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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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JAN 12 1976

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The Honorable James G. Symington
Chairman, Subcommittee on Science,
Research, and Technology
Committee on Science and Technology
House of Representatives

H 3506

Dear Mr. Chairman:

In accordance with your October 17, 1975, request, we have examined, ⁱⁿ for accuracy and completeness, the treatment of peer reviewers' comments (in a September 5, 1972, National Science Foundation staff memorandum) recommending support for (what is now) the "Individualized Science Instructional System" project. As you agreed, we have obtained Foundation officials' views on our findings, and their comments are considered in the report. Our findings are summarized below and discussed in more detail in the enclosure.

The September 5 memorandum briefly summarized the comments of 11 peer reviewers on five general areas and gave a more detailed account of another comment. To the extent that these comments are summarized in the memorandum, they are accurately represented. However, about 45 comments by 9 of the 11 peer reviewers were not explicitly dealt with in the memorandum, nor was documentation on file to indicate their disposition. A Foundation official said that the Foundation's program staff considered all concerns raised by reviewers, and she orally recounted the disposition of each comment.

Thirty-three excerpts expressing only favorable comments from peer reviewers were quoted in the memorandum. According to Foundation officials, these excerpts were used to explain why the program staff recommended supporting the proposal. Twenty-eight of the excerpts appeared to accurately represent the reviewers' thoughts, but the other five could be considered to not accurately reflect the entire thought of the passages from which they were taken.

In addition, the memorandum stated that all reviewers recommended funding. We believe that the rationale for this statement was not fully justified with respect to 3 of the 11 reviewers.

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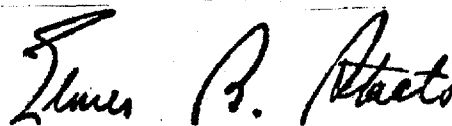
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The three former Foundation officials who approved the proposal said they usually read actual peer review comments and do not rely solely on a recommendation memorandum in deciding whether to recommend support for a proposal. In the case of the September 5 memorandum, two of the officials stated that they had read the peer reviews before approving the proposal. The third official relied on a prior staff briefing and a review of background documents which gave rise to the proposal because he was given little time to consider the memorandum and peer comments before the proposal was considered by the National Science Board.

At the time of our fieldwork, the Foundation's Director was considering recommendations to improve the science education peer review system. These recommendations were made by a special team that the Director appointed to review precollege science curriculum activities, and by us in our October 14, 1975, report "Administration of the Science Education Project 'Man: A Course of Study' (MACOS)" (MWD-76-26). The Director was also considering changes to the peer review system suggested by researchers as discussed in our November 5, 1975, report "Opportunities for Improved Management of the Research Applied to National Needs (RANN) Program" (MWD-75-84).

As you know, the Foundation is also working with your Subcommittee in surveying researchers' and peer reviewers' opinions concerning possible revisions to the Foundation's peer review system. Accordingly, we are not now making additional recommendations to the Director for improving peer review. We believe, however, that this report should be provided to the Director for his information. As previously agreed with your office, we will be in touch with you in the near future to arrange for the release of the report.

Sincerely yours,



Comptroller General
of the United States

Enclosure

REPRESENTATION OF PEER REVIEW COMMENTSFOR THE NATIONAL SCIENCE FOUNDATION'S"INDIVIDUALIZED SCIENCE INSTRUCTIONAL SYSTEM" PROJECTINTRODUCTION

The National Science Foundation supports development of science education curriculums under the authority of the National Science Foundation Act of 1950 (42 U.S.C. 1861 et seq.), as amended. This act authorizes the Foundation to initiate and support (1) basic scientific research, (2) programs to increase research potential, and (3) science education programs, through contracts or other forms of assistance, such as grants.

The Foundation's science education activities, administered by its science education directorate, consist primarily of grant and fellowship programs to improve education for professional careers in science- and technology-based fields, improve scientific literacy, and increase the efficiency and effectiveness of educational processes. Over the last 10 years (fiscal years 1966-75), Federal funds for these activities have totaled over \$1 billion.

The Foundation has identified 53 precollege-level curriculum projects in the science education activities area for which it provided about \$196 million during fiscal years 1956-75. One of these is the "Individualized Science Instructional System" (ISIS) project. ISIS grew out of an unsolicited proposal sent to the Foundation by Florida State University (Tallahassee, Florida) to develop a "Multidisciplinary High School Science System." The initial grant was made on September 29, 1972.

According to Foundation officials, the ISIS project is intended to develop a flexible, open-ended, interdisciplinary curriculum that will facilitate individualization of science instruction at the high school level (grades 10-12). The curriculum, which is still being developed, is planned to consist of approximately 80 short, essentially independent modules (or minicourses), each requiring 2 to 3 weeks of classroom time. Each module will deal with a specific topic by presenting, in an interdisciplinary manner, concepts from biology, chemistry, and physics. Pertinent social science material is incorporated in units that deal with the social implications of science and technology. Each module provides options which permit the student to probe into more complex aspects of the topic. Guidance in implementing ISIS in a variety of classroom situations is also provided.

The Foundation has provided the grantee with over \$3.3 million in development funding for fiscal years 1973-75. In addition, in fiscal years 1974-75, various grantees have received about \$158,000 for implementation activities--primarily for activities to increase awareness of the curriculum (such as informational conferences) and for resource personnel development.

In an October 17, 1975, request from the Chairman, Subcommittee on Science, Research, and Technology, House Committee on Science and Technology, and in later agreements with his office, we were asked to examine, for accuracy and completeness, the treatment of peer reviewers' comments in a September 5, 1972, staff memorandum recommending support for what is now the ISIS project. Consequently, our review was limited to analyzing the representations made in that document. To accomplish this, we reviewed the Foundation's project records for the ISIS grant and interviewed present and past Foundation officials.

Copies of our reports referred to on this page and on page 14 of this enclosure and the Foundation's study referred to on page 13 have been provided separately to the Subcommittee staff.

GENERAL PRECOLLEGE PEER REVIEW PROCEDURES

One procedure that the Foundation normally uses for evaluating proposals to develop educational curriculums is the mail peer review system, in which outside peer reviewers are requested to examine proposals and comment on their merits. ^{1/}The outside peer reviewers are primarily scientists and educators competent in the fields involved in the proposals. The peer reviews are advisory to the Foundation in making the final decision as to whether to fund a proposal.

After selecting the reviewers for precollege-level proposals, the Foundation usually sends them a letter noting the factors to be considered in their review. The letter for the initial ISIS proposal asked reviewers to consider such factors as scientific merit, the feasibility and effectiveness of the proposed procedures, the reasonableness of the budget, and the qualifications of project personnel.

^{1/}For a more detailed discussion of the Foundation's policies and procedures for evaluating precollege-level education proposals, see pages 4 to 7 of our report "Administration of the Science Education Project 'Man: A Course of Study' (MACOS)" (MWD-76-26, Oct. 14, 1975).

Upon receiving the reviewers' comments, the Foundation's program staff assesses them and their impact on a proposal and may then negotiate both substantive and financial aspects of the proposal with the proposer. Generally, a summary of pertinent reviewers' comments is provided to the proposer. If the Foundation's program staff later decides to recommend funding a proposal, a memorandum recommending support is prepared. The recommendation for support is part of a package prepared for review within the education directorate. This package contains the initial and any modified proposals, all peer review comments received, all correspondence between the Foundation and the proposer, all review documents, the recommendation for support, and any other pertinent documents. At the time of the ISIS proposal, the package was usually prepared by the program manager and reviewed in turn by the section head, division director, and assistant director for education. 1/

The proposal must also be approved by the Grants and Contracts Officer, as the designee of the Foundation's Director. In addition, awards involving expenditures of at least \$500,000 in a single year or at least \$2,000,000 in total must be approved by the National Science Board.

REPRESENTATION OF PEER REVIEWERS' COMMENTS

The Foundation received 11 peer reviews on the Florida State University proposal. In examining the Foundation's September 5, 1972, recommendation memorandum, we found that it (1) summarized what the program staff believed were major reviewer concerns and outlined the proposer's reactions to those concerns, (2) did not explicitly address about 45 comments by 9 of the 11 reviewers (their disposition was also not documented in Foundation files), (3) contained 5 excerpts quoted from reviewers that could be considered to not completely reflect the thoughts of the passages from which they were taken, and (4) contained a statement that does not appear to be supported by the reviewers' comments.

1/In September 1975 a Grant Review Board was established within the education directorate to supplement its program officials' review of proposed grants and contracts. The board includes officials of the education directorate, as well as business and technical representatives from other Foundation offices, such as the Office of the General Counsel and the Grants and Contracts Office.

Foundation disposition of
certain reviewers' comments

The memorandum stated that all reviewers felt that the development of a multidisciplinary, individualized science curriculum was opportune, but that all questioned some aspects of the proposal. From analyzing peer reviewers' comments, the program staff felt that reviewers' reservations about the proposal focused on the following five main areas. Some reviewers:

- Felt that scientific concepts often build on each other and feared that the nature of the proposed curriculum would prohibit such growth.
- Questioned the instructional management system that the project promised to provide for schools and teachers.
- Indicated that there was inadequate provision for laboratory and problem solving within the learning scheme.
- Questioned the evaluation procedures as being too limited and too informal.
- Speculated that the method of development might prove to be inefficient.

On July 5, 1972, to secure the proposer's response to these concerns, the Foundation sent him verbatim, but anonymous, copies of the review comments received as of that date. According to a Foundation official, sections were marked to indicate the five areas of concern. The official added that when the remaining comments were received, they were transmitted to the project staff either by mail or by telephone. The proposer responded in writing to the five areas on July 19-20, 1972. The recommendation memorandum summarized the response and indicated that the program staff was satisfied with it.

In reviewing the peer reviewers' comments, we noted that all reviewers expressed reservations regarding the proposal in at least one of the five areas of concern that the Foundation considered most important, and that 6 of the 11 reviewers expressed reservations in more than one area. About 40 of the comments of the 11 reviewers were in the five main areas of concern.

The memorandum also noted that one reviewer believed that individual school systems had already done much development on integrated or multidisciplinary approaches to secondary school science. In the memorandum, the program staff recognized the validity of the criticism, but indicated that experience had shown that materials developed by individual school systems could not give results of the quality the proposal promised.

As discussed above, the Foundation's memorandum summarized five concerns raised by all reviewers and a separate concern raised by one reviewer. To the extent that these comments were summarized, we believe that they were accurately represented.

Reviewers' comments not explicitly addressed in the recommendation memorandum

The memorandum did not explicitly deal with about 45 of the peer reviewers' comments, including questions about the reasonableness of the proposed budget, the diversity of the personnel working on the project, the treatment of curriculum material at the introductory level, and the transition problem students may face in further study or in work. Foundation officials stated that although documentation is not available in the Foundation's files, the program staff considered all concerns expressed by reviewers. Examples of reviewers' comments not explicitly dealt with in the memorandum and the then responsible program manager's oral recounting of the comments' disposition are cited below.

Reasonableness of the budget

Three reviewers expressed concern over the reasonableness of certain aspects of the proposed budget. This included concern that the consultants' honoraria were too high, that the project staff appeared to be too large, and that producing prototype equipment was unnecessary since the proposer desired to use equipment readily available in schools.

Regarding the size of the proposed honoraria, the former program manager said the amount had been negotiated downward. The proposer's amended budget shows that moneys requested for consultants and honoraria decreased by \$22,000--from \$131,500 to \$109,500.

Regarding the size of the staff, the former program manager indicated that the proposer had run a large project before and knew about staffing requirements. Secondly, the

proposer intended to stagger the introduction of staff so that it would not be underused at the beginning of the project. In addition, she informed us that extensive discussions were held in which the proposer fully justified the proposed budget, including staffing.

Regarding budgeted amounts for prototype equipment to be available to schools during the tryout of the ISIS materials, the former program manager believed this to be a legitimate request. Some materials would not be readily available in the schools, and to ask schools to field test the materials and also to pay for them would be unfair.

Diversity of personnel

Three reviewers raised questions about whether project personnel had sufficiently diverse backgrounds.

One suggested that more users of education curriculums--such as teachers--be represented on the proposed standing committees. The former program manager replied that some teachers were to be included on an advisory committee, and the proposal stated that teacher input would be provided during the field testing of the experimental curriculum.

Another reviewer felt that people with expertise in implementing the curriculum in schools should be included in the project staff. The former program manager disagreed, stating that since this was the initial proposal for a possible 7-year project, involvement in implementation activities was premature. In addition, the project was not to be isolated from implementation concerns, since the proposed staff included persons involved in prior innovative curriculum efforts and since the proposer's institution had a laboratory school.

A third reviewer suggested including more diverse personnel in the proposed advisory committee--such as an engineer, an ecologist, and a health scientist. The former program manager disagreed, indicating that such persons would not be relevant to the primary subjects of the proposed curriculum--biology, chemistry, and physics.

Treatment of material at an introductory level

Two reviewers expressed concern that the discrete nature of the proposed minicourses could result in shallow treatment of science material since it could not be assumed that other, more fundamental minicourses had been used.

According to the former program manager, the proposal contained a provision to develop optional activities to treat topics in more depth, and the proposer had agreed that a few modules emphasizing the sequential development of ideas would be developed to teach fundamental science concepts.

Transition problem

Two reviewers believed that the proposed curriculum should be structured so that students could make the transition to another school and to various later kinds of study and work. The former program manager acknowledged that this was a problem in most innovative curriculums. The Foundation discussed the problem with the proposer, who agreed that historically sequenced modules--those that emphasized the sequential development of ideas to teach fundamental science concepts--to help the transition would be included in the curriculum.

Quoted passages from review

The recommendation memorandum contained 33 quoted excerpts from the 11 peer reviews. The quoted passages reflected the reviewers' favorable comments, but contained none of their concerns or criticisms. We believe that 28 of the 33 quoted excerpts accurately represented the thoughts expressed by the respective reviewers. The other five excerpts, however, in our opinion did not accurately or completely convey the entire thoughts of the passages from which they were taken. These five excerpts, together with the relevant passages from which they were taken, are shown below.

Comparison of Excerpted and Complete Peer Reviewer Comments

Comment as appearing in recom-
mendation memorandum

"...I am sympathetic to many of the objectives that lie behind this proposal."

Comment within relevant
review passage

"While I am sympathetic to many of the objectives that lie behind this proposal, I find myself drawing back from certain essential aspects of it. My objections are partly philosophical and partly pragmatic. Because of these, I count it a serious weakness of the proposal that no discussion of some of these matters was included in the presentation." (Underscoring added.)

ENCLOSURE

"...I would recommend that the project be initiated."

"The personnel listed have much experience in curriculum development..."

"...The personnel and advisors are excellent..."

ENCLOSURE

"Assuming the questions and concerns expressed above can be satisfactorily responded to by the proposal writers, including a large reduction of the budget, I would recommend that the project be initiated." (Underscoring added.)

"Project Personnel. The personnel listed have much experience in curriculum development. Perhaps some new blood is needed, and I would urge that persons in high schools that have experience in individualized instruction (e.g., Seattle, Corvallis, Duluth, Mason City, Iowa) should become involved. No doubt they can supply expertise about implementation of a multidisciplinary learning system that most of the listed project personnel do not have." (Underscoring added to second sentence.)

"4. It seems to me this whole grand scheme goes too far ahead. The personnel and advisors are excellent, but they have done very little work to date. I would grant enough to assemble a team able to produce a sample of minicourse topics and a few prototypes. Fifty topic headings, over a wide range of disciplines and levels, and two prototype courses would seem to me a minimum basis for the grant beyond Phase I. Nor would I approve the remaining phases without a strong sample of six months work at least on the Phase I issues. They determine it

"The procedures to be followed during the proposed seven year effort appear to have been well thought out and include a number of excellent provisions: small working teams that include a communicator, a school-oriented person, and a subject-matter specialist; a rather long shake-down period (Phase II); informal, small scale trials of early drafts; early liaison with professional societies; early contact with publishers..."

all: the idea is good, but its execution determines its utility." (Underscoring added.)

"The procedures to be followed during the proposed seven year effort appear to have been well thought out and include a number of excellent provisions: small working teams that include a communicator, a school-oriented person, and a subject-matter specialist; a rather long shake-down period (Phase II); informal, small scale trials of early drafts; early liaison with professional societies; early contact with publishers. Yet, many questions of strategy and procedure cause the reviewer some concern." (Underscoring added.) (Reviewer's concerns expressed in following review paragraphs.)

Our rationale for considering these five excerpts misleading and the views of the Foundation's former program manager, who prepared the memorandum, follow. The program manager did not believe that any of the excerpts were misleading. We believe that all the above excerpts could be considered to not accurately reflect the predominant thought of the passage from which they were taken.

The positive tone of the first excerpt does not reflect the overall critical tone of the sentence. In addition, the main idea of the sentence--the reviewer's doubts about certain aspects of the proposal--is excluded. The program manager stated that the reviewer was not opposed to the general philosophy behind the proposal and that all reservations had been disposed of to the program staff's satisfaction.

Although the second excerpt would appear to imply an unqualified recommendation for funding the proposal, the sentence in its entirety qualifies that recommendation. According to the program manager, all the reviewer's expressed concerns--including a negotiated budget reduction--had been taken care of to the program staff's satisfaction.

ENCLOSURE

ENCLOSURE

The third excerpt could give the impression that the reviewer unconditionally endorsed the proposed project staff, but in fact the reviewer made suggestions for enhancing it. The program manager did not consider this excerpt to be misleading because the proposed staff included persons knowledgeable in implementing a multidisciplinary curriculum.

The fourth excerpt does not recognize the reviewer's caveat that because the proposed staff had done little work to date, the grant should be made on a trial basis. The excerpt suggests that the reviewer completely supported the competency of the personnel and advisors. In fact, however, the reviewer urged caution due to his perception of their relative inexperience with the proposed materials. The program manager stated that because this was an initial proposal, the proposed personnel could not have done much work. She also pointed out that the trial startup recommended by the reviewer was agreed to by the proposer.

The fifth excerpt excludes the reference in the last sentence of the paragraph to many questions of strategy that concerned the reviewer. Thus, the excerpt could suggest that the reviewer overwhelmingly supported the proposed procedures, when in fact he was concerned about certain aspects of them. The program manager did not believe the quoted excerpt to be misleading because the memorandum noted that each reviewer raised questions on aspects of the proposal plan.

According to the program manager, the excerpted quotes in the memorandum were meant not to summarize the main thoughts of the reviewers, but to support the proposal and to convey the program staff's reasons for recommending funding. She noted that the memorandum stated:

"* * * Sections from reviewer's letters, quoted below, reflect our reasons for recommending that the proposal to develop a 'Multidisciplinary High School Science System' be awarded funds for a 22-month period."

She added that the memorandum did not purport to imply that peer reviewers made no constructive criticism of the proposal. She cited the discussion of various reviewers' concerns on pages 2 to 4 of the memorandum, noting particularly a sentence on page 2 which states: "* * * All reviewers recommended funding but none without raising questions on aspects of the proposal plan. * * *"

Summary conclusion and recommendation
from reviewers

The memorandum stated that all reviewers agreed that the proposal was opportune and that all recommended funding. Specifically, the memorandum stated:

"* * * All reviewers agreed that the development of the 'Multidisciplinary Science System' is opportune, especially in view of the proposed flexibility of the curriculum and its modular structure. All reviewers recommended funding but none without raising questions on aspects of the proposal plan. * * *"

Our examination of the reviewers' comments on the proposal showed that all 11 agreed that the development of a multidisciplinary, individualized curriculum was timely. Three reviewers, however, did not explicitly recommend funding the proposal. Their recommendations and the disposition of these recommendations as recalled by the former program manager are discussed below.

One reviewer recommended that the proposal not be funded in its present form. He felt that it explored many areas already investigated and that it would lead to unneeded duplication of effort since similar materials already existed. The program manager said that the reviewer furnished the program staff materials referred to in his review and that, because the materials were generally not of high quality, the reviewer's reservation was considered invalid. The reviewer had not raised other major objections about funding the proposal, so this was considered an implicit go-ahead to recommend funding.

A second reviewer said that the proposal needed a major revision to warrant support of the magnitude requested. Although his review did not appear to single out one overriding concern, issues raised included the method of developing the curriculum, the sequential teaching of widely applicable basic scientific principles, and the method of instructional management. The program manager believed that the matters the reviewer felt needed revision would be attacked later in the project, and that as the project advanced aspects of it would surely be revised. Because all the reviewer's reservations had been dealt with to the program staff's satisfaction, the reviewer was interpreted as recommending funding for the proposal. In addition, the program manager believed that the following statement by the reviewer implied agreement to recommend funding: "6. Some evidence of the

practicality of 'farming out' the development of minicourses should be available prior to making a massive financial commitment."

The third reviewer was reluctant to support the proposal without additional information and recommended that, because of weaknesses he perceived, it be returned to the proposer for additional study. The reviewer's concerns included (1) a lack of assurance that the minicourses would be useful to the educational community except as a supplementary curriculum and (2) inadequate examination of the instructional management scheme by the proposer. The program manager said the need for "additional information" and "additional study" cited by the reviewer were satisfied when the proposer sent the Foundation his written reactions to the reviews. Because of this and because the reviewer's concerns had been addressed to the program staff's satisfaction, the reviewer was considered to have implicitly recommended funding.

Views of education directorate
officials who approved the proposal

We asked the former Foundation officials (the section head, division director, and assistant director for education) who approved the proposal whether they considered (1) any of the quoted passages in the memorandum to be quoted out of context and (2) the statement in the memorandum that all reviewers recommended funding to be accurate.

They did not believe that any of the quoted passages were taken out of context, although one believed that one of the quoted excerpts should have been expanded. Two officials believed that all reviewers had recommended funding, while the third felt that only 10 of the 11 had done so. Two of the officials expressed the rationale that, once the program staff had addressed a reviewer's concerns, the reviewer could be assumed to have generally recommended support for the proposal.

The officials advised us that the memorandum was just one part of a package of materials they were given when asked to approve a proposal. (See p. 3.) All three officials said they read the actual peer reviews when considering whether to recommend supporting a proposal. Two said they had read the peer reviews when the September 5, 1972, memorandum was forwarded to them. The other, however, said he did not review the peer review comments or the recommendation memorandum when considering the Florida State University proposal because he was given little time before the proposal was considered by the National Science Board.

He relied instead on a prior staff briefing and a review of background documents which gave rise to the proposal.

FOUNDATION EVALUATION OF PEER REVIEW
SYSTEM AND OUR RECENT RECOMMENDATIONS

In April 1975 the Foundation's Director appointed a science curriculum review team to review the Foundation's precollege science education program. The review team's May 1975 report identified, among other things, areas of concern regarding the peer review process. Among these recommendations were that criteria for evaluating reviews should be clearly and fully made known to all parties and that reviews should be documented to guide all parties in Foundation decisionmaking. These recommendations are intended to tighten review procedures along the chain of program responsibility and to insure that reviewers' comments are fairly and accurately summarized for Foundation officials who review the recommendation. The Foundation is considering these actions.

The Foundation is also studying its peer review system. One aspect of the study will provide such statistical data as the number of reviewers used, the number of reviews performed by panelists, and the geographical location of reviewers. This data will be used to develop detailed management information about the peer review system and its relationship to the Foundation's mechanisms for review and proposal evaluation. According to a Foundation official, automatic data processing procedures are being completed to make this data readily available.

In another aspect of the study, the Foundation is working with the House Subcommittee on Science, Research, and Technology to obtain opinions about its peer review system. Questionnaires have been sent to about 3,000 prospective principal investigators and to about 1,500 persons who have reviewed proposals for the Foundation. The questions deal with such topics as the respondents' personal experience with the peer review system, their views on the equity and effectiveness of the review of proposals, and suggestions of possible alternative peer review procedures. The results of the survey, to be presented as tabulations and analyses, are expected to be available early in 1976.

Under a third aspect of the study, the Foundation contracted with the National Academy of Sciences for the first phase of a two-phase project to examine the philosophy behind the Foundation's peer review system and to assess its effectiveness. The first phase will consist of a detailed description of the peer review system, including an examination

of how funds are allocated among disciplines and how peer reviewers are chosen. This phase is expected to be completed by June 1976.

In an October 1975 report 1/ dealing with the administration of a Foundation-supported, precollege science education curriculum, we discussed peer review procedures relating to a proposal to develop an elementary-school-level social studies curriculum. We noted that disposition of peer reviewers' comments were not always documented in Foundation files. We recommended that the Foundation's Director establish procedures to insure that the evaluation and disposition of peer review comments are documented in the future. The Director agreed with our recommendations and stated that actions needed to implement them were being taken.

During our review of the Foundation's Research Applied to National Needs program, a number of researchers advised us that changes were needed in the program's proposal evaluation system to provide increased objectivity and accountability. These findings could have Foundation-wide implications. The Foundation's Director agreed with our recommendation to assess the potential impact of the changes to the peer review system suggested by researchers. 2/

CONCLUSIONS

Education directorate officials who approved the ISIS proposal advised us that the September 5, 1972, memorandum was just one part of a package they received containing all pertinent materials relating to the proposal--including the actual peer reviews. Thus, they did not depend solely on the recommendation memorandum for the transmission of peer reviewers' comments. They added that, in general, they had no fault with the memorandum's representations of peer reviewers' comments. In our opinion, however, the memorandum recommending support of the Florida State University proposal was not a totally complete and accurate representation of peer reviewers' comments.

The memorandum was incomplete in that it did not discuss many of the concerns raised by peer reviewers. Foundation officials advised us, however, that all concerns raised

1/See footnote, p. 2.

2/See pages 54 to 69 of our report "Opportunities for Improved Management of the Research Applied to National Needs (RANN) Program" (MWD-75-84, Nov. 5, 1975).

by reviewers were considered by its program staff, although the disposition was not documented in the project files.

Five quoted excerpts contained in the memorandum could be considered to not accurately reflect the entire thoughts of the passages from which they were taken. The staff's practice of quoting positive excerpts from peer reviewers' comments to aid in recommending a proposal to higher management officials could cause inadvertent misrepresentation of those comments, and should therefore be used with extreme care, if at all.

We do not agree with the Foundation's rationale in stating that all reviewers recommended funding for the proposal. We question the Foundation's approach which assumes that, once a reviewer's criticisms are considered to be disposed of by the program staff, the Foundation can unilaterally consider that the reviewer, in effect, recommends funding for the proposal.

Because the Foundation's Director has already been advised by us and the precollege curriculum review team of the need to improve the Foundation's peer review system, and because he is considering possible improvements, we are not making further recommendations at this time.