

**STUDY OF THE ABILITY OF METEOROLOGISTS TO COMMUNICATE
WITH THE GENERAL PUBLIC AND THE PUBLIC'S ATTITUDE
TOWARD VARIOUS WEATHER-RELATED SUBJECTS**

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1. INTRODUCTION

A survey of the general public was conducted by the National Weather Service in Pittsburgh. One sample consisted of Federal Building employees and a second comprised NOAA Weather Radio (to be referred to as the NWR) listeners. The goals were to get a better understanding of their opinions on various weather-related subjects, to compare the results of each sample, and to appraise the meteorologists' ability to communicate with the general public.

Are meteorologists able to effectively convey practical weather information to the general public? Are public forecast formats flexible enough to accommodate the needs and priorities of our customers? Are there differences between the written forecast and the impression the public receives after hearing that forecast? Do meteorologists inadvertently undermine the listening audience's confidence in their profession by issuing accurate forecasts and timely warnings which confuse rather than inform? Numerous questions can be raised concerning the communications link between disseminators of weather information and users, and the obstacles to success.

Since most meteorological research is aimed at improving the ability to predict atmospheric parameters and not toward enhancing the capability to express ideas, it was decided that a survey of a segment of the general public would be an appropriate, though small, first step in rectifying this imbalance. The main purposes of this study are to determine:

- A. If weather products are interpreted by the public in the manner intended,
- B. The types of weather information desired by the public,
- C. What sources the public relies on for weather information and the effectiveness of the NWR,
- D. Whether the NWR audience is representa-

tive of the general public, and if not, how does it differ, and

- E. What information is retained and understood after hearing a weather forecast by simulating actual listening conditions.

2. PROCEDURE

The first phase of the survey was conducted on Wednesday, May 25, 1977. Questionnaires were handed to each person entering the Federal Building in Pittsburgh from 6:30 to 9:30 a.m. The 12-question survey was designed to be non-technical and take 5 to 10 minutes to complete. Those who participated had until 7:00 p.m. to deposit it in one of the two boxes marked WEATHER SURVEY, in the first floor lobby.

The second phase of the survey took place at 7:00 p.m. that same day over the NWR. The audience was asked to number a sheet of paper from 1 to 12, write their choices for each question, and mail the answers. The survey was pre-taped and repeated three times to compensate for any difficulties that might arise with such a verbal questionnaire. Aside from question 7, and a special 13th question added to the NWR version, the two surveys were identical.

The Federal Building survey was advertised for three days with strategically placed posters, while an announcement briefly describing the NWR survey was broadcast in tandem with the station identification for five days. Multiple choice was selected as the method of testing since it supplies an ample amount of feedback and is relatively easy to answer and score. A space labeled "any comments" was provided on the Federal employee version to encourage expression of opinion on any topic of interest. NWR participants were asked to include comments on the back of their tally sheet.

3. DATA

In the Federal Building, a total of 2333 question-

naires were distributed and 975 returned for a response rate of 42%. In spite of a thorough advertising campaign, only 92 responses were received from NWR listeners. All results are in percentages, except for question 8 which is based on a scale of 1 to 4. For questions 1 through 6 in the Federal Building survey and 1 through 7 in the NWR version, the participants were able to choose more than one answer, and consequently, the results could exceed 100% (see Table 1). While very few of the NWR respondents included comments, 188 of the Federal employees elected that option. These are summarized in the discussion.

TABLE 1

| QUESTION | FEDERAL EMPLOYEE VOTE (%) | NWR VOTE |
|--|------------------------------|-------------|
| WHAT COMES TO MIND WHEN YOU HEAR THE FOLLOWING WORDS OR PHRASES: QUESTIONS 1 THROUGH 4... | | |
| 1. FAIR WEATHER | | |
| a. no precipitation | 61 | 78 |
| b. clear skies | 57 | 68 |
| c. cloudy | 4 | 3 |
| d. partly cloudy | 22 | 21 |
| 2. VARIABLE CLOUDINESS | | |
| a. partly cloudy | 37 | 43 |
| b. varying amounts of clouds | 32 | 68 |
| c. forecaster unsure of the forecast | 4 | 3 |
| d. sometimes cloudy, sometimes clear | 56 | 66 |
| 3. 40% CHANCE OF RAIN TODAY | | |
| a. it will rain 40% of the day | 4 | 7 |
| b. forecaster not sure, but rain doubtful | 9 | 21 |
| c. light rain will fall | 9 | 12 |
| d. chance of it raining is 4 times out of 10 | 79 | 89 |
| e. 40% of the area will get rain | 5 | 13 |
| 4. SNOW FLURRIES | | |
| a. on and off light snow | 55 | 54 |
| b. up to an inch accumulation | 3 | 16 |
| c. a few snowflakes here and there | 42 | 75 |
| d. a "dusting" of snow | 22 | 37 |
| 5. HOW WOULD YOU PROTECT YOURSELF FROM LIGHTNING? | | |
| a. seek shelter in a car | 57 | 89 |
| b. get inside a large house or building | 69 | 82 |
| c. seek shelter under a tree | 0 | 5 |
| d. get out of open water | 43 | 72 |

6. FROM WHAT SOURCES DO YOU GET MOST OF YOUR

WEATHER INFORMATION?

| | | |
|--|----|----|
| a. radio | 70 | 47 |
| b. newspaper | 6 | 13 |
| c. KIH-35 NOAA Weather Radio, 162.55 MHz | 4 | 97 |
| d. television | 61 | 41 |
| e. phone recording: 936-1212 | 23 | 14 |
| f. by looking out the window | 23 | 26 |

QUESTION

FEDERAL
EMPLOYEE VOTE (%)NWR
VOTE

7. (FEDERAL EMPLOYEE VERSION)...DID YOU KNOW
THAT THE NATIONAL WEATHER SERVICE HAS ITS OWN
RADIO STATION IN PITTSBURGH...NOAA WEATHER
RADIO, KIH-35, 162.55 MHz ON THE PUBLIC SERVICE
BAND?

| | | |
|--------|----|---|
| a. yes | 29 | X |
| b. no | 71 | X |

7. (NWR AUDIENCE VERSION)...HOW CAN THE
NATIONAL WEATHER SERVICE IMPROVE ITS NWR
BROADCASTS?

| | | |
|---|---|----|
| a. shorten the length of the 4 to 5 minute broadcast cycle to 3 minutes | X | 15 |
| b. make the weather stories that accompany the forecast more interesting | X | 30 |
| c. improve the voice quality and enunciation of the announcers | X | 35 |
| d. make the radar summaries more concise and interesting | X | 52 |
| e. increase the number of special broadcasts like the "Omaha Tornado" and the "Summer That Never Was" (recreations of historical weather events) | X | 37 |

QUESTION

FEDERAL
EMPLOYEE VOTE (%)NWR
VOTE

| | | |
|---|---|----|
| f. increase the number of broadcasts designed to give our listeners an introduction to meteorology and tips on severe weather safety | X | 68 |
|---|---|----|

8. IN A WEATHER FORECAST, HOW WOULD YOU RATE
THE FOLLOWING, FROM 1 TO 4, AS BEING IMPORTANT
TO YOU (1 IS MOST IMPORTANT, 4 IS LEAST
IMPORTANT)?

| | | |
|---------------------------------|-----|-----|
| a. the amount of cloudiness | 3.1 | 3.1 |
| b. the temperature | 1.4 | 1.4 |
| c. the wind speed and direction | 3.0 | 3.0 |
| d. the percent chance of rain | 1.5 | 2.0 |

9. WHAT COMES TO MIND WHEN YOU HEAR THIS PHRASE
..."CLOUDY WITH A CHANCE OF SHOWERS"?

| | | |
|--------------------------------------|----|----|
| a. greater than a 50% chance of rain | 33 | 33 |
| b. less than a 50% chance of rain | 67 | 67 |

10. WHICH WOULD YOU PREFER HEARING ON
COMMERCIAL AM-FM RADIO:

| | | |
|---|----|----|
| a. a word for word account of the official forecast, or | 47 | 62 |
| b. occasional "variations" of the forecast by the broadcaster to relieve the monotony of repeated readings? | 53 | 38 |

| QUESTION | FEDERAL EMPLOYEE VOTE (%) | NWR VOTE |
|--|------------------------------|-------------|
| 11. WHICH OF THE FOLLOWING MEANS THE SAME THING AS "SEVERE THUNDERSTORM WATCH"? | | |
| a. severe thunderstorm alert | 20 | 17 |
| b. severe thunderstorm potential | 32 | 42 |
| c. severe thunderstorm lookout | 21 | 26 |
| d. severe thunderstorm warning | 27 | 15 |
| 12. IN MOST CASES, WOULD YOU PREFER TO HEAR... | | |
| a. a complete forecast with all the "percentages of rain and partly cloudy", or | 50.42 | 67 |
| b. a forecast that simplifies the situation and says "it will either rain, or it won't"? | 49.48 | 33 |
| NOTE: ALL RESULTS IN TABLE 1 ARE IN PERCENTAGES, EXCEPT FOR QUESTION 8 WHICH IS BASED ON A SCALE OF 1 TO 4. FOR QUESTIONS 1 THROUGH 6 IN THE FEDERAL SURVEY AND 1 THROUGH 7 IN THE NWR VERSION, MORE THAN ONE CHOICE PER QUESTION WAS POSSIBLE AND THE RESULTS COULD EXCEED 100%. | | |

4. DISCUSSION

It is difficult to request opinions covering a wide range of subjects while competing for the participant's time on the job and maintaining his/her interest. In addition, a bias of unknown magnitude was introduced through the use of Federal employees as representatives of the general public. Given the legal constraints facing a Federal employee conducting a survey in an official capacity, there were few alternatives.

A project much larger in scope than such a survey would be required to fully satisfy the primary objectives of this study. However, within the limited framework of a questionnaire, several relationships may be suggested.

How does the general public interpret weather products and is it in the manner intended? Questions 1 through 5, 9, and 11 were devised to shed light on this important topic. Both Federal employees and NWR listeners clearly chose "no precipitation" and "clear skies" as representative of "fair weather." However, it might come as somewhat of a surprise to find that "partly cloudy" lacked similar identification. While each group indicated a good grasp of the meaning of "variable cloudiness", only 32% of the Federal employees picked "varying amounts of clouds" which offered a literal translation of the phrase under consideration. Although the overwhelming selection in question 3 was choice "D", the voting might have been deceptive since that choice was simply a rewording of the expression being tested and may have discouraged participants from choosing one of the alternatives. An agreement that snow flurries are off and on in character with a very light intensity was signaled by the answers to question 4. This seems to contradict the notion, especially in parts of the northern U.S. susceptible to snow flurries such as Pittsburgh,

that a period of moderate or heavy snow can be judged a flurry if it is brief and accumulates an inch or less. Question 5 temporarily changed the direction of the survey from measuring phrase identification to a short examination of severe weather safety. It was gratifying to find both groups well informed on some of the precautions to be taken during thunderstorms. Question 9 resumed the assessment of weather terminology and indicated the public has a general understanding of the "chance" category in precipitation forecasts. It should be remembered, though, that the real trial of effectiveness comes not in handing someone a written forecast, but in simulating actual listening conditions. The final NWR survey question tackles this problem. The last question dealing with the interpretation of weather products was number 11, an attempt to find a substitute for the word "watch", as in severe thunderstorm watch. Although many alternatives have been proposed, a consensus has yet to develop and the outcome here does not offer a quick solution. However, the fact that the second largest quantity of respondents identified "warning" with "watch" affirms the need for either a word or phrase that will not be confused with "warning", or an entirely new "watch/warning" system. Another possible problem would be the similar sound of watch and warning. Unfortunately, this idea could only be tested on the NWR audience and the broadcast of a watch or warning was felt to be unsuitable, even with prior notification of the test.

Questions 8, 10, and 12 were used to help determine the kind of weather information wanted by the public. Both the Federal employees and the NWR audience agreed on a set of priorities for several components of a weather forecast. Although a few respondents wondered whether question 8 referred to summer or winter, this question assumed a year-round rating and was not meant to take into account seasonal variations. It is interesting to note the virtual tie for "most important" between the temperature and percent chance of rain, with the wind speed and direction and amount of cloudiness categories trailing far behind. Perhaps the most surprising aspect was the 4th place finish of the cloudiness factor, usually mentioned in every forecast. The intent of questions 10 and 12 was similar and the results were about the same. Question 10 touched on an issue close to the hearts of most operational meteorologists by trying to find out whether the news media reflects the public's requirements for weather information. The tabulation showing a substantial percentage of the population would like to hear a word-for-word description of the official forecast contrasts with the loose formats and light entertainment approach to the weather adopted by many broadcasters. NWR listeners were even more positive in their feelings. While a few participants expressed difficulty in separating questions 10 and 12, or thought they contradicted

each other, question 12 should be viewed as the second half of question 10. Where number 10 analyzed actions of the broadcaster, number 12 rests the "burden of proof" on the meteorologist and asked members of the survey to evaluate the type of forecast they prefer to have written. Choice "A" represents the kind of forecast currently produced by the National Weather Service and "B" depicts a simplified version of that forecast provided by some private meteorologists and TV "weathermen". Federal employees were evenly divided on this question while the NWR audience had a strong inclination for a complete forecast.

Question 6, and both Federal employee and NWR versions of question 7 were created to find the public's principal sources of weather information and measure the effectiveness of the NWR. The results of Federal employee question 7 were disappointing. The NWR had been in operation a year when this question was posed, and despite a publicity campaign including widespread newspaper coverage, only 29% of the respondents had even heard about the service offered. In addition, a large turnout of Corps of Engineers employees, most of whom maintain some contact with the hydrology department of the Pittsburgh Forecast Office and are aware of the NWR, probably influenced the outcome in favor of the "yes" answer. With approximately 40 such employees, a more accurate estimate of general public recognition would be 25%.

While the latter question simply gauged identification of the NWR, question 6 compared its popularity with several other methods of obtaining weather information. Although a relatively small proportion of participants knew of the radio's existence, a scant four percent listed it as one of their major sources. As might be expected, commercial radio and television were the dominant contributors of weather information, though the opportunity to select more than one choice underscored the dismal showing of the NWR. Most disheartening, however, was the third place ranking of "looking out the window" which, according to the Federal employees, amassed more than five times the total votes for the NWR. This question's saving grace was the vote of confidence expressed by 97% of the NWR audience. The results imply that once future NWR listeners are informed of the availability of such a station, and purchase the equipment necessary to receive it, they are quite satisfied with the station's performance and remain loyal.

In the NWR survey, a question requesting criticism of broadcasts and suggestions for improvement was the logical substitution for its Federal survey counterpart. NWR question 7 indicated the radio audience's greatest concerns were the quality of the radar summaries (for listeners) and

the desire for a larger amount of background weather information. These participants approved the 4 to 5 minute average broadcast cycle, and made a motion for improved weather synopses and style of the announcers, and increased frequency of special programs.

Any comparison between the Federal employees and NWR audience in this survey should be made with caution. The small fraction of total listenership responding is in sharp contrast with the 42% return rate of the Federal group and hasty conclusions may be speculative. In retrospect, either the NWR survey should have been conducted on an additional day, or the audience needed an incentive, since an offer of free radar map overlays was greeted with 1200 requests 9 months earlier. It can also be argued that people with access to their local NWR station are more "weather conscious" than those who have never heard of the service or lack a specially designed radio, however, the Pittsburgh NWR station had been on the airwaves only a year at the time of this survey and the cost factor might have inhibited some NWR spectators from becoming participants. As a result, a cross-section of Pittsburgh's NWR listeners taken shortly after its inauguration may not reflect the true characteristics of the potential audience. Although the limited sample creates restrictions, some relationships can be demonstrated.

A review of the responses from each group indicates a tendency toward a greater meteorological awareness on the part of the NWR listeners. Both samples exhibited a general understanding of the everyday weather phrases examined, a knowledge of lightning safety, and a similar list of priorities for the ingredients of a weather forecast. While the NWR participants made more selections per question than the Federal employees on those questions allowing more than one answer, the higher percentages for each possible choice did little to alter this overall agreement. However, there was substantial disagreement on the meaning of "severe thunderstorm watch" and the sources and types of weather information desired. The radio respondents' perception of a "severe thunderstorm watch" was considerably closer to the intended meaning. The radio audience also decisively established the NWR as its favorite source of information and gave significantly lower marks to commercial radio, television, and the Bell Telephone recording of the daily forecast. Nevertheless, "looking out the window" maintained a sizable following with 26% of the vote. In addition, the preference of NWR listeners was for a complete forecast, both in its originally written and broadcast form. While any conclusions based on a modest investigation are tentative, a greater meteorological sensitivity and a more complex outlook toward weather forecasting characterize the NWR audience.

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People relying on a verbal message, such as radio or a phone recording, for their weather information must absorb that message without the benefit of a visual aid. Communication is successful when this series of ideas is understood and remembered in the manner intended. An experiment was designed where actual listening conditions could be reproduced to measure the general public's ability to comprehend and retain a weather report of average difficulty. The NWR and its audience seemed a natural proving ground for this test ... question 13. The following forecast was read once in a deliberate fashion and the participants were asked to write their recollection of the contents. Since this survey was taken during a Wednesday evening in late May, the forecast consisted of four 12-hour periods covering Wednesday night through Friday with weather conditions compatible with the prevailing situation.

"Variable cloudiness tonight. Low in the mid 60s/18 Celsius. Warm and humid with a chance of showers and thundershowers Thursday. High in the low 80s. Fair Thursday night. Low in the upper 50s. Partly sunny Friday. High in the mid 70s. Wind ... southwest 10 to 20 mph through Thursday. Probability of precipitation ... 20% tonight, 40% Thursday and 10% Thursday night."

In scoring the answers, the contents were broken down into 14 segments and rated as correct, partially correct, or wrong. The results, in percents, are presented in Table 2.

Only one part of this forecast, "probability of precipitation ... 20% tonight", was remembered in some form by a majority of the participants. Recall was best with the first forecast period and steadily deteriorated with succeeding periods (see Figure 1). The "probability of precipitation" temporarily reversed this trend, but even there recall faded with time. The cloudiness factor didn't fare well either. Except for "variable cloudiness tonight", the first forecast period, the cloudiness groups which followed, "fair" and "partly sunny", were recollected to a sufficient degree by less than 25% of the respondents. The phrases "warm and humid", "chance of showers and thundershowers", and "wind ... southwest 10 to 20 mph through Thursday" had similar problems and could not be identified by at least three quarters of the sample. Each of the four predicted temperatures were also difficult to recall and more readily brought to mind a temperature range; i.e., 80s, than the specific forecast; i.e., low 80s. However, it is evident from the number of totally incorrect answers that the temperatures made a slightly stronger impression than other segments of the forecast. An example of the effect of hearing a forecast versus reading or watching one can also be illustrated. According to question 9, 67% of the voters knew the mean-

TABLE 2

| FORECAST SEGMENT | CORRECT | ACCEPTABLE VARIATIONS OF CORRECT | WRONG |
|--|---------|---|-------|
| 1. variable cloudiness tonight | 37% | any variation of cloudy - 12% | 51% |
| 2. low in the mid 60s | 15 | any variation of "60s" - 28 | 57 |
| 3. 18 degrees celsius | 28 | 10 to 20 celsius - 6 | 66 |
| 4. warm and humid | 22 | either warm or humid - 0% | 78 |
| 5. chance of showers and thundershowers | 9 | either showers or thundershowers - 15 | 76 |
| 6. high in the low 80s | 14 | any variation of "80s" - 28 | 58 |
| 7. fair Thursday night | 8 | either clear or partly cloudy - 5 | 87 |
| 8. low in the upper 50s | 5 | any variation of "50s" - 23 | 72 |
| 9. partly sunny Friday | 8 | either partly cloudy, fair, or sunny - 14 | 78 |
| 10. high in the mid 70s | 9 | any variation of "70s" - 18 | 73 |
| 11. wind southwest 10 to 20 mph through Thursday | 9 | either southwest or 10 to 20 mph - 15% | 76 |
| 12. chance of rain...20% tonight | 32 | either 10% or 40% - 31 | 37 |
| 13. 40% Thursday | 25 | either 10% or 20% - 14 | 61 |
| 14. 10% Thursday night | 18 | either 20% or 40% - 6 | 76 |

NOTE: ALL TOTALS...CORRECT, PARTIALLY CORRECT, AND WRONG...ARE EXPRESSED IN PERCENTAGES.

A GRAPH OF FORECAST SEGMENT VERSUS THE TOTAL SCORE OF "CORRECT AND PARTIALLY CORRECT"

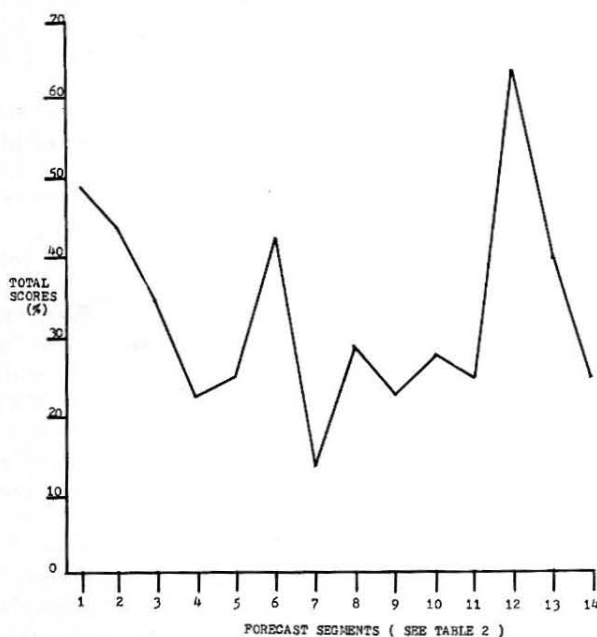


Figure 1. A graph of forecast segment versus the total score of "correct and partially correct."

TABLE 3

AVERAGE SCORES OF "CORRECT AND PARTIALLY CORRECT"
BY POSITION

| | |
|---------------------|-------|
| 1ST PERIOD FORECAST | - 42% |
| 2ND PERIOD FORECAST | - 29 |
| 3RD PERIOD FORECAST | - 20 |
| 4TH PERIOD FORECAST | - 24 |
| THE "WIND" GROUP | - 24 |
| THE "POPS" | - 42 |

A GRAPH OF THE AVERAGE SCORES BY POSITION

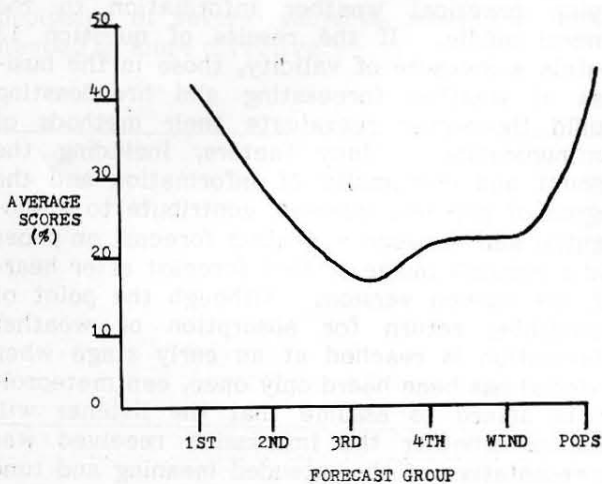


Figure 2. A graph of the average scores by position.

ing of "chance of showers." In question 13, a mere 24% recognized it among other information in the forecast and the word "chance" did not register with three fourths of the 24%.

Table 3 shows the average scores of "correct and partially correct" for each segment of the forecast by position. These scores were calculated by adding the "correct" and "acceptable variations of correct" scores for each forecast segment in the position or "period", and dividing that total by the number of segments. When those values are plotted on a graph (see Figure 2), a pattern emerges and indicates that a listener tends to absorb more material toward the beginning and near the end of a weather message. However, the upswing with the "probability of precipitation" (POPS for short) could be misleading since they are sometimes considered a separate subject attached to the body of the forecast. A graph of the POPS, Figure 3, demonstrates this possibility.

TABLE 4

AVERAGE SCORES OF "CORRECT AND PARTIALLY CORRECT" BY FORECAST COMPONENT
AND A COMPARISON WITH THE RANKINGS FROM QUESTION 8

| COMPONENT | AVERAGE SCORES | RANKINGS ACCORDING TO QUESTION 8: | |
|--------------------------|----------------|-----------------------------------|--------------|
| | | FEDERAL EMPLOYEES | NWR AUDIENCE |
| CLOUDINESS | 28% (3RD) | 4TH | 4TH |
| TEMPERATURE | 35% (2ND) | 1ST | 1ST |
| PROBABILITY OF PRECIP. | 42% (1ST) | 2ND | 2ND |
| WIND SPEED AND DIRECTION | 24% (4TH) | 3RD | 3RD |

TOTAL "CORRECT AND PARTIALLY CORRECT" POPS SCORES BY POSITION

| | |
|------------------|-------|
| 1ST PERIOD (20%) | - 63% |
| 2ND PERIOD (40%) | - 39% |
| 3RD PERIOD (10%) | - 24% |

A GRAPH OF THE TOTAL "CORRECT AND PARTIALLY CORRECT" POPS SCORES
BY POSITION

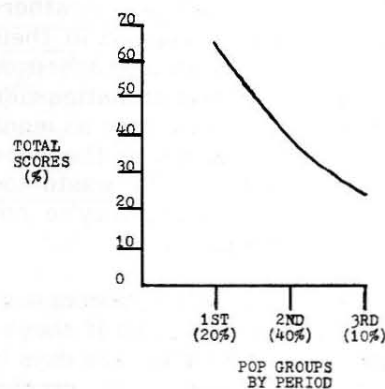


Figure 3. Total "correct and partially correct" POPS scores by position.

Ranking the four major components of this weather forecast using the same criteria reveals another significant trend (see Table 4). The order of categories for listening comprehension is approximately the same as the list of priorities by importance of content in question 8. In question 8, temperature and percent chance of rain were voted the most important items in a forecast; here in question 13, they are still first and second. Although their standings are reversed, four groups of temperatures were involved as opposed to

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three for the POPS. The average score of "correct and partially correct" for the POPs could have been lowered if a fourth period "percent" for Friday was included since the ability to remember appears to decrease with an increasing amount of information. In general, it is reasonable to assume that a person's ability to make mental notes upon hearing a weather message involves many factors, including his/her personal interest in the information offered, the amount of information, and the position of specific information relative to the entire message.

Of the 975 questionnaires returned by Federal employees, 19% contained comments. The overall tone of the comments was negative, indicating a strong dissatisfaction with television weathercasters, forecasting in general, and the use of "probability of precipitation." Fifteen comments were received from NWR participants and all said, in effect, "keep up the good work." Table 5 outlines the number of Federal employee comments in various categories and some representative opinions.

Table 5

MEDIA WEATHERCASTING (50) - "weathercasters on TV have much to be desired in their ability to convey information to an unknowledgeable public" ... "too much emphasis on nationwide weather" ... "why does the forecast vary so much from radio and TV station to station at the same time of the day?" ... "the guys on TV waste too much time. If they're weathermen, they're not comedians. Maybe they're neither."

FORECASTING IN GENERAL (34) - "forecasters are damned if they're right and damned if they're wrong" ... "to report weather four to five days in advance is meaningless. Can't even predict today's weather" ... "weather forecasts are right on temperature, worse on rain, worst on snow."

THE NATIONAL WEATHER SERVICE (33) - "keep up the good work" ... "I think the NWS should conduct an intensive publicity campaign to tell the public they are the official reporters."

CONTENT OF WEATHER FORECASTS (22) - "on normal days, variation in describing weather is okay. On bad days, I need a word-for-word description" ... "you'll be understood easier if you don't use words that mean different things to different people" ... "brevity and frankness should prevail."

PROBABILITY OF PRECIPITATION (19) - all comments except one were negative - "what is a percent chance of anything? The term is very unclear and I get the feeling that the NWS does not know if it will rain, but definitely maybe with a percent chance."

NATIONAL WEATHER SERVICE SURVEY (12) - "this survey was a good idea."

MISCELLANEOUS (8) - "the 936-1212 number (Bell Telephone recording) is not publicized enough."

SEVERE STORMS (6) - "too many severe alerts with no results" ... "how can people be alerted of impending severe weather when radio/TV are not in use by most people?"

NOAA WEATHER RADIO (4) - "good to have radio in this area."

5. CONCLUSIONS

A review of this study calls attention to the problem meteorologists have in effectively conveying practical weather information to the general public. If the results of question 13 contain a measure of validity, those in the business of weather forecasting and broadcasting should thoroughly reevaluate their methods of communication. Many factors, including the amount and complexity of information and the degree of personal interest, contribute to a substantial gap between a weather forecast on paper and a person's image of that forecast after hearing the spoken version. Although the point of diminishing return for absorption of weather information is reached at an early stage when material has been heard only once, can meteorologists afford to assume that the listener will examine whether the impression received was representative of the intended meaning and tune in again? It is possible that traditional procedures for "getting the message across" underestimate the discrepancies between the meteorologist's thought processes and the public's point of view. Of course, the transmission of information usually involves intermediaries such as the United Press International and Associated Press and radio and television personnel, and the responsibility for keeping the general public up-to-date often lies outside the control of meteorologists. Since this arrangement has inherent limitations, operational meteorologists should, according to David Murray of the University of Wyoming, present the weather prediction to the public in a clear and uncomplicated manner to eliminate as many potential problems as possible. The NWR is generally accepted as the most promising way for the NWS to bypass the middlemen. The NWR audience was found to be loyal and somewhat more meteorologically sophisticated than their "civilian" companions. On its first anniversary, the Pittsburgh NWR station still had a long way to go before becoming a major disseminator of weather information.

Meteorologists have an obligation to analyze the requirements of their customers and put together

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the best product feasible. However, the benefit of accurate forecasts and timely warnings is lost when those receiving the information misinterpret the meaning or can't realize the value of each message. To provide better service to the general public, it might be advantageous for meteorologists to adapt their perspective regarding this communication and bring it closer to that of their users.

6. SUMMARY

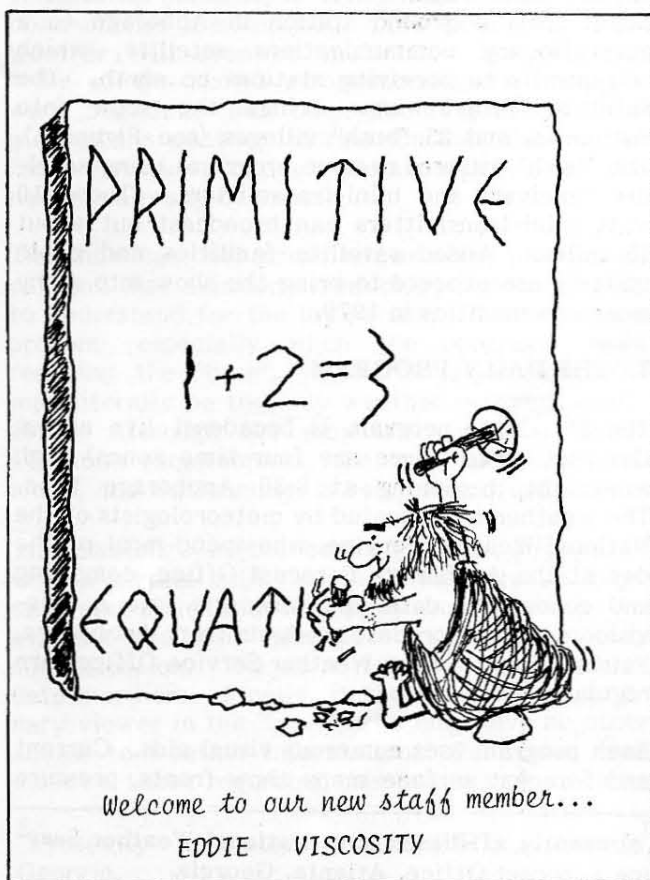
In some respects, the feedback from this survey raised more questions than it answered. It touches the tip of an unexplored iceberg and invites additional investigations into areas ranging from the identification of communication problems to their remedies. An approach focusing on one or two topics, instead of this rather cursory discussion of several subjects, would be recommended as more effective.

I would like to thank the staff of WSFO Pittsburgh for their cooperation in conducting this project. The following people deserve a special mention for their constructive criticism and volunteering, sometimes reluctantly, to act as a sounding board for various new ideas: William France; Herb White (now with WSFO Raleigh); Dick Crouthamel (now with WSFO Washington, D.C.); Ray Visneski; Abe Greenburg; and Chuck Heckler.

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