


NATIONAL SCIENCE FOUNDATION

25 APR 1978

PROJECT
SUMMARY

NSF AWARD NO.

BNS77-22305

NAME OF INSTITUTION (NSF DIRECTORY NAME) STANFORD UNIVERSITY		ADDRESS OF INSTITUTION (INCLUDE BRANCH/CAMPUS & COMPONENT) DEPARTMENT OF MUSIC STANFORD, CA. 94305	
PRINCIPAL INVESTIGATOR CROWNING, JOHN GRANT, JOHN R.		DIVISION (OFFICE) AND DIRECTORATE BNS/DBS	
PROPOSAL NUMBER BNS77-22305		FISCAL YEAR 78	PROGRAM SENSORY PHYSIOLOGY & PERCEPTION
TITLE OF PROJECT EXPERIMENTS IN TIMBRE PERCEPTION			
SUMMARY OF PROPOSED WORK (LIMIT TO 22 PICA OR 18 ELITE TYPEWRITTEN LINES) <p>Newly developed techniques will be used in an attempt to uncover the distinctive features or dimensions of timbre perception. Stimulus tones are synthesized on the basis of the analysis of natural sounds. One phase of the research looks at the perceptual salience of various acoustical properties analyzed in natural tones. Another phase looks at the structure underlying the perceived relationships among a set of stimuli as measure with the judgment of similarity. This structure is presented via multidimensional scaling programs as a geometric map of stimulus points corresponds to their subjective similarity. This perceptually-derived structure is interpreted in terms of the possibly corresponding relationships among physical properties of the stimuli, thus making a psychophysical model for the dimensions of timbral similarities. The perceptual processing of acoustical interpolations between known tones will also be studied because of the possible existence of a categoridal mode for the perception of naturalistic timbre.</p>			
START AND END DATES 5/1/78 - 10/31/80		AMOUNT GRANTED \$104,704	PROGRAM APPROVAL  Sherman L. Guth, P/D
			DATE 3/2/78

A copy of this summary has been sent to the Science Information Exchange at the Smithsonian Institution for reference and public records:

NATIONAL SCIENCE FOUNDATION
Washington, D.C. 20550

SUMMARY OF COMPLETED PROJECT

Form Approved
OMB No. 99R0013

Please read instructions on reverse carefully before completing this form.

1. INSTITUTION AND ADDRESS		2. NSF PROGRAM	3. PRINCIPAL INVESTIGATOR(S)
4. AWARD NUMBER	5. DURATION (MOS)	6. AWARD PERIOD from to	7. AWARDEE ACCOUNT NUMBER
8. PROJECT TITLE			
9. SUMMARY (ATTACH LIST OF PUBLICATIONS TO FORM)			
9. SIGNATURE OF PRINCIPAL INVESTIGATOR/ PROJECT DIRECTOR		TYPED OR PRINTED NAME	DATE

INSTRUCTIONS FOR SUMMARY OF COMPLETED PROJECT (NSF Form 98A)

GENERAL

Awardees are reminded that the requirement for the submission of this Summary to the National Science Foundation does not change the present requirement for reprints of publications to be forwarded to the Foundation program unit having cognizance over the grant. In addition to the Summary of Completed Project (NSF Form 98A), for reports to be deposited in the National Technical Information Service, Bibliographic Data Sheet (NTIS Form 35) should be used.

SUMMARY

The summary (approximately 300 words) must be self-contained so as to be intelligible to a knowledgeable reader. Without restating the project title, it should begin with a topic sentence stating the project's major thesis. In preparing the summary the author should include, if pertinent to the project being described, the following items:

- The primary objectives and scope of the project.
- The techniques or approaches used only to the degree necessary for comprehension.
- The findings and implications stated as concisely and informatively as possible.

Awardees should bear in mind that this Summary of Completed Projects may be used together with the project summary prepared by the Foundation at the time of the award to answer inquiries by nonscientists as to the nature and significance of the research which the Foundation supports. Scientific jargon and abbreviations should be avoided when possible.

The requirements outlined in the American National Standard for Writing Abstracts (ANSI Z39.14-1971) may be useful in preparing the summary.

PUBLICATIONS

A list of publications based all or in part on the information/findings generated by this NSF-supported project should be attached to this form when it is submitted to NSF.

SUBMIT TWO COPIES OF THIS REPORT TO:

**NATIONAL SCIENCE FOUNDATION
DIVISION OF GRANTS AND CONTRACTS
POST-AWARD PROJECTS BRANCH
WASHINGTON, D.C. 20550**

NATIONAL SCIENCE FOUNDATION

Washington, D.C. 20550

Grant General Conditions

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1. Allowable Costs

a. The allowability of costs and cost allocation methods for work performed under this grant, up to the amount specified in the grant letter, shall be determined in accordance with the applicable Federal Cost Principles in effect on the effective date of the grant and the terms of the grant.

b. The Federal Cost Principles applicable to specific types of grantees are as follows:

(1) Institutions of Higher Education. FMC 73-8 (formerly OMB Circular A-21) is applicable to both public and private institutions of higher education, and is codified in 34 CFR 254, and reproduced in 41 CFR Subparts 1-15.3 and 1-15.8.

(2) Other Nonprofit Organizations. Subpart 1-15.2 of the FPR (41 CFR Subpart 1-15.2) or by the cost principles contained in DHEW publication Guide for Nonprofit Institutions, OASC-5, or DHEW publication, Guide for Hospitals, OSAC-3, as appropriate.

(3) Commercial Firms. Subpart 1-15.2 of the FPR (41 CFR Subpart 1-15.2)

(4) State and Local Governments. FMC 74-4 (formerly OMB Circular A-87) codified in the Code of Federal Regulations as 34 CFR Part 255. It also is reproduced as 41 CFR Subpart 1-15.7.

2. Payments

a. Unless otherwise specified in the grant letter, the grantee shall receive payments under this grant through cash advance by U.S. Treasury check drawn in amounts necessary to meet current needs, pursuant to the procedures contained in U.S. Treasury Circular No. 1075, revised. The grantee will arrange with the

Foundation's Division of Financial and Administrative Management for issuance of Treasury checks on a regular cycle as required. The grantee agrees to comply with all applicable U.S. Treasury regulations and National Science Foundation implementing and reporting procedures, which are outlined in Chapter IV of the NSF *Grant Policy Manual*.

b. Interest earned on advance payments to other than State agencies shall be reported to NSF on the Federal Cash Transaction Report, SF 272 (if payments are made in accordance with the procedure described in paragraph (a) of this article) and remitted by check made payable to the National Science Foundation.

3. Changes in Objectives or Scope

Neither the phenomenon or phenomena under study nor the objectives of the project stated in the proposal or agreed modifications thereto shall be changed without prior NSF approval. Such changes should be proposed to the NSF Program Officer, by the Principal Investigator, in a written communication countersigned by the Authorized Organizational Representative. If approved by NSF, the grant will be appropriately amended.

4. Changes in Principal Investigator or Level of Effort

If a named principal investigator or project director plans to, or becomes aware that he will, (1) devote substantially more or less effort to the work than anticipated in the approved proposal, (2) sever his connection with the grantee organization, or (3) otherwise relinquish active direction of the project, he shall advise both the NSF Program Officer and his organiza-

tion's Authorized Organizational Representative. They shall initiate action appropriate to the situation, under the guidelines described in Section 622 of the *Grant Policy Manual*.

5. Organizational Prior Approval System

a. In order to carry out its responsibilities for monitoring project performance and for adhering to grant terms and conditions, each performing organization should have a system to ensure that appropriate authorized officials provide necessary organizational reviews and approvals in advance of any action that would result in either the performance or modification of an NSF-supported activity where such approvals are required by the grant instrument, including the obligation or expenditure of funds where the governing cost principles either prescribe conditions or require approvals.

b. The organization should designate an appropriate official or officials to review and approve the types of actions described in a, above. Preferably, the official(s) should be the same official(s) who sign(s) or counter-sign(s) those types of requests which require submission to, and approvals by NSF. The designated official(s) shall not be the principal investigator or project director or any

official having direct responsibility for the actual conduct of the project, or a subordinate of such individual. When independence of the designated official cannot be maintained, such as where the head of the performing organization is also the principal investigator or project director, the Organizational Prior Approval System does not apply to that grant. In such a case or whenever for any reason an organization does not have an Organizational Prior Approval System, all approvals required by the table in the article entitled "Prior Approval Requirements," which would have been given by the Organizational Prior Approval System, must be obtained from the NSF Program Officer.

c. Grantee organizations may be more, but not less, restrictive concerning approvals of the specified items.

6. Prior Approval Requirements*

The following table summarizes the prior approval requirements applying generally to NSF grants. Unless the special conditions of this grant require otherwise, these prior approval requirements apply to expenditures under this grant. The table also specifies who gives each type of prior approval: the NSF Grants Officer, the NSF Program Officer, or the Organizational Prior Approval System (OPAS).

Type of expenditures		Prior approval required by
1.	Alterations and renovations:	OPAS
	a. Under \$1,000	Grants Officer
	b. \$1,000 or more	Grants Officer
2.	Capital expenditures for land, buildings or repairs	Grants Officer
3.	Contractual approvals required by other articles	
4.	Equipment:	Program Officer
	a. Special purpose: \$1,000 or more	Grants Officer
	b. General purpose	
	c. Cumulative expenditures which exceed budgeted amount by more than 25 pct.	OPAS
		Program Officer
5.	News release costs	
6.	Participant support costs: Transfer of funds to other categories of expense	Program Officer
		Grants Officer
7.	Preaward costs	Grants Officer
8.	Commercial production or distribution of books, films, etc.	Grants Officer
9.	Rental or lease of facilities	
10.	Travel:	Program Officer
	a. Each foreign trip and its costs	
	b. Cumulative domestic travel expenditures which exceed budgeted amount by \$500 or 25 pct., whichever is greater	OPAS
	c. Dependent foreign travel	Program Officer

* Some of these approvals may have been given in advance by virtue of being specifically detailed in the grant proposal and agreed to by NSF in making the grant.

7. Consultant Services

Payments to individuals for consultant services under this grant shall not exceed \$183/day, and shall be reasonable as required by the applicable cost principles. These requirements are discussed in Section 516 of the *Grant Policy Manual*.

8. Project Income

a. Royalty Income. Unless otherwise specified in the grant letter, the grantee may retain royalties received as a result of copyrights produced during the life of the grant and for 3 years following the expiration of the grant, up to the amount of \$10,000. Royalty income in

excess of \$10,000 earned during this period will to the extent practicable be maintained in an interest bearing account and remitted and reported annually to NSF.

b. Other Income. Unless otherwise specified in the grant letter, the Federal share of other project income may be retained by the grantee and added to the funds committed to the project by NSF and the grantee and be used to further project objectives. The grantee share may be used as desired by the grantee, including financing the non-Federal share of the project. The "Federal share" and the "grantee share" will reflect their respective contributions to the cost of the project.

9. No-Cost Extensions

If additional time beyond the established expiration date of this grant is required to assure adequate completion of the original scope of work within the funds already made available, two copies of a request for no-cost grant extension must be forwarded in time to be received by the NSF Program Officer at least 45 days prior to that date. Such request must contain the signatures both of the Principal Investigator/Project Director or his designee and of the Authorized Organizational Representative and should include summaries of progress, estimated funds remaining, and plans to complete that part of the project for which the extension is being requested. The need for an extension of time should be justified. The fact that funds may remain at the expiration of an award is not in itself sufficient justification for an extension. If approved by NSF, the grant shall be appropriately amended.

10. Cost-Sharing and Cost-Sharing Records and Reports

a. The grantee must cost share under this grant in accordance with any specific requirements contained in or referenced by the grant letter. If the grant letter has no specific requirements and if the work supported by this grant is for research resulting from an unsolicited proposal, the grantee must share in the costs of the work at a rate of not less than one percent of total project costs.

b. The grantee must maintain records of all project costs which are claimed by the grantee as cost sharing as well as records of costs to be paid by the Government. Such records are subject to audit. If the grantee's cost participation includes in-kind contributions, the basis for determining the valuation for volunteer services and donated property must be documented.

c. Unless otherwise required by the grant letter, the actual cost participation by the grantee need not be reported to NSF on SF 269, Financial Status Report.

11. Acknowledgment of Support and Disclaimer

An acknowledgment of NSF support and a disclaimer must appear in any publication of any material, whether copyrighted or not, based on or developed under this project, in the following terms:

"This material is based upon work supported by the National Science Foundation under Grant No. (Grantee should enter NSF grant number)."

All materials, except scientific articles or papers published in scientific journals, must also contain the following:

"Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the National Science Foundation."

12. Reprints of Publications

At such time as any article resulting from work under the grant is published in a scientific, technical or professional journal or publication, two reprints of the publication should be sent to the cognizant NSF Program Officer, clearly labeled with the grant number and other appropriate identifying information.

13. Progress Reports

a. *Content of Progress Reports.* Unless otherwise specified in the grant letter, progress reports shall include:

(1) A summary of overall progress, including results obtained to date, and a comparison of actual accomplishments with proposed goals for the period;

(2) An indication of any current problems or favorable or unusual developments;

(3) A summary of work to be performed during the succeeding budget period, and

(4) Other information pertinent to the type of project being supported or as specified in the terms and conditions of the grant.

b. *Timing of Progress Reports.* Unless otherwise specified in the grant letter, two copies of progress reports shall be submitted to the NSF Program Officer in the following frequency:

(a) For grants with an award duration of 2 years or more, the first report should be submitted no later than 90 days after the anniversary of the effective date of the grant, with succeeding reports annually thereafter, except after the final year. If a request for renewed support is submitted during the final year, the progress report should be attached to such request. Otherwise, only a final report and summary need to be submitted.

(b) For all other grants, the progress reports should be part of any request for continued or renewed support.

14. Final Reports

a. Types of final reports:

(1) *Final Technical Report.* Unless otherwise specified in the grant letter, the final technical report shall include appropriate grant identifying data and the following basic information:

- Scientific or technical Description of Research or other work and Results
- Titles of Theses (if any)
- Scientific or other Collaborators connected with the grant including students (show title or status, e.g., Associate Professor, Graduate Student, etc.)
- Comments (include reference to continuation if appropriate)

- Signature of principal investigator and date

(2) *Summary of Completed Project.* The Summary of Completed Project, NSF Form 98A, should be used to summarize, in laymen's language, the final technical report in order to answer inquiries by nonscientists as to the nature and significance of the project.

(3) *Financial Status Report.* The Financial Status Report, Standard Form 269, prescribed by OMB Circulars, shall be used to report the final status of funds for all nonconstruction projects.

b. Submission

(1) The grantee must furnish NSF with two copies of the Summary of Completed Project and the Final Technical Report within 90 days of the expiration date of the grant.

(2) Within 90 days after the expiration date of the grant, the grantee must furnish NSF with an original and two copies of the Financial Status Report.

(3) The Summary of Completed Project and the Financial Status Report should be submitted as a single package. Where circumstances warrant, grantees may submit the Final Technical Report separately. All these reports should be submitted to:

Post Award Projects Branch
Division of Grants and Contracts
National Science Foundation
1800 G Street, N.W.
Washington, D.C. 20550

(4) Any additional copies of the final technical report shall be submitted to the NSF Program Officer in the number and by the date specified in the grant letter or reference incorporated therein.

15. Data Collection

Data collection activities performed under this grant are the responsibility of the grantee and NSF support of the project does not constitute NSF approval of the survey design, questionnaire content or data collection procedures. The grantee shall not represent to respondents that such data are being collected for or in association with the National Science Foundation or the Government without the specific written approval of such data collection plan or device by the Foundation. However, this requirement is not intended to preclude mention of NSF support of the project in response to an inquiry or acknowledgment of such support in any publication of this data.

16. Title to equipment

Unless otherwise specified in the grant letter, title to equipment purchased or fabricated with NSF grant funds by a college or university, other nonprofit organization or a unit of State or local government shall vest in the grantee institution, with the understanding that such equipment (or a suitable replacement obtained as a trade-in) will remain in use for the specific project for which it was obtained.

17. Copyright

Unless otherwise provided in the grant letter, the grantee may copyright any books, publications, films, or

other copyrightable materials developed in the course of or under this grant. However, any such copyrighted materials shall be subject to a royalty-free, irrevocable, worldwide, nonexclusive license in the United States Government to reproduce, perform, translate, and otherwise use and to authorize others to use such materials for Government purposes.

18. Rights in Inventions

a. Except as otherwise provided in the Grant letter, or where an Institutional Patent Agreement has been executed with the grantee (unless the grant letter or the terms of IPA exclude the grant from the operation of the IPA), the following provisions will apply:

b. Whenever any invention which is, or may be, patentable is conceived or first actually reduced to practice in the course of or under this grant, the grantee shall furnish NSF with complete information thereon; and NSF shall have the right to determine whether or not and where a patent application shall be filed, and to determine the disposition of the invention and title to and rights under any patent application or patent that may result. In making such a determination, NSF shall take into account the public interest and the equities of the grantee. In any case, NSF may arrange to have the invention described in a printed publication.

c. The grantee, for itself and for its employees, agrees that all documents will be executed and all other actions necessary or proper to carry out the determination of NSF will be taken.

d. Except as otherwise authorized in writing by the Grants Officer, the grantee shall insert in each subaward having experimental, developmental, or research work as one of its purposes, provisions making this article applicable to the subawardee and its employees.

e. Reports of inventions required under these provisions or requests for retention of rights in such inventions, as well as requests for guidance in these matters, should be addressed to the NSF Office of the General Counsel.

19. Rights in ADP Data Banks and Software

Data banks and software, produced with the assistance of NSF grants, having utility to others in addition to the grantee, shall be made available to users, at no cost to the grantee, by publication or, on request, by duplication or loan for reproduction by others. The investigator who produced the data or software shall have the first right of publication. Grantees will be allowed a reasonable amount of time to make necessary corrections or additions to finite data banks which are incomplete or which contain errors, ambiguities or distortions. Privileged or confidential information will be released only in a form which protects the rights of privacy of the individuals involved. Where the collection of such information is anticipated in advance of the award, provisions for handling it should be treated in the proposal. Any dispute over the release or use of data or software will be referred to the Foundation for resolution. Any out of pocket costs incurred by the grantee in providing information to third parties may be charged to the third party. Under certain conditions, a modification

or exemption from the above policy may be granted by the Foundation at the time of the award. Such an arrangement will be described in the grant letter and will take into account both the public interest and the equities of the grantee.

20. Standards for Financial Management Systems

NSF grantees, except State or local units of government, shall have financial management systems which meet the requirements of Attachment F to OMB Circular A-110. State and local units of government shall follow the comparable standards of FMC 74-7 (formerly OMB Circular A-102). Attachment F to OMB Circular A-110 is reproduced as Exhibit 3-1 in the *NSF Grant Policy Manual*.

21. Procurement Standards

a. NSF grantees, except units of State or local government, shall follow the requirements of Attachment O to OMB Circular A-110. Units of State or local government shall follow the comparable requirements of FMC 74-7 (formerly OMB Circular A-102). Attachment O to OMB Circular A-110 is reproduced as Exhibit 3-2 in the *NSF Grant Policy Manual*.

b. In addition, unless the grant letter provides otherwise, prior written approval shall be obtained from NSF before:

(1) Any of the research or other substantive project effort is contracted or otherwise transferred.

(2) Contracting for the commercial production or distribution of books, films, or similar materials.

c. NSF approvals will be made by the Grants Officer, who will specify which requirements of this grant must be flowed-down to satisfy the purposes of OMB Circular A-110 or FMC 74-7.

d. Grantee requests for approvals shall include an explanation of the need for the contracting, a proposed performance statement, justification for the price or estimated cost (including a detailed budget for cost-reimbursement type arrangements) and the basis for selecting the contractor.

22. Liabilities and Losses

NSF assumes no liability with respect to accidents, bodily injury, illness, breach of contract or any other damages or loss, or with respect to any claims arising out of any activities undertaken with the financial support of this grant, whether with respect to persons or property of the grantee or third parties. The grantee may wish to insure or otherwise protect itself or others as it may deem desirable.

23. Audit and Records

a. Financial records, supporting documents, statistical records, and other records pertinent to this grant shall be retained by the grantee for a period of 3 years from submission of the Financial Status Report described in the article of these General Conditions entitled "Final Reports," except that:

(1) Records which relate to audits, appeals, litigation, or the settlement of claims arising out of the perfor-

mance of the project shall be retained until such audits, appeals, litigation, or claims have been disposed of.

(2) Records relating to projects subject to special project income provisions shall be retained until 3 years from the end of the grantee's fiscal year in which the grant letter requirement for reporting income expires.

b. Unless court action or audit proceedings have been initiated, the grantee may substitute microfilm copies of original records.

c. The NSF Director and the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any pertinent books, documents, papers, and records of the grantee organization, and of the performing organization, if different, to make audits, examinations, excerpts and transcripts. Further, any negotiated contract in excess of \$10,000, made by the grantee shall include a provision to the effect that the grantee, NSF, the Comptroller General, or any of their duly authorized representatives, shall have access to pertinent records for similar purposes.

d. In order to avoid duplicate recordkeeping, NSF may make special arrangements with grantees to retain any records which are needed for joint use. NSF may request transfer to its custody of records not needed by the grantee when it determines that the records possess long-term retention value. When the records are transferred to or maintained by NSF, the 3-year retention requirement is not applicable to the grantee. In the rare event that these provisions are exercised, NSF will negotiate a mutually-agreeable arrangement with the grantee regarding reimbursement of costs.

24. Site Visits

The Foundation, through authorized representatives, has the right, at all reasonable times, to make site visits to review project accomplishments and management control systems and to provide such technical assistance as may be required. If any site visit is made by the Foundation on the premises of the grantee or a contractor under a grant, the grantee shall provide and shall require his contractors to provide all reasonable facilities and assistance for the safety and convenience of the Government representative in the performance of their duties. All site visits and evaluations shall be performed in such a manner as will not unduly delay the work.

25. Suspension or Termination for Cause

a. When in the opinion of NSF, a grantee has materially failed to comply with the terms and conditions of a grant, NSF may (1) suspend the grant or (2) terminate the grant for cause.

b. NSF prefers that deficiencies be corrected whenever practicable. Therefore, action to suspend or terminate a grant normally will be taken only after the grantee has been informed of the deficiency and given sufficient time to correct it. However, this policy does not preclude immediate suspension or termination when such action is reasonable under the circumstances and necessary to protect the interests of the Government.

c. If a grant is suspended pursuant to this article, no obligations incurred by the grantee during the period of

suspension will be allowable under the suspended grant. However, NSF will allow necessary and proper costs which the grantee could not reasonably avoid during the period of suspension; provided that such costs would otherwise be allowable under the applicable Federal cost principles.

d. If a grant is terminated pursuant to this article, financial obligations incurred by the grantee prior to the effective date of termination shall be allowable to the extent they would have been allowable had the grant not been terminated, except that no obligation incurred during the period in which the grant was suspended (except those allowed pursuant to c, above) will be allowed. The settlement of termination costs will be in accordance with the applicable Federal cost principles.

e. When it is believed that a grantee has failed to comply with one or more of the terms and conditions of a grant, the Grants Officer will advise the grantee by letter of the nature of the problem and that failure to correct the deficiency may result in suspension or termination of the grant. The grantee will be requested to respond in writing within 30 days of the date of such letter, describing the action taken or the plan designed to correct the deficiency. Copies of such correspondence will be furnished to the Principal Investigator and to the NSF Program Officer.

f. If a satisfactory response is not received within 30 days of receipt of such a letter, the Grants Officer may issue a notice suspending authority to further obligate grant funds, in whole or in part. The notice of suspension will be sent by certified mail (return receipt requested), to the Authorized Organizational Representative, with a copy to the PI/PD. Within the Foundation, copies will be furnished to the Division of Financial and Administrative Management (DFA) and to the Program Officer. The notice will set forth the activities covered by the suspension and its effective date, and the corrective action required by the grantee in order to lift the suspension.

g. The suspension will remain in effect for a maximum of 90 days during which time the grantee will take corrective action to the satisfaction of NSF or give assurances satisfactory to NSF that corrective action will be taken. In that event, the Grants Officer will issue a notification, addressed as in f, above, that the suspension is lifted.

h. In the event the deficiency is not corrected to the satisfaction of NSF, the Grants Officer may issue a notice of termination, addressed as in f, above. The notice will establish the reasons for the action and its effective date.

i. Within 90 days of the effective date of termination, the grantee will furnish an itemized accounting of funds expended for allowable costs prior to the effective date of termination and the unexpended grant balance. The grantee may request a review of the termination decision in accordance with the procedure described in the article of these General Conditions entitled "Termination Review Procedure."

26. Termination by Mutual Agreement

a. Circumstances may arise in which either NSF or the grantee wishes to terminate its performance of a project in whole or in part. If both parties agree that continuation

of the project would not produce results commensurate with the further expenditure of funds or for any other reason, the grant may be terminated by mutual agreement.

b. If the grantee wishes to terminate the project, the Authorized Organizational Representative should advise the NSF Grants Officer, with a copy to the NSF Program Officer.

c. If NSF wishes to terminate the project, the Grants Officer will advise the grantee's Authorized Organizational Representative, with copies to the PI/PD and the NSF Program Officer.

d. With 30 days after receipt of a request from either party for termination by mutual agreement, the other party will provide an appropriate written response. In the event of disagreement between the parties, the Grants Officer will make a final decision subject to the review procedures described in the article entitled "Termination Review Procedure."

27. Termination Review Procedure

a. Any request for review of a notice of termination should be addressed to the Assistant Director for Administration, National Science Foundation, 1800 G Street, N.W., Washington, D.C. 20550. It must be postmarked no later than 30 days after the postmarked date of such notice.

b. The request for review must contain a full statement of the grantee's position and the pertinent facts and reasons in support of such position.

c. The Assistant Director for Administration will promptly acknowledge receipt of the request for review, and appoint a review committee consisting of a minimum of three persons, none of whom may be either from the NSF program which is responsible for recommending and/or monitoring the scientific aspects of the project or from the Branch of the NSF Division of Grants and Contracts which is responsible for monitoring the administrative aspects of the grant.

d. Pending resolution of the request for review, the notice of termination will have no force or effect, except that NSF may continue to withhold or defer payments under the grant during the review proceedings.

e. The termination review committee will request the Grants Officer who issued the notice of termination to provide copies of all relevant background materials and documents. It may, at its discretion, invite representatives of the grantee and the NSF program to discuss pertinent issues and to submit such additional information as it deems appropriate. The chairman of the review committee will insure that all review activities or proceedings are adequately documented.

f. Based on its review, the committee will prepare its recommendations to the Assistant Director for Administration, who will advise the parties concerned of his decision.

28. Nondiscrimination

This grant and any program assisted thereby are subject to the provisions of Title VI of the Civil Rights Act of 1964 (PL 88-352) and the Rehabilitation Act of 1973 (PL 93-112), the regulations issued pursuant thereto by the Foundation (45 CFR Part 611), and the

Assurance of Compliance which the grantee has filed with the Foundation. No person shall, on grounds of race, color, national origin, or handicap, be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination under this grant. In addition, if this project involves an education activity or program, as defined by Title IX of the Education Amendments of 1972 (PL 92-318; 20 USC 1681-1686), no person shall on the basis of sex, be excluded from participation in the project.

The grantee shall obtain from each organization that applies to be, or serves as a subrecipient, subgrantee, or subcontractor under this grant (for other than the provision of commercially available supplies, materials, equipment, or general support services) an Assurance of Compliance with Title VI of the Civil Rights Act of 1964 and the above regulations thereunder. Such assurance may be filed in one of two ways: (1) by written notification that the appropriate Assurance of Compliance Form has been executed and filed either with the Foundation or the U.S. Department of Health, Education, and Welfare; or (2) by executing and filing with the grantee an NSF Assurance of Compliance Form.

29. Human Subjects

a. The grantee is responsible for safeguarding the rights and welfare of any human subjects involved in research, development, and related activities supported by this grant. The grantee may conduct research involving human subjects, only as described in the grant proposal and as approved by the grantee's Institutional Review Committee. Prior to conducting such research, the grantee shall obtain and document a legally effective informed consent from each human subject involved. No such informed consent shall include any exculpatory language through which the subject is made to waive, or to appear to waive, any of his legal rights, including any release of the grantee or its agents from liability for negligence.

b. The grantee agrees to comply with DHEW regulations regarding the use of human subjects, appearing in Title 45 Code of Federal Regulations, Part 46, Subtitle A. (See DHEW Publication No. (NIH) 72-102 for additional guidance.)

30. Animal Welfare

Any grantee performing research on warm blooded animals shall comply with the Laboratory Animal Welfare Act of 1966 (PL 89-544, as amended, 7 U.S.C. 231 et seq.) and the regulations promulgated thereunder by the Secretary of Agriculture (9 CFR, Sub-chapter A) pertaining to the care, handling, and treatment of warm blooded animals held or used for research, teaching or other activities supported by Federal awards. The grantee is expected to ensure that the guidelines described in DHEW Publication No. (NIH) 74-23, "Guide for the Care and Use of Laboratory Animals," are followed.

NOTE—The grantee may request registration of its facility and a current listing of licensed dealers from the Regional Office of the Animal and Plant Health Inspection Service (APHIS), USDA, for the region in which his research facility is located. The location of the

appropriate APHIS Regional Office, as well as information concerning this program, may be obtained by contacting the Senior Staff Officer, Animal Care Staff, USDA/APHIS, Federal Center Building, Hyattsville, Md. 20782.

31. Marine Mammal Protection

The protection of marine mammals in research activities supported by Foundation grants is the responsibility of the grantee. The grantee agrees that it will comply with the Marine Mammal Protection Act of 1972, P.L. 92-522, in all marine research activities supported by Foundation funds.

32. Pollution Control

The grantee agrees to comply with the Clean Air Act (42 U.S.C. 1857), as amended, the Federal Water Pollution Control Act (33 U.S.C. 1251), as amended, and applicable regulations in the performance of this grant.

33. Research Involving Recombinant DNA Molecules

Primary responsibility for implementing proper conduct of recombinant DNA research lies with grantees. If this grant supports research involving recombinant DNA molecules, the grantee agrees to comply with the requirements of the NIH Guidelines for Recombinant DNA Research and the requirements of NSF Important Notice No. 64, "Research Involving Recombinant DNA Molecules," dated April 6, 1977.

34. Use of U.S. Flag Carriers

a. The Comptroller General of the United States, by Decision B-138942 of June 17, 1975 (as amended) provided guidelines for implementation of Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974.

b. Any air transportation to, from, between, or within a country other than the U.S. of persons or property, the expense of which will be assisted by NSF funding, must be performed on a U.S.-flag carrier if service provided by such carrier is "available."

c. For the purposes of this requirement:

(1) Passenger or freight service by a certificated air carrier is considered "available" even though:

(a) Comparable or a different kind of service by a noncertificated air carrier costs less, or

(b) Service by a noncertificated air carrier can be paid for in excess foreign currency, or

(c) Service by a noncertificated air carrier is preferred by the grantee, contractor or traveler needing air transportation, or

(d) Service by a noncertificated air carrier is more convenient for the grantee, contractor, or traveler needing air transportation.

(2) Passenger service by a certificated air carrier is considered to be "unavailable":

(a) When the traveler, while en route, has to wait 6 hours or more to transfer to a certificated air carrier to proceed to the intended destination, or

(b) When any flight by a certificated air carrier is interrupted by a stop anticipated to be 6 hours or more for refueling, reloading, repairs, etc., and no other flight by a certificated air carrier is available during the 6-hour period, or

(c) When the flight of a certificated air carrier, by itself or in combination with other certificated or noncertificated air carrier (if certificated air carriers are "unavailable"), take 12 or more hours longer from the origin airport to the destination airport to accomplish the Federally funded mission than would service by a noncertificated air carrier or carriers.

35. Work Abroad

The grantee shall assure that grant activities carried on outside the United States comply with the laws or regulations of the country in which the work is to be conducted. These activities shall be coordinated with appropriate foreign government authorities and necessary licenses, permits or approvals should be obtained prior to undertaking proposed activities.