide any additional assistance the Working Group might require.

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