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An Analysis of Employee Publics and Employee Communication Programs in the National Bureau of Standards

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James E. Grunig

Seminar in Corporate Communication
College of Journalism
University of Maryland

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Prepared for
National Bureau of Standards
Washington, D.C. 20234

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Introduction

The National Bureau of Standards, as a typical large research organization, could be expected to have a number of gaps between employees whose bridging is necessary for the coordination of the organization. NBS employs hundreds of specialized scientists who typically communicate with others in their specialty but communicate little with scientists or nonscientists outside their specialty. Likewise, the Bureau employs hundreds of technical, service, administrative, and clerical employees with little in common with their research-oriented scientists. Finally, there typically is a gap in large organizations between managerial and nonmanagerial employees, a gap which is especially large when the nonmanagerial employees are themselves highly educated and autonomous professionals.

Communication is generally the most effective means of bridging gaps of these kinds, and the National Bureau of Standards, as most large organizations, engages in a number of internal communication programs designed to bridge different gaps. Questions exist about these programs, however, which only research can answer. Have all of the gaps been identified--i.e., are there information needs of employees which have not been recognized? Are the internal media now used the most effective means of providing needed information? Do media now exist which once served a purpose but no longer are necessary? Do some media meet the same information needs and thus duplicate efforts? Are there different information needs for different kinds of employees, and are different media needed to meet these needs?

With these questions in mind, graduate students in the University of Maryland's Seminar in Corporate Communication planned a study in cooperation with the Bureau's Office of Information Programs. The study was designed to result in a profile of employee publics, each with different information needs. The profile also was designed to determine how each employee public uses existing internal media and each public's knowledge of information now being disseminated to employees.

Concepts and Methods

Applied research may be approached in at least two ways. The most common approach is to take a set of practices, or programs, as given and then observe the consequences--effects--of those programs. The research results can then be used to revise the programs in order to promote desirable consequences and reduce undesirable consequences. The shortcoming of this approach, however, is that the programs being studied may not have been the most appropriate in the first place. When existing programs are evaluated in isolation, alternative programs are seldom considered and seldom will the results of the research suggest new programs.

This seminar took a second approach to applied research. We believed that an applied researcher should begin with a theory which, when measured in a research setting, would result in a profile of communication problems and needs which the practitioner must deal with. This profile then can be used as a yardstick to explain why some existing programs are effective and others are not. It might also suggest new programs which the practitioner may not previously have considered.

The theory applied in this study was developed by Grunig as a means of identifying and targeting publics on the basis of similarity in people's communication behaviors. The assumption behind the theory is that a professional communicator should concentrate on communicating with publics which are most likely to be communicating with him and that he should provide information to publics which are most likely to need and to seek that information. Information cannot affect the behavior of people unless they first process that information. Therefore, any communication program designed for people who are unlikely to process the information represents a waste of resources.

The theory also assumes that communication is a situational behavior--i.e., that people communicate as a consequence of the way they perceive a specific situation and not because of cross-situational personality traits, attitudes, etc. Thus, the theory allows a researcher to do two things. First, by looking at how different people perceive several situations, he can predict which people will seek information about each of the situations. Second, by looking at the nature of those situations, he can predict which kind of information will be needed by people who are actively communicating--i.e., they generally need information relevant to the situations about which they are actively communicating.

In this study, the theory was used to isolate different types of NBS employees with different kinds of information needs. These employee types were then compared by their demographic characteristics in order to make it possible to identify them. They were then compared by their media use, their content preferences for NBS media, and their knowledge of news items appearing in NBS publications.

In order to understand these results, it is useful at this point to describe the Grunig theory in somewhat more detail. The theory uses the combinations of four variables to indicate the extent to which a person will actively communicate about a particular situation. The first of these concepts, problem recognition, represents the extent to which a person recognizes that something is missing or indeterminant in a situation so that he stops to think about the situation. The second concept, constraint recognition, represents that extent to which a person perceives constraints in a situation which limit his freedom to construct his own behavior. Generally, the theory holds, people will communicate about situations in which they perceive something to be missing and in which they do not perceive constraints which limit their ability to personally affect the situation.

The combinations of these two concepts can be viewed as four types of situations, situations in which people's behaviors can be expected to be similar. The behaviors resulting in these four situations have been called problem-facing behavior (high problem recognition, low constraints), constrained behavior (high problem recognition, high constraints), routine habit behavior (low problem recognition, low constraints), and fatalistic behavior (low problem recognition, high constraints).

Within each of these situations, a person may or may not make use of a referent criterion, the third variable in the theory. A referent criterion, in essence, exists when a person knows what to do in a situation. He might have knowledge or experience from similar situations, or he might have a goal, a solution, or an attitude which he carries from situation to situation. The effect of the referent criterion is to reduce a person's need to communicate about a situation because it indicates to that person, what his behavior should be in the situation.

Finally, a person can either be involved or not involved in each of these four basic situations. This fourth variable in the theory, level of involvement, is important because it changes a person's communication behavior from active information seeking to passive information processing. A person who perceives himself to be involved in a situation actively--and selectively--looks for information to deal with the situation--if he also perceives the situation in a way that leads to problem-facing or constrained behavior. When involvement is low, a person is unlikely to seek information at his own initiative.

The low-involvement problem-facing situation, however, often brings forth "curious" people who seek information about situations that do not involve them. On the other hand, a person will process information about situations which do not involve him if he is exposed to it without any effort on his part. For example, a person waiting in a waiting room may process information in an available magazine although he would not otherwise seek out that information.

These four variables can be grouped into 16 different combinations, combinations which can be viewed as 16 different ways of perceiving a situation. Previous research has shown that the probability that a person will seek or process information differs across these 16 combinations. Table 1 presents the most accurate set of probabilities that have been calculated to date. The communication professional can use this theory to identify, in this case, how each type of employee views each of several types of situations confronted on the job. Once he knows how these employee types view the job, he can consult the table of probabilities to determine his chances of communicating with these employee types about the situations of concern.

In this study, the theory was measured for 14 different situations that might affect NBS employees. These situations were chosen to cover a wide range of potential information needs that NBS employees might experience. For each of the 14 situations, respondents used a four-point scale to respond to four questions designed to measure each of the concepts in the theory: Is this situation something you stop to think about? (problem recognition); To what extent do you see a connection between yourself and each of the situations? (level of involvement); How much experience or knowledge do you have that could help you make judgements about each of the situations? (referent criterion); and How much could you do personally, that might improve the handling of each of the situations? (constraint recognition).

In addition to measuring these concepts, questions were also designed to measure readership or use of 21 NBS employee media. Employees were also asked how likely they would be to reach each of 16 different types of articles if they appeared in NBS media, content areas which were chosen to represent current media content and to relate to the situations chosen for measurement of the Grunig theory. Finally, employees were asked if they had heard each of nine different items of NBS information, and, if they had heard them, the source from which they first got the information. These nine items were chosen to fit situations measured in the Grunig theory and to represent items which had appeared in different employee media. These knowledge questions, therefore, allowed us to determine if the employees that the theory predicts would seek or process certain kinds of information had indeed heard that information. It also allowed us to determine if employees who had heard the items tended to use any particular media in seeking that information.

These questions, then, were arranged into a 10-page questionnaire which was mailed to a sample of 600 Bureau employees (out of approximately 3,000 total employees). Fifty of the 600 were returned because the employee no longer worked at the Bureau or for similar reasons. Of the remaining 550 respondents, 425 returned usable questionnaires, for a response rate of 77 percent.

Of these returns, 339 came after the first mailing and 86 after a follow-up mailing. Page 10 of Table 2 compares the resultant sample with actual population percentages on one demographic characteristic and compares the first-return respondents with the follow-up respondents on seven characteristics. The comparison of the first-return and follow-up respondents was done to identify the characteristics of the nonrespondents who tend to be similar to respondents who return a questionnaire after a follow-up appeal.

These data show that there are somewhat more professionals and administrative personnel in the sample than in the entire population and somewhat fewer wage scale and clerical employees. The same differences were found in comparing the first-return and follow-up subsamples. These comparisons also showed that employees in the first-return sample had somewhat more education than those in the follow-up sample and that they were found in higher GS grades. Employees in the first return sample also had worked significantly fewer years at the Bureau than those in the follow-up sample. This pattern of more educated employees being more likely to return the questionnaire is common for self-administered questionnaires, and with the high return rate in the study represents a minor bias. It should be remembered, however, that professional employees are slightly overrepresented when the results are examined.

Several statistical techniques were used to analyze the data, and these techniques will be explained in more detail when the results are discussed. In the results which follow, frequency counts for all questions on the questionnaire are first presented and discussed. Factor analysis then was used to reduce the situational theory questions, media questions, content questions, and knowledge questions to a few major categories. Canonical correlation then was used to relate the situational theory results to the media and communication variables and to develop employee types. These employee types then were cross-tabulated with the demographic variables and other media use variables to provide a complete profile of the employee types.

Discussion of Results

Table 2 is a reproduction of the entire questionnaire with response frequencies for the entire sample for each question. These total responses are useful primarily in giving perspective on the data and in some instances in indicating the most used media, most important

situations, etc. The most useful results are found, however, when these responses are combined into a profile of employee types and compared across employee types. Briefly, these overall responses can be summarized as follows:

Media Use (Questions 1-5): In large part, these results reflect the numbers of people who receive each of the publications. For example, program newsletters are not frequently used because over half of the sample do not receive them. Nevertheless, the two media which stand out as most used are the NBS Standard and the Technical Calendar, followed by Fire Prevention and Accident News and SEBA News. Likewise, when respondents were asked to choose which publication they would read if they had time to read only one they chose the Technical Calendar first, followed by the Standard and Dimensions magazine. Question 4 shows that about two-thirds of NBS employees spend some time but less than an hour a week reading Bureau publications. Question 5 shows little redundancy in Bureau publications. The most frequent responses for each publication is that employees sometimes or rarely see information in each publication that they have already heard from other sources.

Content Preference (Question 6): Mean responses on the content categories show that people would read most of the items at least half of the time they appear. The most popular areas, however, are news about pay and benefit plans, congressional legislation affecting NBS, news from the Department of Commerce affecting NBS, messages from the Director, and news of appointments and awards. Least popular are reports of speeches by NBS administrators and news of SEBA sports activities. Most research news categories get middle-range scores indicating they are popular with some employees but not others. Later we will identify these employees. In general, then, it seems that most employees are interested in news about changes affecting the organization and presumably their jobs. Some, but not all employees are interested in the more specialized types of content.

Evaluation of Media (Question 7): Results indicate that the first source of information about Bureau activities is the Standard and "other employees." The most dependable sources of information are the Technical Calendar and the Standard. The most useful sources are the Technical Calendar and the supervisor. Several media are chosen as providing the most complete information: the Standard, Technical Calendar, the supervisor, Dimensions magazine, and other employees. Most employees would choose the Standard to communicate information about themselves, and most say the Standard and Dimensions present the most accurate picture of Bureau events and people. Finally, the Standard, Dimensions, Administrative Issuances and the Technical Calendar are most likely to be saved for future reference.

Knowledge of Bureau News (Question 5): From 40 to 70 percent of employee respondents had not heard each of the news items. The most

known items were that NBS had published product standards for toys, the "flexitime" experiment for civil service employees, and the appointment of an administrator. These results follow closely the content preferences reported earlier. The least heard items were the research items and the employee sports items, again reflecting a more specialized interest by fewer employees. The sources from which employees had first heard these items showed no dominant media, but rather seemed to show that employees who had heard information heard it from the source where it first appeared. In other words, they seem to be seeking information relevant to them from a number of sources and not from a limited number of sources.

Theoretical Variables (Part II, Questions 1-4): These results will be useful primarily in categorizing employees, but they do give some indications, in raw form, of how employees perceive these NBS situations. First, the problem recognition question shows that employees think the most about public understanding of NBS research, decisions in the Dept. of Commerce, Congressional legislation affecting NBS, the relationship between NBS and the scientific community, decisions made in the director's office, the NBS budget, employee benefits, and transportation to and from NBS. As expected these results closely resemble the information preference results and again indicate the most frequently felt information needs of the largest number of Bureau employees.

The level of involvement results follow a similar pattern, but the scores are generally lower than the problem recognition scores. This would indicate that although employees think about these issues they do not feel a strong personal involvement in them. Thus, they would not actively go out and seek the information but would process it if it appears in a convenient form when they have time to attend to it. This interpretation also seems to be borne out by the relatively small amount of time employees report reading NBS publications.

The referent criterion results show most employees do not perceive much knowledge and experience which might be relevant--indicating that they can use information. But employees feel constrained in most of these situations so that they probably do not believe they can personally use much of the information provided them. The major exceptions to this pattern are the categories of public understanding of NBS research and the relationship between NBS and the scientific community. In both cases, employees do feel they have knowledge and experience and that they can personally do something. Although outside the scope of this study these two results seem to indicate that employees perceive a need and are willing to communicate to outside groups, a situation which the information staff should take advantage of.

Given these overall results, we can turn to a series of statistical manipulations that were done to reduce the data to more manageable categories. The first of these manipulations were factor analyses of the

four situational variables, the media use variables, the content preference variables, and the knowledge variables. Factor analysis is a technique which examines inter-relationships between a set of variables and places intercorrelated variables into factors--major dimensions or categories. Thus 15 variables, for example, might be grouped into three factors. Each variable then has a "loading" on each factor, which is the degree to which the variable correlates with or relates to all of the variables with high loadings on the factor. In essence, then, factor analysis is a means of reducing a large number of variables to a smaller and more manageable number of variables. In this study, seven separate factor analyses were conducted as preliminary stages in developing profiles of employees. These results, however, are useful in discerning situational patterns and patterns of media use.

Factor Analysis of Situational Variables: Each of the four situational variables--problem recognition, level of involvement, referent criterion, and constraint recognition--was measured for 14 different NBS situations. Factor analysis of each of these four variables, for the 14 situations, was done to reduce the situations to a smaller number of categories. In each of these analyses, three factors resulted (factors were extracted as long as they had an eigen value of 1.0).

With minor variations, the three factors were almost identical for the four variables. Based on the loadings shown in Table 3, the three factors were named the administrative situations factor, the research situations factor, and the employee situations factor. Situations loading highly on the administrative factor generally included the NBS budget, Congressional legislation, appointments of program directors, decisions in the Department of Commerce, and decisions made in the director's office. Situations loading highly on the research factor included research and services of the four NBS technical institutes, public understanding of NBS research, and the relationship between NBS and the scientific community. The employee factor included situations such as providing social activities for employees, improving employee benefits, and transportation to and from NBS.

There are some deviations from this pattern, however. Some situations, particularly the NBS budget, load on all three factors--indicating they are important to all types of employees. Congressional legislation, decisions in the Department of Commerce, decisions in the director's office, and appointments of program directors also load across factors. The greatest overlap, however, is between the administrative and research factors, indicating an overlap of interest between those employees concerned with research and those concerned with administrative matters.

The final stage of the factor analysis was the computation of a factor score for each employee respondent on each of the factors. These factor scores are the average of each person's scores on the variables making up a factor, weighted by the loading of each variable on the

factor. In other words, after the factor analysis, a person has a score on three factors rather than on 14 individual situations. These factor scores, then were used as the input in later statistical analyses.

Factor Analysis of Media Use: Because 21 different NBS media were included in the study, a factor analysis was also performed to indicate which media tend to be used together and by the same people. Five factors resulted from this analysis, factors which were named the principal media factor, the bulletin board factor, the administrative media factor, the addresses factor, and the technical seminar factor (Table 4).

The principal media factor consists primarily of these media which employees reported using most often. It includes the NBS Standard, the SEBA News, the Technical Calendar, the Credit Union Newsletter, and the Fire Prevention and Accident News. The Administrative Calendar, Administrative Bulletins, and Dimensions magazine also received substantial loadings on this factor.

The other factors represented more specialized media. The bulletin board factor consisted primarily of signs, posters, and official bulletin boards. SEBA News, the Credit Union Newsletter, and Fire Prevention and Accident Information also loaded on the factor, however. As its name implies, the administrative media factor consisted mostly of administrative outlets: press releases, Monthly Highlights, program newsletters, the Annual Report, Administrative Bulletins, Administrative Manual Issuances, and Dimensions magazine. The addresses factor consisted primarily of the State of the Bureau address and other formal addresses. Finally, the technical seminar factor consisted of technical seminars and colloquia. Most other media loaded negatively on this factor, indicating that people who attend technical seminars and colloquia tend not to use the other media. It is also interesting to note that Dimensions magazine loaded on all of these factors except the bulletin board factor, indicating that the magazine is being used by a number of different kinds of employees.

Factor scores were also computed for these five factors and input into later analyses.

Analysis of Content Preferences: In the questionnaire, employees had indicated how often they believed they would read 16 different kinds of content in NBS publications. In this case, factor analysis fit these variables into the same categories as the factor analysis of the situational variables: an administrative content factor, a research content factor, and an employee content factor (Table 5).

The major loadings in the Administrative Content Factor include news from the Department of Commerce, the NBS budget, Congressional legislation, messages from the director, reports of speeches by administrators, and news of pay and benefit plans. The research content factor consisted primarily of news of technical programs in each of the

four technical institutes. However, speeches by administrators, the budget, news from Commerce, messages from the director, and Congressional legislation also loaded on this factor, indicating that those employees with an interest in research information also have a secondary interest in these administrative items. Finally, the employee content factor was typified by news of activities at NBS, human interest stories about employees, SEBA sports activities, letters to the editor, news of appointments and awards, and news of pay and benefit plans. Historical articles about the Bureau loaded about equally on all three factors, indicating that most employees have about the same level of interest in this area.

Again these results were converted to factor scores for each respondent and used in later analyses.

Factor Analysis of Knowledge Questions: The final factor analysis was performed on nine knowledge items that had been chosen to represent different kinds of NBS situations. Whereas the content preferences had measured what employees say they would like to hear, the knowledge items determined whether in fact they had heard those kinds of information. Again, these items factored into three factors similar to those found for other variables: an administrative factor, a research factor, and an employee factor (Table 6).

The most important items on the Administrative Factor were the appointment of an institute director, the appointment of the Under-Secretary of Commerce, and the 1977 NBS budget. The most important loadings on the research factor were four research items from each of the technical institutes. The administrative items also had moderate loadings on the research factor, however. The most important items on the employee factor were the softball team reaching tournament finals and the "flextime" experiment for civil service employees. However, two research items and two administrative items also loaded highly on this factor, as they did on all three factors. These four items, the budget, under secretary appointment, flame inhibitors, and standards for toys thus seemed to have been heard by employees with all three types of information needs.

As with the other factor analyses, factor scores again were computed for use in further analysis.

After these preliminary factor analyses to reduce the data to more manageable categories, the next step was to combine the categories into a profile of employee situations. For this purpose, a canonical correlation analysis was performed to correlate the situational variables with the communication variables, thus making it possible to use the situational variables to explain the content preferences, knowledge levels, and media use of different types of NBS employees.

A canonical correlation works somewhat like a simple correlation which is used to determine the extent to which two variables are associated with one another. For example, the attribute of blond hair may be correlated with the attribute of blue eyes, and a high correlation coefficient would indicate that blond-haired people tend to have blue eyes. Canonical correlation works in much the same way, except that instead of two variables several variables are correlated simultaneously with several other variables. The result is a set of canonical variates that are much like the factors that result from factor analysis. In contrast to factor analysis, however, canonical correlation begins with two sets of variables--one set of independent variables and one set of dependent variables--rather than a single set of interrelated variables. Canonical variates, then, consist of sets of independent and dependent variables which are maximally correlated with each other. In this study, the Grunig situational variables were the independent variables and they were used to explain the dependent communication variables. The variables used in the canonical correlation were the seven sets of factor scores which resulted from the preliminary factor analyses and the variable of how much time employees reported spending each week with NBS media.

As used in this study, the canonical variates can be interpreted as different kinds of communication behavior patterns exhibited by Bureau employees. Any one employee may engage in more than one of these behavior patterns, but for simplicity each employee was assigned into an employee type, as determined by his highest score on the canonical variates. Canonical variate scores can be computed for each person just as factor scores are computed from factor analysis, and these scores--from the independent variables half of the analysis (the situational variables)--were used to place employees into types. The types then were cross-tabulated with demographic variables to make identification and location of each employee type possible.

As Table 7 indicates, four statistically significant canonical variates resulted. Three of them corresponded to the three sets of factors that had resulted in earlier stages, a research variate, an administrative variate, and an employee variate. A fourth variate also resulted, however, which can be named the non-involved variate. We will describe that fourth variate in more detail later, but its characteristics seem to represent an important type of employee behavior. That behavior seems to be characterized by a lack of involvement in Bureau situations, a high level of constraints in those situations, and a lack of attention to Bureau media and information.

The research variate seems to describe a type of employee who pays most attention to research-related situations at the Bureau. The type's highest level of problem recognition occurs in research situations. However, this type does not feel particularly involved, feels constrained, and does not have a referent criterion in research situations. This type no doubt represents scientists engaged in research. Thus it seems

anomalous that these people are only average in involvement, are high in constraints, and are low in having a referent criterion. The explanation seems to lie in the fact that the items in which employees responded concerned all kinds of research in the Bureau. Thus, these employees may be involved, unconstrained, and have knowledge in their own research field, but would not perceive other research situations in the same way.

Thus, this type perceives research situations in a way that, theoretically, can be labeled low involvement, constrained behavior without a referent criterion. The probabilities shown previously in Table 1 indicate that this type of employee would be moderately high in both seeking and processing research information, and the communication variable scores in Table 7 bear this out. Time spent with NBS media has neither a positive nor negative relationship with this variate indicating only an average time spent seeking a wide range of Bureau information. But the scores on addresses and seminars is high, indicating seeking of more specialized information. The type does show a preference for research content over other types of content and is more likely to have heard the research items than the other items (probably because they have processed available research information rather than sought it out). That the type is not an active information seeking type is also shown by average scores on use of principal media, administrative media and bulletin boards.

The situational variables for the research type also indicate that it would be likely to process administrative information (low involvement problem-facing behavior with a referent criterion), although the moderate presence of a referent criterion indicates that this type believes it knows how to deal with administrative situations. The research type, however, would be unlikely either to process or seek employee information (low involvement fatalistic behavior with a referent criterion.) Both predictions are borne out by the communication scores in Table 7.

The second variate clearly represents a type of employee who is most involved in administrative situations. The type perceives administrative situations as high involvement problem-facing situations with no referent criterion present, a way of perceiving situations that Table 1 indicates should lead to maximum processing and seeking of administrative information. The bottom half of Table 7 strongly supports this prediction. But this type also perceives employee situations in the same way, and Table 7 also supports the prediction that the administrative type will both seek and process employee information.

The administrative type perceives research situations as low involvement constrained situations with no referent criterion. Thus, it could also be expected to process but not to actively seek research information, a prediction also supported by Table 7. Because the score on knowledge of research information is lower than the score for interest in research content, this type seems to have a desire to process research information but does not actually carry out this desire.

The third variable represents a type of employee who would be most likely to communicate about employee situations. It views employee situations as high involvement problem facing situations with a referent criterion present. As predicted this type expresses a strong preference for employee content, but interestingly has a negative score in actually having heard employee items. This could have resulted from the presence of a referent criterion. Or it could have resulted because the employee knowledge factor contained a number of administrative items, and this type scored particularly low in interest in administrative information. The employee type should also process research information (it viewed research situations as low-involvement problem-facing situations without a referent criterion), and the scores on research content, research knowledge and attendance at addresses and seminars bear this out. This type also should have no interest in administrative information (low involvement routine habit without a referent criterion) and the communication and media scores support this completely.

The final variate, which we have called the noninvolved variate, represents a type of employee who recognizes problems and thinks about all three types of situations. Nevertheless, the other three situational variables discourage information seeking--although not information processing--in employee and administrative situations. Low involvement, high constraints, and the presence of a referent criterion would discourage seeking of employee-related information and high constraint and low involvement would discourage seeking of administrative information. A problem-facing situation with regard to research situations, however, should stimulate this type to seek research information although a moderate involvement level may limit this type to the processing of research information. That prediction is supported by a strong expressed interest in research information but is not supported by a negative score on knowledge of research items. Interestingly, the type has opposite scores also on its expressed preference for administrative content (positive score) and employee content (negative score) and its actual knowledge of administrative information (negative score) and employee information (positive score).

The best explanation is that this fourth type does not feel involved in most Bureau situations and thus spends little time seeking information (note negative coefficient for time spent on media). However, this type is more likely than other types to use the principle Bureau media--not doubt by processing information easily available in these media--and its knowledge level simply reflects the agenda set by these principle media. Such results can generally be expected in low involvement situations. In any case, this fourth type does appear to represent a type of employee which is largely unconcerned with the kinds of communication formally carried out at the Bureau.

One overall conclusion that can be drawn from Table 7 is that the level of involvement variables generally did not come out with high

coefficients on the canonical variates. The one exception is the level of involvement in employee situations. There could be many reasons for this lack of correlation, but the most plausible seems to be that employees do not perceive that most of the situations measured involve them. Table 2, as discussed above, showed the involvement scores to be skewed to the lower end of the scale, and in most of the situations a third to a half of the respondents said they could see no connection between themselves and the situations. Since the correlations were low with the involvement variables we can conclude that perceived involvement is low for most employees and that this low involvement does not differ much for the four types of employees. The exception, again, is employee situations in which some employees perceive a higher involvement than others.

We will return to the implications of this result later, but it should be said here that it probably indicates that employee communication programs, in this organization at least, must communicate information that does not involve the employees receiving it. Thus employees will process the information if it is not difficult to obtain but will not expend much effort in seeking out the information. Again, the small amount of time employees report they spend reading NBS publications support this conclusion.

We can then turn to a comparison of the demographic characteristics of these four employee types. Tables 8 to 13 show that the types differ significantly on all of the demographic measures. It should be noted first that approximately equal numbers of NBS employees had their highest scores on each of the four types, although there are slightly more employees on the noninvolved type than on the other types.

Table 8 shows that the research type is older than the other types and has been with the Bureau longer. The administrative type and the noninvolved type are not younger than the other types but have been with the Bureau fewer years. Table 9 shows that employees in the four technical institutes are most likely to be found in the research type, although this is less true for employees in the Institute for Computer Sciences and Technology. The administrative type consists mostly of employees in the Office of the Director and in the Office of Administration. Employees in the Office of Information Programs tend to split between the research type and the administrative type although more are found in the research type. Finally, Table 9 shows that employees in the employee type and the noninvolved type come from all organizational units. Thus, it would seem that the employee and noninvolved types consist of employees who are on the fringes of being actively involved in the programs for which they work and thus are most concerned with their status as employees or tend not to be concerned with the Bureau at all.

A similar pattern shows up when the types are compared by education (Table 10). The research-oriented employees have high levels of education, the administrative-oriented employees lower levels of education,

and the employee-oriented and noninvolved employees come from all educational levels. Comparison of the types by job description and salary grade also supports that pattern. Most of the research type are professionals, most of the administrative type are administrative, wage scale, or clerical employees, and the employee and noninvolved types come from all job descriptions. Research-type employees come from higher salary grades and administrative-type employees from lower salary grades (although a number of higher-grade administrators also fit into the administrative type). The employee type and noninvolved type come from all but the highest salary scales. Tables 11 and 12 show, however, that the noninvolved type consists mostly of wage scale, technician, and clerical employees in lower salary scales.

Finally, Table 13 compares the types by sex, and shows that males are more likely than females to be in the research type while the sex distribution in the employee type is about the same as in the Bureau as a whole. Females, however, are more likely than males to be in the administrative and noninvolved types.

As a final comparison of the four types of employees, the types were cross tabulated by the media questions that were not included in the canonical correlation analysis. Table 14 shows that when asked which Bureau publication they would read if they could read only one, the research type chose the Technical Calendar and Dimensions magazine. The other three types chose the Technical Calendar and the Standard in that order, although both the employee type and the noninvolved type had Dimensions in third place (both types also expressed an interest in research content). The administrative type also expressed interest in the Administrative Calendar. Thus, all types tend to choose the two principle NBS news publications first, but there is an across-the-board interest in a research-oriented publication--i.e., Dimensions.

A comparison of the responses to the question asking if there was any redundancy in NBS media showed little deviation from the overall pattern discussed earlier. The noninvolved type generally saw less redundancy, probably because it spends less time with the media. Generally, however, all types reported little redundancy in media content.

Table 15 compares the responses of each of the types to the series of questions asking them to compare and evaluate various NBS media. Most of these results do not deviate from the overall pattern. The only difference is that the research type said "other employees" are its first source of information whereas other types choose the Standard. Likewise, the research type said its supervisor is the most dependable source of information and the others chose the Standard or the Technical Calendar. Also, the research type said the supervisor provides the most complete information while the others choose the Standard or the Technical Calendar. Otherwise, all types say the Technical Calendar is most useful,

all would choose the Standard to communicate information about themselves, and all think the Standard presents the most accurate picture of Bureau events and people.

Finally, the four types were compared on the media from which they had heard the items of information included in the knowledge questions. Most of the differences here were in whether the types had heard the items, as already discussed in presenting the canonical correlation results. When employees had heard the information, all types tended to hear it from the same place. Likewise, these knowledge sources showed no dominant medium. Rather, employees with knowledge of Bureau news tended to pick it up from a number of sources.

Conclusions and Recommendations

The results of this study seem to suggest three major conclusions about employee communications in the National Bureau of Standards. First, the results suggest that NBS employee media contain information about situations which employees do not perceive to involve them. Second, the study has isolated four types of employee publics with different communication behaviors, different information needs, and for which different communication strategies are necessary. Finally, the results make it possible to evaluate whether existing NBS media currently meet the internal communication needs of the Bureau and whether changes are necessary.

The first conclusion is an important one for a scientific organization like the Bureau which has a high proportion of professional employees. An organization of this type typically grants its employees a great deal of autonomy in their work so as to maximize innovation. In other words, professional employees are allowed a great deal of personal involvement in their own work. What this study seems to have shown, however, is that this involvement in one's own work is accompanied by a low level of involvement in the overall administration of the organization and in the activities of other employees. In a decentralized organization, internal communication is especially important if the activities of employees are to be coordinated. However, it is difficult to force employees to communicate and if their level of involvement is low they will seldom actively communicate--seek information--about the situations which do not involve them.

The study also indicates, however, that employees will process information about low-involvement problems. In other words, employees can be informed about administrative and research activities of the Bureau but such information is not really as critical to them as is information directly relevant in their day-to-day jobs. While internal communication in such a setting cannot secure active cooperation among professionals and between administrators and other employees, it can secure awareness of and perhaps appreciation of one another's problems and activities.

The nature of the information that employees will process, however, differs by types of employees. The research-oriented type--which consists mostly of scientists--will process research information and to some extent administrative information, particularly such administrative information as budgets, Congressional legislation, and decisions in the Department of Commerce and the Director's office. The administration-oriented type consists both of top administrators and of lower-level administrative and clerical aides. They think most about administrative problems, but also pay attention to employee and research problems. They are also highly involved in employee situations and moderately involved in administrative situations. Thus they will process--and perhaps actively seek--administrative information and employee information and are most likely to use administrative media. They are also predisposed to process research information, but in practice do not seem to have time to do so.

The employee oriented type seems to consist of employees from many levels and positions of the Bureau who are probably less involved in their own work than the first two types and as a result are mostly concerned with their status as employees. Although they indicate an interest in employee and research information, in practice they demonstrate only a moderate awareness of this type of information. The fourth, noninvolved type, thinks about most of the situations which were measured but because of a low level of perceived involvement or high perceived constraints seeks or processes little information. This type consists mostly of nonprofessional employees from several different organizational levels. This last type does use the principal NBS media, however, and thus processes the information available in these media. They are most likely, however, to process such employee-related information as items about social and recreational activities and employee benefits, rather than information about the research or administrative activities of the Bureau.

The use employees make of NBS media begins to make sense when it is compared with each employee type's perception of Bureau situations. The two most frequently used publications, the Technical Calendar and the NBS Standard are publications used by all types, but particularly by the employee-oriented and noninvolved types. These are broad-scale media which, in essence, indicate what is on the Bureau's agenda. Reading enough to know what is on the agenda is typical behavior for noninvolved people--e.g., watching television news or scanning newspaper headlines. Thus, the roles of these two media are simply to let people know what is happening. Likewise, the noninvolved types also are most likely to scan bulletin boards. The research-oriented and administrative-oriented employees, however, use more specialized media--addresses, seminars, and Dimensions magazine for research and the Administrative Calendar, Administrative Issuances, and addresses for administrative information. Thus, there seems to be little overlap in NBS media. Some simply tell

people what is on the agenda, some provide research information, and others provide administrative information.

However, there do seem to be some gaps which either modified or new media should fill. Most of the employee types--but especially the research and administrative types--are interested in information about budgets, Congressional legislation, decisions in the Department of Commerce, and decisions in the Director's Office. If such information were provided more and in more depth in the Standard it could become a publication that is sought out rather than simply processed. Finally, a large group of people need information about the research activities in the Bureau, and no single publication now seems to do this. If possible, Dimensions magazine should be distributed to all Bureau employees, and in particular to the scientists that make up the research type. The recent conversion of Dimensions to a more technical publication also would seem to strengthen its utility for these people. Second, more research items could be included in the Standard. And open houses, in which employees can observe research activities of others, would seem desirable.

Finally, some recommendations for the NBS Standard seem to be in order. Most commercial newspapers follow a format in which the news most relevant to all readers is put on the front page and in which specialized information is placed in specialized sections. This format also seems ideal for the Standard. The front pages should contain the most relevant information for everyone--budgets, legislation, major decisions, etc. Inside there should be a specialized research section for research-oriented employees and an employee news section for employee-oriented employees. There might also be a specialized section for administrative news of concern to administrative-oriented employees, although several specialized media now serve this function.

TABLE 1

Conditional Probabilities of Information Processing and Information Seeking
for 16 Communications Situations.

	<u>High Involvement</u>		<u>Low Involvement</u>	
	<u>Information Processing</u>	<u>Information Seeking</u>	<u>Information Processing</u>	<u>Information Seeking</u>
<u>Problem Facing Behavior</u>				
<u>With referent criterion</u>	70%	51%	70%	51%
<u>Without referent criterion</u>	77%	55%	78%	49%
<u>Constrained Behavior</u>				
<u>With referent criterion</u>	63%	45%	57%	31%
<u>Without referent criterion</u>	69%	50%	62%	30%
<u>Routine Habit Behavior</u>				
<u>With referent criterion</u>	57%	48%	63%	23%
<u>Without referent criterion</u>	41%	35%	44%	41%
<u>Fatalistic Behavior</u>				
<u>With referent criterion</u>	43%	12%	39%	12%
<u>Without referent criterion</u>	36%	13%	32%	13%

Probability of information processing over all conditions was 61% for information processing, 40% for information seeking, and 46% for joining an organization.

Source: James E. Grunig, "A Situational Explanation of Environmental Communication Behavior," manuscript submitted for publication, December 1976.

Table 2. Results of Employee Communications Study for Entire Sample

- I. The first set of questions asked about media used to communicate with employees at the Bureau. You may not have received some of these publications. For each question place a check in the column that best describes your answer.

	(5) Always	(4) Most of the time	(3) About Half of the Time	(2) Hardly Ever	(1) Never or Don't Receive	Mean Score
1. How often do you read:						
NBS Standard.....	<u>49.4</u>	<u>34.5</u>	<u>11.8</u>	<u>2.8</u>	<u>1.4</u>	(4.3)
Technical Calendar... Administrative	<u>53.9</u>	<u>29.2</u>	<u>10.0</u>	<u>3.6</u>	<u>3.3</u>	(4.3)
Calendar..... Administrative	<u>29.6</u>	<u>21.8</u>	<u>10.9</u>	<u>11.4</u>	<u>26.2</u>	(3.2)
Bulletins.....	<u>25.8</u>	<u>26.0</u>	<u>14.6</u>	<u>15.8</u>	<u>17.8</u>	(3.3)
Fire Prevention and Accident Information.	<u>27.4</u>	<u>34.0</u>	<u>21.2</u>	<u>12.3</u>	<u>5.2</u>	(3.7)
NBS Press Releases...	<u>8.2</u>	<u>16.2</u>	<u>14.5</u>	<u>23.7</u>	<u>37.3</u>	(2.3)
Monthly Highlights...	<u>15.9</u>	<u>21.4</u>	<u>19.5</u>	<u>19.0</u>	<u>24.1</u>	(2.9)
Program Newsletters..	<u>3.7</u>	<u>9.4</u>	<u>14.1</u>	<u>22.2</u>	<u>50.6</u>	(1.9)
NBS Annual Report....	<u>14.7</u>	<u>15.9</u>	<u>15.2</u>	<u>20.7</u>	<u>33.5</u>	(2.6)
Dimensions Magazine..	<u>21.0</u>	<u>26.3</u>	<u>20.0</u>	<u>16.2</u>	<u>16.4</u>	(3.2)
Administrative Manual Issuances.....	<u>18.8</u>	<u>15.4</u>	<u>12.7</u>	<u>17.1</u>	<u>35.9</u>	(2.6)
Signs posted through- out the buildings.	<u>9.8</u>	<u>37.6</u>	<u>31.9</u>	<u>17.7</u>	<u>2.9</u>	(3.3)
Official bulletin boards.....	<u>7.9</u>	<u>20.6</u>	<u>31.2</u>	<u>35.0</u>	<u>5.3</u>	(2.9)
Posters.....	<u>9.3</u>	<u>27.8</u>	<u>37.3</u>	<u>20.6</u>	<u>5.0</u>	(3.2)
SEBA News.....	<u>29.4</u>	<u>28.9</u>	<u>24.2</u>	<u>11.5</u>	<u>6.0</u>	(3.6)
Credit Union News- letter.....	<u>23.0</u>	<u>25.4</u>	<u>19.2</u>	<u>16.9</u>	<u>15.4</u>	(3.2)
2. How often do you attend:						
State of the Bureau address.....	<u>22.7</u>	<u>23.0</u>	<u>15.6</u>	<u>19.2</u>	<u>19.4</u>	(3.1)
Other formal addresses by high-ranking NBS officials.....	<u>3.8</u>	<u>19.3</u>	<u>23.4</u>	<u>32.0</u>	<u>21.5</u>	(2.5)
Technical seminars...	<u>1.0</u>	<u>13.6</u>	<u>28.4</u>	<u>30.5</u>	<u>26.5</u>	(2.3)
Colloquia.....	<u>0.5</u>	<u>10.5</u>	<u>25.4</u>	<u>32.1</u>	<u>31.6</u>	(2.2)

3. If you had time to read only one NBS publication, which would you read? (check one)

23.4 NBS Standard (1)
17.9 Dimensions magazine (2)
38.8 Technical Calendar (3)
9.1 Administrative Calendar (4)
4.5 Administrative Issuances (5)
4.5 Monthly Highlights (6)
1.7 Program Newsletters (7)

4. About how much time would you estimate you spend each week reading NBS publications such as those just mentioned?

1.9 No time (1)
68.2 Some time, but less than 1 hour (2)
28.1 1-3 hours (3) Mean = 2.3
1.7 4-6 hours (4)
0.2 More than 6 hours (5)

5. How often would you say you see information in the following NBS publications which you have already heard from other sources?

	(5) <u>Often</u>	(4) <u>Sometimes</u>	(3) <u>Rarely</u>	(2) <u>Never</u>	(1) <u>I Don't Receive</u>	Mean
NBS Standard.....	<u>13.3</u>	<u>46.7</u>	<u>28.0</u>	<u>10.1</u>	<u>1.9</u>	(3.6)
Dimensions magazine...	<u>8.3</u>	<u>35.0</u>	<u>30.1</u>	<u>14.3</u>	<u>12.4</u>	(3.1)
Technical Calendar....	<u>3.7</u>	<u>30.6</u>	<u>41.6</u>	<u>19.8</u>	<u>4.4</u>	(3.1)
Administrative Calendar.....	<u>3.7</u>	<u>23.3</u>	<u>27.8</u>	<u>15.4</u>	<u>29.8</u>	(2.6)
Administrative Issuances.....	<u>2.5</u>	<u>21.0</u>	<u>26.2</u>	<u>17.0</u>	<u>33.3</u>	(2.4)
Monthly Highlights...	<u>5.2</u>	<u>28.7</u>	<u>24.3</u>	<u>16.5</u>	<u>25.3</u>	(2.7)
Program Newsletters..	<u>1.5</u>	<u>15.4</u>	<u>18.1</u>	<u>16.9</u>	<u>48.1</u>	(2.1)

6. Next, would you indicate about how often you would read each of the following types of articles if it appeared in an NBS publication? Would you read it?

	(5) <u>Always</u>	(4) <u>Most of the time</u>	(3) <u>Half the time</u>	(2) <u>Hardly Ever</u>	(1) <u>Never</u>	Mean
News of appointments or awards.....	<u>26.1</u>	<u>39.7</u>	<u>19.7</u>	<u>12.1</u>	<u>2.4</u>	(3.8)
News about pay and benefit plans.....	<u>49.5</u>	<u>31.0</u>	<u>12.6</u>	<u>6.2</u>	<u>0.7</u>	(4.2)
Stories about social activities at NBS..	<u>14.5</u>	<u>25.7</u>	<u>28.6</u>	<u>26.0</u>	<u>5.2</u>	(3.2)
News about SEBA sports activities.....	<u>10.5</u>	<u>18.4</u>	<u>24.6</u>	<u>34.7</u>	<u>11.7</u>	(2.8)
Letters to editor and responses.....	<u>14.7</u>	<u>33.4</u>	<u>27.7</u>	<u>20.4</u>	<u>3.8</u>	(3.3)

6. (Continued)	(5)	(4)	(3)	(2)	(1)	
	<u>Always</u>	<u>Most of the time</u>	<u>Half the time</u>	<u>Hardly Ever</u>	<u>Never</u>	<u>Mean</u>
News on Congressional Legislation af- fecting NBS.....	<u>31.4</u>	<u>46.0</u>	<u>14.5</u>	<u>7.4</u>	<u>0.7</u>	(4.0)
Human Interest Stories about NBS employees	<u>17.4</u>	<u>35.8</u>	<u>32.2</u>	<u>12.6</u>	<u>1.9</u>	(3.5)
Messages from the Director.....	<u>29.0</u>	<u>41.1</u>	<u>19.5</u>	<u>8.6</u>	<u>1.9</u>	(3.9)
News from the Depart- ment of Commerce affecting NBS.....	<u>30.3</u>	<u>43.2</u>	<u>18.9</u>	<u>6.0</u>	<u>1.7</u>	(3.9)
Historical articles about the Bureau...	<u>19.6</u>	<u>38.3</u>	<u>31.6</u>	<u>8.6</u>	<u>1.9</u>	(3.7)
News about the NBS budget.....	<u>24.0</u>	<u>33.1</u>	<u>24.7</u>	<u>15.1</u>	<u>3.1</u>	(3.6)
News of technical pro- grams in the Insti- tute for Basic Standards.....	<u>14.9</u>	<u>26.4</u>	<u>27.8</u>	<u>24.5</u>	<u>6.5</u>	(3.2)
News of technical pro- grams in the Insti- tute for Materials Research.....	<u>14.6</u>	<u>25.4</u>	<u>27.1</u>	<u>26.1</u>	<u>6.7</u>	(3.2)
News of technical pro- grams in the Insti- tute for Applied Technology.....	<u>14.4</u>	<u>27.8</u>	<u>27.0</u>	<u>25.4</u>	<u>5.5</u>	(3.2)
News of technical pro- grams in the Insti- tute for Computer Sciences and Techno- logy.....	<u>10.8</u>	<u>21.2</u>	<u>27.5</u>	<u>30.6</u>	<u>9.9</u>	(2.9)
Reports of speeches by NBS administrators..	<u>3.8</u>	<u>15.6</u>	<u>28.4</u>	<u>40.1</u>	<u>12.0</u>	(2.6)

7. Answer each of the following questions by checking the most appropriate sources of information about the Bureau.

	(1) Your Supervisor	(2) Other Employees	(3) NBS Standard	(4) Dimensions magazine	(5) Admin. Calendar	(6) Technical Calendar	(7) Bulletin Boards	(8) Admin. Issuances
--is the source from which you first get information about Bureau activities.....	<u>12.0</u>	<u>27.4</u>	<u>31.3</u>	<u>7.6</u>	<u>3.7</u>	<u>15.4</u>	<u>1.6</u>	<u>1.0</u>
--is the most dependable source of NBS information.....	<u>17.5</u>	<u>13.9</u>	<u>19.4</u>	<u>8.4</u>	<u>4.7</u>	<u>25.7</u>	<u>1.6</u>	<u>8.9</u>
--is the most useful to you.....	<u>20.6</u>	<u>15.1</u>	<u>12.8</u>	<u>4.4</u>	<u>10.2</u>	<u>32.6</u>	<u>1.6</u>	<u>2.9</u>
--do you feel provide the most complete information.....	<u>17.2</u>	<u>13.1</u>	<u>21.7</u>	<u>14.7</u>	<u>6.1</u>	<u>18.6</u>	<u>0.6</u>	<u>8.1</u>
--would you choose to communicate news about yourself (such as awards, retirement, etc.).....	<u>12.4</u>	<u>6.3</u>	<u>54.9</u>	<u>3.6</u>	<u>10.7</u>	<u>10.2</u>	<u>0.3</u>	<u>1.6</u>
--do you think presents the most accurate picture of Bureau events and people.....	<u>6.6</u>	<u>12.1</u>	<u>52.1</u>	<u>17.0</u>	<u>1.6</u>	<u>9.3</u>	<u>0.3</u>	<u>1.1</u>
Check any of these sources which you save for future reference..	<u>31.5</u>	<u>28.0</u>	<u>9.4</u>	<u>18.4</u>	<u>1.2</u>	<u>22.8</u>

Would you now indicate, by checking the appropriate column for each question whether you have heard each of the following items of information about the Bureau and, if you have heard it, your best estimate of where you first heard it?

(1) I haven't heard this (2) NBS Standard magazine (3) Dimensions (4) Admin. Memos (5) Other NBS Media (6) Outside Media (7) Your Supervisor (8) Other Employees (9) Other

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
--Jim Wright was named Acting Director of Institute for Applied Technology....	40.8	15.0	0.7	8.4	1.5	0.0	9.6	21.6	2.5
--The NBS Budget for fiscal year 1977 increased only enough to cover increased costs of doing business over 1976.....	54.4	3.9	0.7	0.2	2.0	1.5	20.4	13.5	3.2
--The House has approved a 2-year experiment in "flex-time" for civil service employees.....	40.2	3.2	0.7	1.0	2.0	31.7	2.9	12.7	5.6
--Edward O. Vetter named Under Secretary of Commerce.	65.1	6.7	0.7	2.7	2.2	11.1	3.7	3.0	4.7
--NBS studies show flame inhibitors not always effective in full-scale fires..	54.3	6.9	14.6	0.5	5.7	5.2	0.7	7.7	4.4
--NBS has published voluntary product standards for toys.....	37.1	14.0	19.5	0.3	6.8	7.0	1.5	9.5	4.3
--The NBS softball team reached the finals of the Dept. of Commerce Tournament.....	60.8	24.9	1.0	0.0	4.4	0.5	0.2	6.1	2.2
--NBS has helped the Bureau of Radiological Health control x-rays through Calibration service.....	69.5	6.1	9.6	0.0	4.9	0.2	1.5	5.4	2.7
--Cerebellar Model Arithmetic Computer developed at NBS won an Award from Industrial Research Magazine	68.5	9.8	5.4	0.5	3.7	5.9	2.4	1.5	2.4

II. After each of the next four questions, several situations or issues are listed which might be considered important for you or the Bureau to think about. Answer the question for each item, placing a sheet in the column that best describes your answer.

1. Is this something you stop to think about?

	(4) <u>Often</u>	(3) <u>Sometimes</u>	(2) <u>Rarely</u>	(1) <u>Never</u>	<u>Mean</u>
Improving employee benefits.....	<u>19.8</u>	<u>38.8</u>	<u>32.3</u>	<u>9.2</u>	(2.7)
Public understanding of NBS research.....	<u>34.2</u>	<u>44.5</u>	<u>15.7</u>	<u>5.7</u>	(3.1)
Research and services of the Institute for Computer Sciences & Technology.....	<u>15.5</u>	<u>21.5</u>	<u>33.4</u>	<u>29.5</u>	(2.2)
The NBS Budget.....	<u>21.6</u>	<u>39.6</u>	<u>28.2</u>	<u>10.7</u>	(2.7)
Transportation to and from NBS..	<u>25.9</u>	<u>34.4</u>	<u>26.3</u>	<u>13.4</u>	(2.7)
Research and services of the Institute for Basic Standards	<u>17.2</u>	<u>28.6</u>	<u>33.0</u>	<u>21.1</u>	(2.4)
The relationship between NBS and the scientific community.....	<u>28.4</u>	<u>41.7</u>	<u>19.7</u>	<u>10.2</u>	(2.9)
Providing social activities for NBS employees.....	<u>6.3</u>	<u>22.6</u>	<u>41.4</u>	<u>29.7</u>	(2.1)
Research and services of the Institute for Materials Research.....	<u>18.0</u>	<u>23.4</u>	<u>33.6</u>	<u>25.1</u>	(2.3)
Appointments of new NBS pro- gram directors.....	<u>9.5</u>	<u>31.9</u>	<u>35.0</u>	<u>23.6</u>	(2.3)
Congressional legislation that affects NBS.....	<u>25.2</u>	<u>48.3</u>	<u>19.0</u>	<u>7.5</u>	(2.9)
Decisions in the Department of Commerce affecting NBS.....	<u>25.4</u>	<u>45.5</u>	<u>22.0</u>	<u>7.2</u>	(2.9)
Research and services of the Institute for Applied Tech- nology.....	<u>16.1</u>	<u>25.2</u>	<u>38.1</u>	<u>20.6</u>	(2.4)
Decisions made in the NBS Director's Office.....	<u>24.0</u>	<u>45.4</u>	<u>20.2</u>	<u>10.3</u>	(2.8)

2. To what extent do you see a connection between yourself and each of the following? Is the connection:

	(4) <u>Strong</u>	(3) <u>Moderate</u>	(2) <u>Weak</u>	No (1) <u>Connection</u>	
Improving employee benefits.....	<u>11.6</u>	<u>24.6</u>	<u>32.8</u>	<u>31.1</u>	(2.2)
Public understanding of NBS research.....	<u>23.4</u>	<u>35.5</u>	<u>26.1</u>	<u>15.0</u>	(2.7)
Research and services of the Institute for Computer Sciences and Technology.....	<u>8.9</u>	<u>15.9</u>	<u>28.3</u>	<u>46.9</u>	(1.9)

II. 2. (Continued)

	(4) <u>Strong</u>	(3) <u>Moderate</u>	(2) <u>Weak</u>	No (1) <u>Connection</u>	<u>Mean</u>
The NBS Budget.....	<u>17.4</u>	<u>24.7</u>	<u>26.4</u>	<u>31.5</u>	(2.3)
Transportation to and from NBS..	<u>13.5</u>	<u>22.8</u>	<u>31.0</u>	<u>32.7</u>	(2.2)
Research and services of the Institute for Basic Standards	<u>13.9</u>	<u>21.8</u>	<u>26.6</u>	<u>37.7</u>	(2.1)
The relationship between NBS and the scientific community.....	<u>21.3</u>	<u>33.7</u>	<u>27.1</u>	<u>18.0</u>	(2.6)
Providing social activities for NBS employees.....	<u>3.8</u>	<u>16.5</u>	<u>33.2</u>	<u>46.6</u>	(1.8)
Research and services of the Institute for Materials Research.....	<u>16.2</u>	<u>18.5</u>	<u>23.0</u>	<u>42.3</u>	(2.1)
Appointments of new NBS pro- gram directors.....	<u>6.9</u>	<u>17.0</u>	<u>24.9</u>	<u>51.1</u>	(1.8)
Congressional legislation that affects NBS.....	<u>18.8</u>	<u>21.8</u>	<u>22.1</u>	<u>37.3</u>	(2.2)
Decisions in the Department of Commerce affecting NBS.....	<u>16.8</u>	<u>22.3</u>	<u>24.4</u>	<u>36.5</u>	(2.2)
Research and services of the Institute for Applied Tech- nology.....	<u>13.4</u>	<u>18.5</u>	<u>25.8</u>	<u>42.3</u>	(2.0)
Decisions made in the NBS Director's Office.....	<u>14.8</u>	<u>25.7</u>	<u>24.7</u>	<u>34.9</u>	(2.2)

3. How much experience or knowledge do you have that could help you make judgments about each of the following?

	(4) A Great Deal	(3) Some-thing	(2) Very Little	(1) None	Mean
Improving employee benefits.....	4.3	34.1	44.5	17.0	(2.3)
Public understanding of NBS research.....	12.0	48.7	27.3	12.0	(2.6)
Research and services of the Institute for Computer Sciences & Technology.....	7.4	16.8	29.3	46.6	(1.9)
The NBS Budget.....	5.4	24.2	37.5	32.9	(2.0)
Transportation to and from NBS..	7.7	35.6	36.9	19.8	(2.3)
Research and services of the Institute for Basic Standards	7.6	25.4	29.2	37.8	(2.0)
The relationship between NBS and the scientific community.....	12.5	40.1	26.8	20.7	(2.4)
Providing social activities for NBS employees.....	1.3	19.0	39.6	40.1	(1.8)
Research and services of the Institute for Materials Research.....	9.7	19.2	27.4	43.7	(1.9)
Appointments of new NBS program directors.....	1.8	14.7	32.6	50.9	(1.7)
Congressional legislation that affects NBS.....	3.3	28.9	32.2	35.5	(2.0)
Decisions in the Department of Commerce affecting NBS.....	3.6	25.3	35.7	35.5	(2.0)
Research and services of the Institute for Applied Technology.....	6.9	22.3	30.3	40.5	(2.0)
Decisions made in the NBS Director's Office.....	3.8	27.8	33.2	35.2	(2.0)

4. How much could you do, personally, that might improve the handling of each of the following?

	(1) A Great Deal	(2) Some-thing	(3) Very Little	(4) Nothing	
Improving employee benefits.....	1.6	19.9	48.6	30.0	(3.1)
Public understanding of NBS research.....	9.0	44.2	32.0	14.7	(2.5)
Research and services of the Institute for Computer Sciences & Technology.....	6.5	9.9	27.9	55.6	(3.3)
The NBS Budget.....	3.1	12.9	34.8	49.2	(3.3)
Transportation to and from NBS..	1.6	22.2	43.9	32.3	(3.1)

II. 4. (Continued)

	(1) A <u>Great Deal</u>	(2) Some- thing	(3) Very Little	(4) Nothing	Mean
Research and services of the Institute for Basic Standards	<u>4.7</u>	<u>18.9</u>	<u>28.6</u>	<u>47.8</u>	(3.2)
The relationship between NBS and the scientific community.....	<u>9.7</u>	<u>37.5</u>	<u>28.3</u>	<u>24.6</u>	(2.7)
Providing social activities for NBS employees.....	<u>1.2</u>	<u>19.2</u>	<u>39.6</u>	<u>40.0</u>	(3.2)
Research and services of the Institute for Materials Research.....	<u>6.0</u>	<u>16.7</u>	<u>26.4</u>	<u>50.9</u>	(3.2)
Appointments of new NBS pro- gram directors.....	<u>1.7</u>	<u>8.7</u>	<u>30.6</u>	<u>59.0</u>	(3.5)
Congressional legislation that affects NBS.....	<u>2.2</u>	<u>13.2</u>	<u>32.9</u>	<u>51.6</u>	(3.3)
Decisions in the Department of Commerce affecting NBS.....	<u>3.0</u>	<u>12.4</u>	<u>31.3</u>	<u>53.2</u>	(3.3)
Research and services of the Institute for Applied Tech- nology.....	<u>5.5</u>	<u>16.9</u>	<u>27.6</u>	<u>50.0</u>	(3.2)
Decisions made in the NBS Director's Office.....	<u>3.2</u>	<u>15.7</u>	<u>30.7</u>	<u>50.4</u>	(3.3)

III. Finally, please answer a few questions about yourself that are necessary for statistical tabulation.

	First Returns	Follow-up	
1. How old are you? <u>40.1</u>	<u>39.6</u>	<u>42.6</u>	(n.s)
2. How many years have you been with the Bureau? <u>10.6</u>	<u>10.1</u>	<u>12.6</u>	(5%)
3. In what major organizational unit do you work?	First Returns	Follow-up	
<u>19.8</u> Institute for Basic Standards (1)	18.6	24.4	
<u>21.6</u> Institute for Materials Research (2)	21.1	23.2	
<u>21.1</u> Institute for Applied Technology (3)	20.8	22.0	
<u>9.0</u> Institute for Computer Sciences & Technology (4)	9.5	7.3	S=.60
<u>0.8</u> Program Office (5)	0.9	0.0	
<u>3.3</u> Office of the Director (6)	3.8	1.2	
<u>19.0</u> Office of Administration (7)	18.9	19.5	
<u>5.5</u> Office of Information Programs (8)	6.3	2.4	
4. What is your highest level of education?			
<u>3.9</u> Did not complete high school (1)	2.5	9.3	
<u>13.0</u> High school graduate (2)	13.7	10.5	
<u>26.0</u> Some college or technical school (3)	26.4	24.4	S=.09
<u>12.0</u> College graduate (4)	11.8	12.8	
<u>22.5</u> Post-graduate study (5)	22.0	24.4	
<u>22.5</u> Ph.D. degree (6)	23.6	18.6	
5. Are you:			
<u>69.7</u> Male (1)	69.1	72.0	
<u>30.3</u> Female (2)	30.9	28.0	S=.71
6. What is your GS or Wage Scale rating?			
<u>6.5</u> GS4 or below (1)	6.1	8.2	
<u>20.4</u> GS 5-7 (2)	21.1	17.6	
<u>13.1</u> GS 9-11 (3)	13.1	12.9	
<u>48.7</u> GS 12-15 (4)	50.8	41.2	
<u>3.3</u> GS 16 or above (5)	2.9	4.7	S=.14
<u>6.0</u> WG (6)	4.5	11.8	
WL (7)	----	----	
<u>0.3</u> WP (8)	0.3	0.0	
<u>1.8</u> WS (9)	1.3	3.5	
7. Which of the following best describes your job:			
<u>Actual Sample</u>			
45 <u>55.0</u> Professional (Scientist, engineer, etc.) (1)	55.8	51.9	
12 <u>12.2</u> Technician (2)	11.5	15.2	
14 <u>5.2</u> Wage Scale (3)	4.0	10.1	
14 <u>19.7</u> Administrative (4)	20.2	17.7	S=.17
16 <u>7.7</u> Clerical (5)	8.4	5.1	

Table 3

Factor Loadings for 14 Communication Situations from Factor Analyses of Four Variables

	Problem Recognition		Level of Involvement		Referent Criterion		Constraints			
	Admin. Factor	Empl. Factor	Admin. Factor	Research Factor	Admin. Factor	Research Factor	Admin. Factor	Research Factor		
Improving employee benefits.....	.16	.57	.26	.09	.12	.13	.62	.16	.09	.64
Public understanding of NBS research.....	.25	.06	.20	.62	.20	.65	.18	.13	.67	.22
Research and services of the Institute for Computer Sciences and Technology.....	.14	.07	.13	.39	.22	.37	.17	.29	.46	.17
The NBS Budget.....	.48	.25	.58	.34	.46	.37	.36	.49	.43	.31
Transportation to and from NBS..	.03	.37	.22	.16	.18	.09	.53	.20	.16	.55
Research and services of the Institute for Basic Standards..	.19	.07	.16	.55	.22	.62	.07	.29	.58	.07
The relationship between NBS and the scientific community.....	.22	.06	.16	.80	.25	.84	.05	.21	.84	.09
Providing social activities for NBS employees.....	.07	.04	.13	.15	.05	.04	.57	.17	.08	.72
Research and services of the Inst. for Materials Research..	.08	.59	.22	.50	.21	.58	.06	.31	.54	.04
Appointments of new NBS program directors.....	.54	.33	.66	.29	.62	.36	.13	.72	.32	.24
Congressional legislation that affects NBS.....	.78	.32	.87	.26	.80	.36	.15	.82	.28	.19
Decisions in the Department of Commerce affecting NBS.....	.86	.14	.90	.20	.87	.27	.17	.86	.25	.23
Research and services of the Inst. for Applied Technology..	.34	.38	.41	.37	.31	.48	.11	.46	.35	.19
Decisions made in the NBS Director's Office.....	.68	.23	.81	.26	.72	.33	.24	.77	.29	.28

Table 4
Factor Loadings on Five Types of Media Use

	<u>Bulletin Board Factor</u>	<u>Admin. Media Factor</u>	<u>Principal Media Factor</u>	<u>Addresses Factor</u>	<u>Technical Seminar Factor</u>
How often do you read:					
NBS Standard.....	<u>.14</u>	<u>.15</u>	<u>.68</u>	<u>.18</u>	<u>-.02</u>
Technical Calendar....	<u>-.03</u>	<u>.14</u>	<u>.60</u>	<u>.20</u>	<u>.11</u>
Administrative Calendar.....	<u>.02</u>	<u>.32</u>	<u>.38</u>	<u>.12</u>	<u>-.28</u>
Administrative Bulletins.....	<u>.10</u>	<u>.45</u>	<u>.27</u>	<u>.14</u>	<u>-.48</u>
Fire Prevention and Accident Info.....	<u>.22</u>	<u>.20</u>	<u>.42</u>	<u>-.07</u>	<u>-.16</u>
NBS Press Releases....	<u>.18</u>	<u>.69</u>	<u>.08</u>	<u>.07</u>	<u>-.08</u>
Monthly Highlights....	<u>.06</u>	<u>.66</u>	<u>.23</u>	<u>.20</u>	<u>.06</u>
Program Newsletters...	<u>.16</u>	<u>.58</u>	<u>.05</u>	<u>-.06</u>	<u>.06</u>
NBS Annual Report.....	<u>.03</u>	<u>.53</u>	<u>.11</u>	<u>.30</u>	<u>.06</u>
Dimensions Magazine...	<u>-.12</u>	<u>.34</u>	<u>.30</u>	<u>.35</u>	<u>.10</u>
Administrative Manual Issuances.....	<u>.07</u>	<u>.39</u>	<u>.22</u>	<u>.20</u>	<u>-.40</u>
Signs posted through- out the buildings...	<u>.78</u>	<u>.04</u>	<u>.09</u>	<u>.07</u>	<u>-.08</u>
Official bulletin boards.....	<u>.67</u>	<u>.20</u>	<u>.17</u>	<u>-.02</u>	<u>-.03</u>
Posters.....	<u>.72</u>	<u>.13</u>	<u>.18</u>	<u>.04</u>	<u>-.06</u>
SEBA News.....	<u>.39</u>	<u>.03</u>	<u>.66</u>	<u>.01</u>	<u>-.10</u>
Credit Union News- letter.....	<u>.34</u>	<u>.07</u>	<u>.49</u>	<u>-.07</u>	<u>-.09</u>
How often do you attend:					
State of the Bureau address.....	<u>.08</u>	<u>.12</u>	<u>.08</u>	<u>.88</u>	<u>.09</u>
Other formal addresses by high-ranking NBS officials.....	<u>.03</u>	<u>.17</u>	<u>.10</u>	<u>.76</u>	<u>.19</u>
Technical seminars....	<u>-.06</u>	<u>.08</u>	<u>.02</u>	<u>.23</u>	<u>.79</u>
Colloquia.....	<u>-.09</u>	<u>.12</u>	<u>-.01</u>	<u>.29</u>	<u>.77</u>

Table 5
Factor Loadings on Three Types of Content Preference

	<u>Administrative Content Factor</u>	<u>Research Content Factor</u>	<u>Employee Content Factor</u>
News of appointments or awards.....	<u>.40</u>	<u>.04</u>	<u>.55</u>
News about pay and benefit plans.....	<u>.33</u>	<u>-.03</u>	<u>.48</u>
Stories about social activities at NBS.....	<u>.06</u>	<u>.05</u>	<u>.80</u>
News about SEBA sports activities.....	<u>-.07</u>	<u>.04</u>	<u>.71</u>
Letters to editor and responses.....	<u>.17</u>	<u>.16</u>	<u>.62</u>
News on Congressional legislation affecting NBS.....	<u>.66</u>	<u>.21</u>	<u>.04</u>
Human Interest Stories about NBS employees...	<u>.20</u>	<u>.03</u>	<u>.70</u>
Messages from the Director.....	<u>.64</u>	<u>.21</u>	<u>.33</u>
News from the Department of Commerce affecting NBS.....	<u>.76</u>	<u>.20</u>	<u>.23</u>
Historical articles about the Bureau.....	<u>.30</u>	<u>.25</u>	<u>.31</u>
News about the NBS budget.....	<u>.63</u>	<u>.42</u>	<u>.03</u>
News of technical pro- grams in the Insti- tute for Basic Standards.....	<u>.20</u>	<u>.77</u>	<u>.04</u>
News of technical pro- grams in the Insti- tute for Materials Research.....	<u>.14</u>	<u>.76</u>	<u>.02</u>
News of technical pro- grams in the Insti- tute for Applied Technology.....	<u>.18</u>	<u>.70</u>	<u>.04</u>
News of technical pro- grams in the Insti- tute for Computer Sciences and Techno- logy.....	<u>.14</u>	<u>.63</u>	<u>.07</u>
Reports of speeches by NBS administrators....	<u>.43</u>	<u>.47</u>	<u>.25</u>

Table 6
Factor Loadings on Three Areas of Knowledge

	<u>Administrative News Factor</u>	<u>Research News Factor</u>	<u>Employee News Factor</u>
--Jim Wright was named Acting Director of Institute for Applied Technology....	<u>.57</u>	<u>.10</u>	<u>-.03</u>
--The NBS Budget for fiscal year 1977 increased only enough to cover increased costs of doing business over 1976.....	<u>.21</u>	<u>.23</u>	<u>.22</u>
--The House has approved a 2-year experiment in "flex-time" for civil service employees.....	<u>.01</u>	<u>.17</u>	<u>.32</u>
--Edward O. Vetter named Under Secretary of Commerce.	<u>.46</u>	<u>.12</u>	<u>.29</u>
--NBS studies show flame inhibitors not always effective in full-scale fires..	<u>.07</u>	<u>.34</u>	<u>.28</u>
--NBS has published voluntary product standards for toys.....	<u>.18</u>	<u>.36</u>	<u>.45</u>
--The NBS softball team reached the finals of the Dept. of Commerce Tournament.....	<u>.06</u>	<u>-.01</u>	<u>.51</u>
--NBS has helped the Bureau of Radiological Health control x-rays through Calibration service.....	<u>.05</u>	<u>.58</u>	<u>.13</u>
--Cerebellar Model Arithmetic Computer developed at NBS won an Award from Industrial Research Magazine	<u>.21</u>	<u>.53</u>	<u>.03</u>

Table 7

Canonical Correlation of Grunig Situational Variables
with Communication and Media Variables

	Canonical Coefficients			
	Research Variate ^{a/}	Administrative Variate	Employee Variate ^{a/}	Non-Involved Variate
<u>Situational Variables</u>				
Administration Situations:				
Problem Recognition	.27	.69	-.53	.31
Level of Involvement	-.02	.08	-.13	-.05
Constraints	-.04	-.36	-.06	.24
Referent Criterion	.15	-.31	-.12	-.21
Research Situations:				
Problem Recognition	.45	.17	.21	.79
Level of Involvement	-.08	-.11	-.08	.09
Constraints	.32	.10	-.66	-.21
Referent Criterion	-.21	-.13	-.21	-1.15
Employee Situations:				
Problem Recognition	-.23	.26	.45	.33
Level of Involvement	-.05	.22	.13	-.42
Constraints	.06	-.25	-.16	.42
Referent Criterion	.07	-.04	.07	.21
<u>Communication Variables</u>				
Media Factors:				
Bulletin Boards	-.16	.13	.18	.24
Administrative	.10	.34	.06	-.20
Principal Media	-.02	-.05	.03	.24
Addresses	.41	.20	.27	-.36
Seminars	.28	-.17	.28	-.31
Knowledge Factors:				
Administrative Items	.05	.18	-.17	-.46
Research Items	.17	-.24	.07	-.10
Employee Items	-.02	.18	-.16	.26
Content Factors:				
Administrative	.20	.39	-.61	.48
Research	.38	-.05	.36	.68
Employee	-.26	.38	.68	-.19
Time Spent on Media	.00	.10	.04	-.23
Canonical Correlation	.77	.64	.47	.32
Chi-Square	711.06	383.74	193.91	105.50
	144df, .01	121df, .01	100df, .01	81df, .05

a/ Signs reversed for easier interpretation.

Table 8

Comparison of Age and Years with Bureau of Four Employee Types

	<u>Age^{a/}</u>	<u>Years^{b/}</u>
All employees	39.9	10.5
Research Type	44.3	14.2
Administrative Type	38.9	8.5
Employee Type	38.4	11.3
Non-Involved Type	37.9	8.1

a/ F= 6.23, significant at .01 level.

b/ F= 8.48 significant at .01 level.

Table 9

Comparison of Four Employee Types by Organizational Unit

	<u>N</u>	<u>Percentage of Unit</u>			
		<u>Research Type</u>	<u>Administrative Type</u>	<u>Employee Type</u>	<u>Non-Involved Type</u>
Institute for Basic Standards	74	35.1	12.2	24.3	28.4
Institute for Materials Research	78	37.2	9.0	28.2	25.6
Institute for Applied Technology	78	23.1	25.6	21.8	29.5
Institute for Computer Sciences and Technology	33	18.2	24.2	27.3	30.3
Program Office	3	100.0	0.0	0.0	0.0
Office of the Director	13	7.7	58.8	15.4	23.1
Office of Administration	72	6.9	41.7	22.2	29.2
Office of Information Programs	20	45.0	25.0	20.0	10.0
N	<u>371</u>	<u>97</u>	<u>86</u>	<u>88</u>	<u>100</u>

Chi square 61.14, 21 d.f, significant at .01 level.

Table 10

Comparison of Four Employee Types by Level of Education

	Percentage of Educational Level				
	N	Research Type	Administrative Type	Employee Type	Non-Involved Type
Did not complete high school	14	0.0	42.9	21.4	35.7
High school graduate	51	5.9	39.2	23.5	31.4
Some college or technical school	95	9.5	30.5	24.2	35.8
College graduate	46	23.9	17.4	30.4	28.3
Post-graduate study	88	40.9	18.2	21.6	19.3
Ph.D. degree	82	46.3	9.8	23.2	20.7
N	376	97	87	90	102

Chi square = 68.42, 15df, significant at .01 level

Table 11

Comparison of Four Employee Types by Job Description

	Percentage of Job Description				
	N	Research Type	Administrative Type	Employee Type	Non-Involved Type
Professional	203	38.4	13.8	25.1	22.7
Technician	44	11.4	18.2	25.0	45.5
Wage Scale	19	0.0	36.8	21.1	42.1
Administrative	74	13.5	50.0	17.6	18.9
Clerical	30	6.7	26.7	20.0	46.7
N	370	95	88	85	102

Chi square = 77.56, 12df, significant at .01 level

Table 12

Comparison of Four Employee Types by GS or Wage-Scale Rating

	Percentage of Rating Level				
	N	Research Type	Administrative Type	Employee Type	Non-Involved Type
GS4 or below	24	8.3	25.0	33.3	33.3
GS 5-8	77	6.5	36.4	24.7	32.5
GS 9-11	47	12.8	27.7	27.7	31.9
GS 12-15	178	42.1	15.2	23.6	19.1
GS 16 or above	12	66.7	16.7	8.3	8.3
Wage Scale	28	0.0	35.7	21.4	42.9
N	366	96	86	89	95

Chi square = 75.23, 15df, significant at .01 level.

Table 13

Comparison of Four Employee Types by Sex

	Percentage of Sex				
	N	Research Type	Administrative Type	Employee Type	Non-Involved Type
Male	254	30.7	16.9	26.0	26.4
Female	115	13.9	38.3	18.3	29.6
N	369	94	87	87	101

Chi square = 26.34, 3df, significant at .01 level

Comparison of Employee Types by Most Important Publication

	Percentage of Type				
	All Employees	Research Type	Administrative Type	Employee Type	Non-Involved Type
NBS Standard	23.1	12.1	26.7	28.6	25.7
Dimensions magazine	17.6	22.2	6.7	22.0	18.8
Technical Calendar	38.8	53.5	35.6	33.0	32.7
Administrative Calendar	8.9	5.1	12.2	8.8	9.9
Administrative Issuances	5.0	2.0	8.9	3.3	5.9
Monthly Highlights	4.7	4.0	7.8	2.2	5.0
Program Newsletters	1.8	1.0	2.2	2.2	2.0
N	381	99	90	91	101

Chi square = 34.80, 18df, significant at .01 level.

Table 15

Comparison of Responses of Four Employee Types to Six Questions about NBS Media

Which of the following:	Research Type	Administrative Type	Employee Type	Non-Involved Type
--is the source from which you first get information about Bureau activities and achievements.....	Other Employees (35.6%)	Standard (34.9%)	Standard (32.6%) Other Employees (29.1%)	Standard (34.8%)
--is the most dependable source of NBS information.....	Supervisor (23.9%) Technical Calendar (21.6%)	Standard (25.3%) Technical Calendar (20.7%)	Technical Calendar (26.7%) Standard (23.3%)	Technical Calendar (28.9%)
--is the most useful to you.....	Technical Calendar (33.7%)	Technical Calendar (33.3%)	Technical Calendar (28.6%)	Technical Calendar (33.3%)
--do you feel provides the most complete information.....	Supervisor (27.4%)	Standard (30.1%)	Standard (22.5%) Technical Calendar (21.2%)	Technical Calendar (20.0%) Standard (18.8%)
--would you choose to communicate news about yourself (such as awards, retirement, etc.).....	Standard (58.1%)	Standard (59.5%)	Standard (56.4%)	Standard (46.5%)
--do you think presents the most accurate picture of Bureau events and people.....	Standard (41.0%)	Standard (60.7%)	Standard (53.7%)	Standard (52.9%)

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16. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.) An evaluative study of the employee communication program at the National Bureau of Standards was conducted in cooperation with the Seminar in Corporate Communication, University of Maryland College of Journalism to: 1) identify the information needs of different types of NBS employees, 2) relate these information needs to use of internal employee media, and 3) evaluate and make recommendations on these media. Information needs were identified using a communication model developed by Grunig, which predicts the probability that a public will actively seek out information or passively process it. The variables of this model were related to content preference and media use through factor analysis and canonical correlation. The study identified four types of employee publics: 1) a research-oriented employee, 2) an administrative-oriented employee, 3) an employee programs and benefits-oriented employee, 4) an employee who perceives himself to be uninvolved in most NBS programs. The study also showed that most employee media in a research organization contain information which employees do not perceive to involve them. Thus, following the logic of the Grunig theory, employees will passively process the information if it is easily available, but they will not seek it out. Recommendations are then made for how employee media should be designed for each employee type and on how to deal with the generally low level of employee involvement.				
17. KEY WORDS (six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons) Communication among scientists; coordination of research organizations; employee communication; information needs; information processing; information seeking; internal media.				
18. AVAILABILITY <input checked="" type="checkbox"/> Unlimited <input type="checkbox"/> For Official Distribution. Do Not Release to NTIS <input type="checkbox"/> Order From Sup. of Doc., U.S. Government Printing Office Washington, D.C. 20402, SD Cat. No. C13 <input checked="" type="checkbox"/> Order From National Technical Information Service (NTIS) Springfield, Virginia 22151		19. SECURITY CLASS (THIS REPORT) UNCLASSIFIED		21. NO. OF PAGES 42
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