

request can be modified in real time and thereby be much sharper. I think this makes the bibliographic retrieval system much more comfortable for the user. He or she is not flooded with paper, the majority of which may not suit the actual need. Another point, too, is that with the on-line system one can tell immediately whether there is no information available in the area of interest. That can save 2 weeks of waiting, which can be very important in determining a course of action.

Inasmuch as the system must meet the needs of operations people as well as researchers, it has to work within the general time frame available to an operating engineer or administrator. A specific problem with a bridge or road has to be dealt with in a very short time. This will not allow a wait for 2 weeks for the first round of reference material; therefore, the batch system is not useful, but the on-line system may be. The engineer may be able to use the research-in-progress file to identify 1 or 2 people who are currently doing work in a closely related area. A phone call may then provide all the usable information available relevant to the specific problem.

On the other hand, one advantage of the HRIS batch system is the fact that there are professionals on the HRIS staff who can define intelligent search strategies. In an on-line environment on the user's premises, quite often that link is missing. Actual operation of the terminal is quite simple. We have found that it is easy to train a clerk to handle the terminal operations of getting on-line, entering the search terms, and so forth. But that is quite different from defining a search strategy that expresses the user's informational requirements in terms that the system can respond to. This operation will frequently require the attention of a technical specialist and is a hidden cost of an on-line bibliographic retrieval system.

Weber touches on a problem that is characteristic of "free form" search systems, and that is having to enter a long string of terms such as "highway, highways, road, roads, freeway, and freeways" in order to cover the concept of "road." It would be very nice if each user had a section of memory in which strings of search strategies could be stored. He would then be able to call a personalized, frequently used strategy with one command and search within his own defined universe, which may be much smaller than the overall universe of bibliographic information that is held within the system. In this way, I think the system could avoid the clumsiness of the present set-up and the lack of flexibility of a fixed thesaurus.

Barbara K. Kunkel and Elizabeth F. Miller, Calspan Corporation

Calspan is one of the nation's largest independent research and development organizations with research capabilities in a great diversity of areas. Providing information retrieval for the technical staff of an organization with such a diversity of interests through manual effort has become increasingly difficult in recent years. Therefore, in January 1973, we began using Lockheed's Dialog on-line retrieval system to search a variety of data bases, one of which was the NTIS file. On the whole, we have been very satisfied with the Dialog system, but we felt the NTIS data base was deficient in several areas, especially transportation. Since 8 to 10 percent of Calspan's total research effort is in the field of transportation, we were very interested in the TRIS project as a means of strengthening our information retrieval system in this area.

Thus far, we have used the TRIS system strictly for in-house applications. When a member of the technical staff requests information on a transportation-related subject, we usually run a search of both the Dialog NTIS and the TRIS files. We thought there might be interest in the comparisons of these 2 data bases on 2 sample subjects.

The first subject was single-vehicle accidents. The TRIS search located 9 items and the NTIS search found 18 citations. Three references were found in both files and 3 other references, which were common to both files, were found after differences in indexing were considered. The citations found in TRIS and not in NTIS were a journal article, a conference proceeding, and a foreign publication. One would not expect to

find any of these in NTIS. The references found in NTIS and not in TRIS were either too old or were multidisciplinary accident reports, which apparently are not included in the TRIS file.

The second subject was air bags. The TRIS search revealed 26 references, and the NTIS search found 51 citations. Four citations were found in both files. Of the 22 citations found exclusively by TRIS, 15 were work-in-progress notices, 6 were journal articles, and 1 was a report that we would have expected to find in NTIS. Of the 47 unique references cited by the NTIS search, 20 were outside the time span of the TRIS file, 11 were publications that resulted from projects listed in the TRIS work-in-progress file and that probably would have been cited by TRIS had the file been updated, and 16 were reports that we would have expected to find in TRIS but were not included.

If this small sample can be taken as representative of the complete files, we feel that 2 conclusions can be drawn. First, since approximately one-third of the total references would not have been located without the TRIS file, it is fulfilling a need. Second, if the time span covered by TRIS was greater, an additional one-third would have been found by the TRIS file.

From our work with the TRIS file during the past 6 months, we feel that TRIS supplements the NTIS file in 3 ways: (a) TRIS contains work-in-progress statements, journal articles, and many foreign publications, none of which normally is included in the NTIS file; (b) some reports that should be in NTIS inadvertently are not included, and the TRIS file offers a backup for these citations; and (c) some records may be in the NTIS file, but will not show up because of variations in indexing. Since the TRIS file uses an independent indexing system, it narrows the possibility of missing pertinent references.

There are several improvements that we would like to suggest. First, we would like to have the ability to search on connected words. We feel that the advantages of being able to search the complete abstract is of minimal value without being able to relate words.

Our second suggestion is for more complete information for document retrieval. We have found that many references do not give sufficient information on actual document accessibility. We would like to suggest that report numbers be added wherever possible and that some type of information be clearly stated as to how and where documents may be obtained. Other on-line systems have even made documents cited available in microfiche, and this might be a future consideration for TRIS. For items retrieved from the work-in-progress file, we would like to see a statement telling when a report can be expected. An information retrieval system is only as valuable as the documents cited by it, and its effectiveness is directly proportional to actual document access. Improvement of document access information, we feel, would be the most beneficial change in the present TRIS format.

The third suggestion we have would be to provide more frequent updating of the system. We realize that during the experimental period the data base was fixed, but we would now like to see the system updated at 1-month or, at least, 3-month intervals.

We have found, through working with on-line systems, that they provide a significant savings over manual searching techniques. The TRIS work-in-progress section is especially helpful, for this information is not readily available elsewhere and aids in determining new areas of research and avoiding duplication of effort.

In conclusion, we feel that TRIS is a valuable addition to the available on-line systems and that, with a few minor improvements, it will provide fast access to transportation information and literature—a service that is sorely needed by the transportation research community.

Robert M. Nicotera, Pennsylvania Department of Transportation

In the Pennsylvania Department of Transportation, we have had an encouraging

experience with the HRIS on-line retrieval demonstration project. I would like to emphasize the word "demonstration"; we think that the project has demonstrated that an on-line retrieval system is manageable and is a vital, if not necessary, means of communication within the transportation community.

To determine quickly what work has been done in a given area of interest, an abstract search is probably the best initial step. A formal library search often yields too many reports and just too much information. A brief, quick summary is really all that is necessary. Even with the limited file available to HRIS, we have frequently used the HRIS on-line service for this purpose and have found it to satisfy our needs.

People in operations areas such as traffic, maintenance, and construction encounter problems that require immediate solutions. Other states or agencies have frequently encountered similar problems, and evaluation reports are available. A personal contact may yield sufficient information to make decisions affecting the solution to the problem. HRIS, as a starting point, allows immediate access to the basic information.

We have used HRIS on-line service in the evaluation of new products and new techniques. Even with the limited file available, abstracts relating to recent innovations in traffic, maintenance, and construction have been available.

In an organization the size of our department, proposals for research are constantly received. One of the responsibilities of the research coordinator is to evaluate each proposal. The HRIS on-line service provides an efficient means of summarizing research currently in progress or previously done in that particular area of interest.

In summary, the HRIS on-line system provides that important first step in any research activity. The availability of a brief, but quickly obtained information base certainly enhances the capabilities of the researchers in many application areas.

In our department, the system is used in an informal environment; that is, it is not integrated into a formal library operation. Plans are to make it a part of the research library operation. At this time the sole operator of the system is a research engineer with a computer background and a number of years of experience in various operational and research areas of the department. However, we feel that the system has been designed simply enough so that almost anyone in the research division could operate it adequately—preferably, with the researcher present to define and configure the search strategy.

Our research library, which is separate from the main library, is the informal "walk-in" type and is not staffed with professional librarians. Efforts were made without success before the HRIS on-line project to obtain a professional librarian. Our continuing with the HRIS on-line service may help in this matter. However, the lack of a librarian may have helped us in "selling" the program. The researchers requesting the search were able to become directly involved. As a result they became more intimately familiar with the operation and capabilities of the system. Any notion that the system was just another gimmick was quickly erased once the information requested was immediately displayed.

We use the off-line print option to a large degree when the volume of output is lengthy. A selected search is initially made on titles or other selected elements. If the search appears to be satisfactory, an off-line printout is requested. We have been getting next-day mail service from Battelle, possibly because of our proximity to Columbus. That reduces our connect time and on-line time, which is of course a significant savings.

Selig Starr, Federal Highway Administration

I agree that the test period for the demonstration project was too short for a sound evaluation. This was particularly true for those of us in FHWA because we did not go on line until late August and did not begin to indoctrinate terminal operators and poten-