BY CAROL TENOPIR

Online Images on STN

THE TIME IS coming soon when online images of journal articles will be the rule rather than the exception—when online full text with ASCII *and* images will be expected and available for almost everything. Already, image files are becoming more commonplace on the Internet, and many regular readers of CD-ROM books and journals expect to see images. In the commercial online world, where most searchers connect with a 9600 bps modem (or slower), images are still rare.

Last summer Chemical Abstracts Service (CAS), a division of the American Chemical Society (ACS), enhanced its text-only electronic journals file with images. Chemical Journals of the American Chemical Society (CJACS) now offers online image articles in addition to those with ASCII-text. The images are available only through STN International, the scientific and technical network of ACS.

CJACS not new

CJACS is not a new file on STN; in fact it was one of the earliest full-text journal articles files to come online. But like most online full text producers, CJACS provided text-only portions of the articles, which could be found in complete form in print. In the field of chemistry, the absence of graphs, tables, charts, structures, and other figures was a real barrier to usability. Online use of the file remained low and limited.

CJACS began as an ASCII-only file on BRS in 1983 after extensive user testing by ACS's Books and Journals Division and BRS. ACS and BRS conducted an expanding series of tests from 1979 through 1982 to see how scientists would react to full-text online journals. Users had generally positive reactions and could see the value of having the full text searchable. Even at that early date, however, users were concerned by the lack of graphics and wanted costs to be kept low.

Most early users of ASCII texts did not use the online versions as a replacement for print. Instead, they used the seachable full texts as a way to locate relevant articles that they then retrieved in paper image form from a library. They did not spend much time reading online but preferred to read print copies.

CJACS Plus with images

With the addition of images to the searchable ASCII versions, the CJACS Plus file becomes a useful tool for research chemists and a supplement to a library's journal collection. All of the 23 journals produced by ACS are available, including the *Journal of the American Chemical Society*, *Journal of Physical Chemistry*, *Journal of Organic Chemistry*, *Analytical Chemistry*, *Inorganic Chemistry*, *Environmental Science & Technology*, and *Journal of Chemical Information and Computer Sciences*.

Searchable ASCII versions continue to be available on CJACS Plus as well. Articles from 1982 to 1991 are still on CJACS Plus in text-only versions. Additionally, all articles from 1992 to the present have ASCII *and* image versions. More than 35,000 image articles are available in a total database of more than 150,000 records.

Downloading images

Users must search with STN's special menu-driven search software, STN Express Version 3.2, to view or download images. Version 3.2 is basically the same as earlier versions of STN Express, with the added image viewing and downloading capability.

After searching the ASCII texts to locate relevant articles, the GI (graphic image) field can be displayed to see if there is a corresponding image file. If there is, the "capture session" menu option, together with the DISPLAY command, allow you to download the image for later viewing.

The images are bit-mapped pictures of the original journal articles. Scanned at 300 dots per inch (dpi), the quality is twice as clean as most FAXes and appropriate for the technical drawings and charts often found in these journals. They are sent to your computer in TIFF (tagged image file format) with each page tagged as a separate image of about 70Kb–130Kb in size. Images are compressed in Group 4 FAX format.

A user can choose to download and view the first page only; all except the first page; or all pages. Since each page is a relatively large file, when in doubt of an article's usefulness it makes sense to view the first page alone to judge its relevance. Then, if you still want the remaining pages, they can be downloaded.

I recommend an Internet network connection running at a minimum of 56kbps for images. A 14,400 bps dial-up connection is my second choice, available in many areas with a CompuServe telecommunications connection. The minimum recommended transmission speed for CJACS Plus images is 9600 bps.

At an average page size of 100k and with almost all pages between 70k and 130k, image transmission speeds of long articles can take what feels like a very long time. Most Internet network connections will take one to three minutes per page; at 14,000 bps dial-up it will take three to five minutes per page; and at 9600 bps it will take four to six minutes per page. At 9600 bps, if you are downloading a five-page or longer article you had better be very motivated and very patient!

What does it cost?

The connect time is not free, either, although online connect-hour prices were significantly reduced for CJACS Plus when images were introduced. The old cost of $84 per hour was brought down to $29 per hour and a full document image charge added. Document charges range from $10 to $15 per article.

For maximum continued utility and maximum quality, you should download the image files to your computer to be viewed online or printed on your local printer. This provides the best quality output and, in cases of downloaded images, the opportunity to make additional copies of equal quali-



Carol Tenopir is Professor at the School of Library and Information Science, University of Tennessee at Knoxville. Her E-mail address is tenopir@utkux.utk.edu

ty. Downloaded pages can be viewed in full screen size or they can be enlarged (Zoom in) or reduced (Zoom out).

Downloaded images can be manipulated with software that can handle TIFF images compressed in Group 4 FAX format. Examples of some programs that can convert TIFF images to other formats so they can be viewed and manipulated include HiJaak and RastView for PCs or Imagenation and TiffWindow for Macs. For word processing, both Word for Windows 2.0a or higher or WordPerfect 5.X will work with TIFF images. All standard copyright provisions and conditions for use apply to the image files just as they do to the text files.

Document delivery

CJACS Plus can be used as a more standard document delivery service as well. ACS will FAX an image article to any number you specify or mail a hardcopy offline print to any address you specify. Turnaround time on the FAX service is usually between one and two hours, and FAX articles are of lower quality (150 dpi) than downloaded ones; for long articles it would often beat the hour or more online connection required to download the image with a 9600bps modem.

Document delivery services combined with online or CD-ROM searches of bibliographic files will continue to be big news in 1995. In addition to the CJACS Plus service, UMI, OCLC, CARL, and Information Access Company (IAC) will all have enhanced document delivery services with articles sent via FAX or an online connection.

Links to bibliographic files

CJACS Plus is also linked to the CA (Chemical Abstracts) and CASREACT bibliographic files, although in a rather awkward way. The OS (other sources) field in these bibliographic records tells whether there is a CJACS text version or CJACS image version of this article. Using the "select" and "crossover" commands, desired articles can be selected and marked for displaying from CJACS. These will be assigned a number.

The searcher then has to go into the CJACS Plus file, search on the assigned number to build an answer set, then print or view the resulting set. However, there should be an easier way.

Linking bibliographic files to corresponding full texts is a valuable service that is becoming a trend. Starting this year, OCLC's EPIC and FirstSearch have links between many bibliographic files and ASCII texts supplied by UMI (for more information, see "A Second Look at FirstSearch," *LJ*, November 1, 1994, p. 30,32). BRS, now CD PLUS online, pioneered a LINK command between Medline and core medical journals. In an ideal world, all bibliographic databases on online systems would be linked to some full-text database or document delivery service. (And it would be done automatically without having to change files or enter new searches.)

On a smaller scale, two other STN files added some images last summer. The Derwent World Patent files (WPIDS and WPINDEX) contain ASCII-text files of patent information, but they now include a patent drawing with many patent records. The patent records are text files, while the added drawings are TIFF image files attached to the text records.

In the case of patent drawings, the image size is usually less than 10k so it can be sent relatively quickly and stored without problem. Approximately 1.5 million patent records on STN now have these image drawings. These include electrical and engineering patents from 1988 to the present and chemical patents from 1992 to the present.

SciFinder

At the Online/CD-ROM '94 meeting in San Francisco this past October, CAS introduced another enhancement to STN searching. SciFinder is a front-end software product aimed at end users, in particular researchers and other scientists who have subject expertise but are novice online searchers.

SciFinder has Windows and Mac versions that use a point-and-click approach to simple online searching. Working in a client-server mode, SciFinder is a desktop application that allows scientists to search CAS databases, download relevant information, and incorporate the search process and results into their daily work. It is set up in a way to mimic the typical research functions of "explore," "browse," and "keep me posted."

Explore, the most typical online searching function, asks users to respond to a series of questions before it automatically logs on to STN. A subject search or an author search, for example, can be conducted by responding to the appropriate questions and, when prompted, by entering the words or author name that is to be searched.

Browse lets users read STN's full-text journal articles, both ASCII and journal article images. With the improved quality of most display monitors and an increase in the time most scientists spend on a computer, the hesitations expressed by the scientists in the 1979–82 studies are probably no longer valid. Low connect costs, better images, and better display devices make reading online less of a barrier.

"Keep me posted" is a current awareness service. A scientist sets up a search interest profile that is matched with database updates. SciFinder automatically notifies users when a new match is made.

> Users want full text, images, friendly software, and low prices. Nontraditional services are delivering on these expectations; traditional services are beginning to as well

CAS motivations

Why is CAS offering so many innovative enhancements now? It has been rumored that the company's motivations are not completely altruistic but rather in response to the threat of increased competition and the negative publicity stemming from recent lawsuits that challenged its tax-exempt status. Certainly CAS is paying more attention to marketing, improving customer service, and new product development. In some cases, prices have been lowered as well.

All traditional online systems face competition and increased expectations from a growing population of users. Users want full text, images, friendly software, and low prices. Nontraditional services are delivering on these expectations; the traditional services are beginning to as well.

For more information on any CAS product or service, contact Chemical Abstracts Service, 2540 Olentangy River Rd., Columbus, OH 43210; 800-753-4227; 614-447-3731.