

PREPARATION OF REPORTSMATHEMATICS BRANCH

It is the intention of the Mathematics Branch (Code 432) of the Office of Naval Research to reduce the burden involved in the preparation of reports for this program so that the maximum effort can be placed in the performance of research.

Nevertheless, reports are needed and these are ordinarily of two types:

- (a) Technical Reports, which present the results of research
- (b) Administrative Reports, which keep us informed of the status of your project.

TECHNICAL REPORTS

A technical report should be prepared when a specific phase of work has been completed or when important results of general interest are obtained. Technical reports obviously will not be issued at regular intervals.

Format

Common sense (in addition to the "Government Printing and Binding Regulations") precludes the use of expensive or non-standard printing presentations. Adhering to the established format and mode of reproducing documents in your own department is entirely satisfactory. The sole exception is that all text reproductions should be black on white; duplication processes which produce purple copies are not suitable for subsequent Defense Documentation Center microfilming. If only purple copy duplication equipment is available, the ONR Scientific Officer should be advised prior to distribution of reports.

Acknowledgement and Identification

All reports should be identified by a number, as well as by author, contractor, title, date, contract number, and task number. All technical reports and publications resulting from the sponsored research of this program should acknowledge support and permit reproduction by the U. S. Government. An acceptable wording is "This research was supported by the Office of Naval Research. Reproduction in whole or in part is permitted for any purpose of the United States Government." If it is desired to withhold proprietary information from subsequent reproduction, this should be discussed with the ONR Scientific Officer.

Use of Standard Forms.

Two forms are to be used by the contractor in preparing technical reports. An additional form is used by ONR to authorize changes to official distribution lists.





A copy of Department of Defense form DD 1473 shall be prepared and included in each copy of all technical reports. This form provides for the inclusion of a brief abstract and identification information. It is used in conjunction with Defense Documentation Center requirements. The use of this form is mandatory in Department of Defense agency technical reports. These forms are now available in dupli-mat masters and other preprinted versions. Assistance in obtaining these forms is available from the cognizant Navy contract administrator.

Instructions for completing this form are self-contained therein. In preparing this form, please note item #8 calls for project and task numbers, (please check if not known) as well as contract numbers. Also, please note the exact wording to be used in item #10: "Releasable without limitations on dissemination." If you wish to restrict the distribution, discuss this with the ONR Scientific Officer.

### Distribution

Contractors are at liberty to disseminate unclassified reports to those not on the official distribution list, with the understanding that such additional distribution will not increase the costs to the government. It will not be necessary to reproduce the distribution list in each report, unless specifically notified to do so. Changes to the official list may be authorized by NAVEXOS Form 3703, or by a letter from the Office of Naval Research.

Secondary distribution of reports is available for Department of Defense activities through the services of the Defense Documentation Center. Those not served by DDC may purchase copies from the Clearinghouse for Federal Scientific and Technical Information (formerly the Office of Technical Services). This organization does not appear on your distribution list, since DDC will furnish the required copy to that agency.

### Form NAVEXOS-2435 "Document Transmittal to Defense Documentation Center"

Twenty copies of technical reports should be transmitted to DDC, as stipulated on the distribution list. NAVEXOS Form 2435 is to be used in sending these copies to DDC. One copy of this form should be sent to DDC with the shipment of the reports. Note that this form will be routed to ONR from DDC, thus providing ONR with the DDC identification number.

### Published Articles

Published articles are also considered as technical reports, and should be listed when citations of technical reports are desired. However, it will not be necessary to send reprints of published articles to the distribution list, if the article is available in the open literature. Two copies should be sent to the Office of Naval Research, Code 432.



## Published Articles and Presentations at Technical Meetings

Dissemination of technical reports to the official list should be considered only as limited scientific distribution. The Office of Naval Research favors the normal interchange of unclassified scientific information through established channels, such as presentation at technical meetings or publication in recognized technical journals.

## Books

Books resulting from sponsored research should be included as technical reports, and should carry acknowledgements in the same way. Books should not be disseminated to the distribution list because of the cost. ONR will require a limited number of copies of books resulting from contracts. The ONR Scientific Officer should be advised when the publication of a book is imminent and he will specify the required number of copies to be purchased from contract funds.

## Release of Technical Reports to Abstractors

Principal investigators may send copies of their technical reports to abstracting services if they wish. Abstractors should note the availability of reports from the Clearinghouse and DDC in their abstracts.

## ADMINISTRATIVE REPORTS

### Status or Progress Reports

The ONR Scientific Officer serves as the focus for inquiries from many government activities and must provide up-to-date information, not only for internal ONR needs but for other government agencies as well. Consequently, it is necessary for the Scientific Officer to be well informed on the status of research tasks. This is normally accomplished not only through technical reports, but also through visits, informal meetings, telephone conversations and "progress or status reports."

Status reports may be informal reports in the form of a letter. A status report should serve to keep the Scientific Officer informed of research results, work in progress, and relative administrative details such as changes in personnel and reports on trips and visitors. In particular, they should list the individuals who worked on the contract during the quarter, the portion of their time devoted to the contract, and any reports completed, publications appearing in print during the period covered, and manuscripts submitted for publication. Write-ups of important results or accomplishments are particularly welcome.

Status reports are treated as privileged communications for use only within ONR or other agencies contributing to the support of a contract.

These reports should be sent to ONR, Code 432 if a three month period elapses without any information exchange with the Scientific Officer, or when there is information to report on. The annual report mentioned below also serves as a status report.





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### Annual Report

A special request calling for an annual summary report is sent each fall. This summary is used in the preparation of the comprehensive annual ONR report.

### Final Report

A final report should be issued on termination of a project. This is not required when contracts are renewed or extended. It should include a list of personnel who have worked on the project, bibliography of all technical reports and publications, and a summary of any additional work accomplished during the contract period.

STANDARD FORMS USED

- A. Department of Defense Form DD 1473  
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To be reproduced in each copy of all Technical Reports.

- B. NAVEXOS Form 2435  
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On Some Multiple Decision (Selection and Ranking) Rules			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
Technical Report, August 1964			
5. AUTHOR(S) (Last name, first name, initial)			
Gupta, Shanti S.			
6. REPORT DATE		7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
November 1964		35	29
8a. CONTRACT OR GRANT NO.		9a. ORIGINATOR'S REPORT NUMBER(S)	
Nonr 1100(26)		Mimeograph Series No. 21	
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11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY	
Also supported by Aerospace Research Laboratories Contract AF 33(657-1137)		Mathematics Branch Office of Naval Research Washington, D.C. 20360	
13. ABSTRACT			
<p>This paper deals with some multiple decision (ranking and selection) problems. Some relevant distribution theory is given and the associated confidence bounds are derived for the differences (ratios) between the parameters. The selection procedures select a non-empty, small, best subset such that the probability is at least equal to a specified value <math>P</math> that the best population is selected in the subset. General results are given both for the unknown location and scale parameters of the <math>k</math> populations. Some desirable properties of these procedures are studied and proved. Selection of a subset to contain all populations better than a standard is also discussed. Performance characteristics of some procedures for the normal means problem are studied and tables are given for the probabilities of selecting the <math>i^{\text{th}}</math> ranked population and for the expected proportion and the expected average rank in the selected subset. A brief review of work by other authors in the problems of selection and ranking and in other related problems is given.</p>			



# Security Classification

14.

## KEY WORDS

Mathematical statistics  
Decision theory  
Multiple decision  
Ranking  
Selection

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It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as (TS), (S), (C), or (U).

There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

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