3 October 1966

MEMORANDUM FOR: Director of Planning, Programming, and Budgeting

SUBJECT : Review of "Request for Approval of the Integrated Information System Project (Phase II) with [redacted] from FY 1967 Funding

REFERENCES :
(a) Memo from Acting DD/I, dated 21 September 1966
(b) Staff Study -- For Phase II IIS of 27 July 1966
(c) [redacted] Phase I Study, "NPIC Review and Functional Flow" of 3 June 1966
(d) [redacted] Phase I Study. "Conceptual Design and Functional Specifications," 19 August 1966
(e) R&D Catalog, IIS of 27 July 1966 -- Revised (Tab A)
(f) [redacted] Phase I Study, "Program Implementation Plan," 19 August 1966
(g) [redacted] Proposal for Phase II, June 15, 1966, ("Attachment")
(h) Memo from DD/OCS, [illegible] ber 1966
(i) Memo from Chief, Information Processing Div., NPIC, 16 September 1966

SUMMARY

The Integrated Information System (IIS) is a project to provide NPIC with the following system capabilities and ADP support:

-- Information Storage and Retrieval (and/or indexing) of image and non-image data

-- A large intelligence data base

-- Computer assisted censuration and metrical computations

-- Photo Interpreter On-line data base and computational access

-- Report generation

-- Mission coverage plots

-- Document control

-- Statistics generation

-- Conversion of graphic and textual material to machine readable form

-- Compatibility with inter- and intra-agency systems

1. A first consideration is the question of NPIC's need for such a system. This need is adequately documented in references (a), (b), (c), and (d). In addition, NPIC, Acting DD/I, OCS and the Information Processing Staff are in strong agreement on the real need for such a system, and of its great and essential value to the Agency. Need is therefore not in doubt.

The questions which are far more difficult and controversial, but essential to intelligent decision, are:

-- What kind of a system? Define it!

-- How is it developed? Where is a comprehensive System Development Plan?

-- By which contractors is it developed? Is [redacted] best qualified? Or even minimally qualified? 25X1A

-- How should the Agency proceed?

2. Phase I of this project was an Analysis and Functional Concept study performed by [redacted] for [redacted] and completed in August. 25X1A 25X1A

Phase II of this project would be a System Design study covering:

-- Alternate methods

-- System Description

-- Component Specification

-- Implementation Plan

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Cost of Phase II study would be [redacted] requiring eight and one-half months. No indication is provided of work breakdown packages for Phase II, or how these add up to [redacted] Costs are shown by total hours and rates. 25X1A

Phase III is called "System Engineering Procurement" and requires twelve and one-half months. Cost of [redacted] portion of Phase III (no equipment nor software) is estimated at [redacted] 25X1A

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Phase IV is called "System Installation and Test," and requires four months in the [redacted] schedule. Cost of [redacted] portion of Phase IV (no equipment nor software) is estimated at $[redacted] Descriptions, definitions, procedures, methods and work breakdown packages for Phases III and IV are completely ignored. This is remarkable for a project of this complexity and magnitude. It implies that [redacted] will consider phases III and IV when they come to them. This is a drastic and amateurish departure from accepted professional practice and system methodology. At this stage we cannot expect precise solutions to all problems, but we should insist upon a comprehensive, total system approach, a reasonable development plan, problem and task identification, demonstration of a convincing working approach to problem solution, and directly related technical experience.

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3. Reference (a) states the cost of Phases I through IV will total [redacted] This is for the [redacted] effort only, which approximates what is usually called the "system engineering and technical direction" role. It provides analysis, design, study and similar functions, but does NOT cover costs of hardware nor programming. [redacted] estimates (reference (d), page 75) that personnel, hardware and programming to provide the operating system would cost an additional [redacted] per year for the first five years and approximately [redacted] per year thereafter. Total 5-year cost of the IIS is thus approximately [redacted] A 25% to 50% overrun of this amount would not be surprising. Initial operating capability is scheduled for 1968 and system completion for 1971.

NO!

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Reference (e) lists 1967 funding as $[redacted] (for Phase II) and FY 1968 funding as [redacted], presumably partial funding for Phase III.

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RELEVANT COMMENTS

1. The IIS is a large, complex, ambitious and important, long-term system. Although described as using "current state of the art," or "off the

shelf hardware," the system integration and interface problems are very complex and are in reality feasible but advanced techniques. It would be the largest, most complex ADP system yet undertaken by the Agency, and one of the most advanced intelligence and image interpretation systems attempted by anyone.

2. The available documentation of the IIS project (references (a) through (i)) does not present a comprehensive, clear, precise, nor adequately detailed project plan. Available studies and plans do not adequately describe what the Agency is getting, nor where, when and how. Phases III and IV equipment procurement, software development and sub-contractor roles are ignored, or treated with the vaguest of generalities.

3. Many important system elements, considerations and problems are omitted or glossed-over in the [redacted] study. This superficiality suggests lack of [redacted] appreciation of many critical technical and system problems. For example, NPIC has ordered two UNIVAC 494 computers for delivery in October 1966 and July 1967. These are completely ignored in the [redacted] studies. These two computers represent a powerful hardware capability. Will some or all of their capacity be available for IIS? Will they be the IIS computers? Why, how, why not? Will they be replaced by IIS?

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4. No consideration is given to problems, methods or procedures for managing the development of this system. For a system of this complexity and magnitude, involving a number of sub-contractors for individual items of hardware and software, comprehensive management techniques are essential.

5. There are numerous statements and planning elements in the [redacted] studies and Phase II Proposal (references (d), (f), and (g)) which seem unrealistic, inaccurate or just plain wrong. Cumulatively these produce grave doubt about the professional competence of [redacted]

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6. The [redacted] Proposal for Phase II, reference (g), consists of just seven pages and nine resumes of personnel. This is a grossly inadequate description of the work to be performed in Phase II. The nine resumes presented contain systems experience mainly in meteorological systems. It appears that the [redacted] is mainly a center for processing [redacted] (internal, business) data, and that the Information and Environmental Systems Department is a group with some weather system experience. Ten additional names of proposed contract personnel are listed, with no resumes of experience provided.

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WRONG

There is no proposal section listing any description of [redacted] the [redacted] or their facilities, organization, or equipment.

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There is no "Related Experience" section to the proposal, nor any indication 25X1A
that [redacted] is qualified by past experience in information processing, ADP, Intelligence Systems, photo processing and interpretation, system engineering, equipment test and integration, management of hardware and software sub-contractors, technical direction of system development, programming, computer and peripheral hardware or any of the other essential skills.

25X1A What has [redacted] ever done in these areas before?
25X1A Why should we think that [redacted] is the best qualified contractor for this task? Surely not just because they performed a [redacted] study, which 25X1A
document is impressive only for its deficiencies.

7. The time schedule for Phases III and IV, pages 7 and 8 of reference (f), is grossly unrealistic. For example, "begin procurement of standard equipment 6 February 67"; "begin test of standard equipment 8 May 67" (this is a nine to twelve-month, not a three-month, item); "begin test plan 23 October 67"; "complete 22 December 67" (but equipment tests started five months before the test plan was started). There are many similar departures from reality.

8. In contrast to the unanswered question about [redacted] experience 25X1A
and competency, the acknowledged skilled and experienced leaders who could work this project include:

Information processing (ADP) systems design and implementation companies

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Photo Interpretation and Processing Systems companies

25X1A [redacted]

Directly related experience of these companies on projects very similar to the IIS includes:

The USAF Mobile Wing Reconnaissance Technical System
The Navy Integrated Operational Intelligence System
The Army Operations Center System
The Naval Reconnaissance Technical Support System
The Air Wing ELINT Processing System
The Fleet Intelligence Center System,

and many other military systems of the type, magnitude and complexity of the IIS.

These companies have been the route and they know the hard places. They have vastly greater experience, skills, facilities and technical competence to apply to the IIS, than has [redacted] 25X1A 25X1A

9. Reference (h) expresses some misgivings about the [redacted] approach and technical depth of the studies. Reference (i) is a reply to these comments.

10. The preceding comments have concentrated on deficiencies in the [redacted] study for development of the IIS, because it is the deficiencies which could jeopardize successful system development. There are also favorable comments which can be made regarding the study. 25X1A

The most significant of these comments is that references (c) and (d) constitute the basis for a definition or specification of the functional requirement for an IIS. Reference (f) is entirely inadequate as a "Program Implementation Plan" and the "Conceptual Design" of reference (d) is deficient, but we do have the basis for specification of the functional requirement, and this is valuable and useful.

11. The [redacted] study is so inadequate that a very lengthy, point by point, specific analysis of errors, omissions and deficiencies could be made. The above sampling is probably sufficient to justify very serious doubt about approving the Phase II contract, and concern over the entire method of proceeding with IIS development. 25X1A

DISCUSSION

1. Since the need for an IIS system is clear and agreed, an effort should be made to correct the deficiencies in the present approach and proceed with system development. A main deficiency is that we do not have a total system development plan. Such a plan is essential to an orderly, well managed effort; without such a plan we would be proceeding in a "play it by ear" mode, and that will not work for the IIS $[redacted] symphony. 25X1A

A second major deficiency is that we have denied ourselves exploitation of the best industry experience and skills for design and engineering of this system, and have instead selected a lesser contractor, [redacted] for reasons not apparent. 25X1A

2. To improve these and other current deficiencies, and to proceed with the project, it is suggested that consideration be given to these procedures:

a. Produce a sanitized "SECRET" IIS Functional Requirement Specification document, from the three [redacted] studies. 25X1A

b. Solicit proposals, (using a. above and bidder's briefings), from 6 to 12 of the major information processing system and photo interpretation companies such as: 25X1A

[redacted]

c. Each of these companies would eagerly spend [redacted] to [redacted] of company money and produce 200 to 500 page technical and cost proposals covering total system development. 25X1A 25X1A

d. These proposals could be either for "Systems Engineering and Technical Direction" contracts only, with "hardware exclusions", or they could be for the entire system, design, hardware, software, et al.

e. From this we would receive 6 to 12 competitive proposals for our technical and cost evaluation. This would give us the opportunity to compare different and similar approaches, skills and competencies; and to select the best qualified approach and contractor. In many cases a systems company would team with a photo interpretations company to propose combined skills and experience. These proposals would provide much of the design work to be covered in the [redacted] Phase II effort, at no cost to the Government. 25X1A

f. Award either a "Systems Engineering and Technical Direction" contract with hardware exclusion, or a total, but phased, system contract to the best contractor or team.

-- Phase I would be Detailed System Design and Implementation Plan.

-- Phase II would be System Engineering, Hardware and Software Procurement.

-- Phase III would be System Installation and Test.

These approximately correspond to Phase II, III and IV of the [redacted] study.

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g. [redacted] would have the opportunity to compete with other bidders, (with the advantage of having been an "insider").

h. The benefit to the Agency would be in the opportunity to compare approaches, capabilities, experience and skills. The application of the skills, experience, and engineering thought of these companies to the IIS project, through the proposal route alone would be of great benefit to the final design and development of the IIS, at no cost to the Agency.

3. This route requires greater initial effort on the part of the Agency, than the apparent current method of climbing in bed with one selected contractor per project. It forces us to think through what we are doing, but we will be in trouble until we do think this through. In the long run, it is much less trouble for the Agency, and produces a much better system.

4. Objections of "Security" can be raised to this approach, but these can be resolved. We are currently doing sensitive classified business with most of the contractors under consideration.

ALTERNATIVES

1. Approve the request for a Phase II contract with [redacted] for [redacted] cross our fingers and hope we get lucky. This is just a down payment on ten years of trouble. The past use of this approach is probably the reason some of our current ADP efforts are in difficulty. Faith, hope, and luck do not solve system problems.

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2. Return the [redacted] Phase II proposal to [redacted] pointing out deficiencies, and request a more thorough job. I do not believe [redacted] has anything like the facilities, skills and competence for this magnitude of job. Has [redacted] ever built a computer, or a console or hundreds of

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digital devices? Have they ever interfaced 300 consoles, displays and other I/O devices with a multi-processor? Have they ever written a half million instruction program package? Does [redacted] have 5000 ADP scientists, engineers, programmers and technicians to call upon for the approximately 100 persons needed full time for Phases III and IV? 25X1A
Does [redacted] have the physical facilities for engineering, test and program de-bugging for this large project? Has [redacted] ever handled an ADP project of this magnitude and complexity? Has [redacted] ever built an intelligence system or a photo interpretation system? In every case the answer is believed to be negative for [redacted] but it would be affirmative for an experienced and qualified company such as [redacted] etc. 25X1A 25X1A 25X1A 25X1A

3. Invite proposals from the eminent ADP and PI systems companies for competitive evaluation. This is really the only way to approach a large, complex system like IIS ([redacted] worth of the most complex and advanced single intelligence and PI system ever developed). 25X1A

4. Abandon the IIS project. This alternative is not acceptable, because the need is real and growing more urgent.

RECOMMENDATION

Clearly, the Agency has not done its homework on the IIS. The [redacted] studies are full of gaps, errors, omissions and are grossly inadequate as a system development plan and the basis for further Agency commitment. To proceed with Phase II commitments of the [redacted] IIS, without better planning and a better definition of what and how, would be unwise and wasteful of resources. 25X1A 25X1A

The urgency of the NPIC need for an IIS type system, and the several years needed to develop an operational system, are important. However, with a system of this size and complexity, the greatest speed (and effectiveness) can be achieved only by the most deliberate and comprehensive planning, prior to initiating critical commitments and major dollar expenditures. 25X1A 25X1A 25X1A

In rebuttal, it can be said that Phases II, III and IV of the [redacted] approach are planning efforts and will rectify the deficiencies noted. The [redacted] studies, proposal and technical competence do not support such confidence. Approval of the Phase II contract would further commit the Agency to [redacted] and its ill-defined approach. The Agency would be stuck with [redacted] for the critical phase of design, and unless we later changed horses, for the prime contractor role, for the entire system. Selection of the prime contractor and his approach is the single, most critical system decision. 25X1A 25X1A

In order to proceed most speedily, orderly and effectively with the IIS project, alternative 3 (competitive proposals) is recommended.

The steps for implementing competitive proposals would be as follows:

-- Designate an NPIC Project Manager for IIS.

-- Draft (non-codeword) SECRET IIS Requirement Specification document from [redacted] studies -- 2 months. 25X1A

-- Initiate discussions and briefings with prospective bidders -- November and December.

-- Write RFP (Request for Proposal) and disseminate with Requirement and Specification to prospective bidders -- 15 January.

-- Receive proposals -- 1 March

-- Complete proposal evaluation -- 15 April

-- Negotiate contract and award contract -- 15 May

CONCLUSION

It is recommended that:

-- The request for approval of Phase II contract with [redacted] 25X1A not be forwarded for approval.

-- It is recommended that alternative 3 be discussed with NPIC and DD/I representatives, in an effort to obtain concurrence on this approach.

The IIS is a very big and difficult job. The comments and recommendations of this memo will not be very popular. No approach will succeed without acceptance by NPIC and DD/I. Whatever decision is made will be of great importance to the Agency, and the problem deserves most serious deliberation.

It is suggested that [redacted] 25X1A 25X1A discuss this project and agree upon an approach prior to meeting with DD/I and NPIC.

[redacted]

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