POST MORTEM OF THE ELECTRONIC PUBLICATION OF THE PAC 2001 PROCEEDINGS

S. Webber, P. Lucas, M. Arena, FNAL, Batavia, IL

Abstract

The Proceedings of the 2001 Particle Accelerator Conference are the fourth in the series to be published electronically. This report describes the preparations before the conference, the activities at the conference and the work afterwards that was required to produce the proceedings. The procedure was a success, and the proceedings were available on the WWW and for the publisher within a reasonable amount of time. There are some areas for improvement that are described in this report.

1 INTRODUCTION

The Proceedings of the 2001 Particle Accelerator Conference were the fourth in the series to be published electronically. This report describes the preparations before the conference, the activities at the conference and the work afterwards that was required to produce the proceedings.

Since the previous conference there has been significant progress in several areas concerning electronic publishing including the development of new templates, extensive use of the Oracle database, new tools to edit PDF and advancements in the scripts to create the indexes for the book, web and CD-ROM.

All papers were edited and quality assured within two months after the conference. However, the proceedings production was delayed significantly due to a large number of delinquent contributed and invited oral papers.

2 ABSTRACT SUBMISSION AND PUBLICATION

PAC2001 spearheaded a new abstract submission system using an Oracle database that interfaced with the web. All abstracts were submitted using this system, which was loosely based on Brookhaven's PAC99 system, with many advancements.

The major change that we made was to house all submissions by an author in a single account in our database. Before authors could submit their abstracts to PAC, they each had to create an account with a unique username and password. Authors then submitted each of their abstracts in the same account. In fact, the same account was used to house all of the abstracts, papers and copyright forms for a single author.

The account system made submission easier for the authors because they only had to enter their personal information one time—instead of with each abstract and paper submission as in the past. It also simplified paper reception because the authors could update titles, names and abstracts themselves. One problem that will have to be considered in the future is that authors were allowed to make changes at any point, which at times did inconvenience the editors and caused inconsistencies between the information posted on the web and the information printed in the publications.

With the use of Oracle, abstracts were published on the web immediately upon receipt. They were quality assured behind the scenes to ensure that all symbols and special characters appeared correctly. Minor spelling and grammar changes were also made.

To create the Abstract Book and Conference Guide, the database administrator wrote two reports to extract the data from the database. The data was then formatted using Quark Express, a page layout program. The process of creating the books took approximately three weeks for formatting and final editing. The editors suggest that more time be left for this process in the future.

3 SPECIAL CHARACTERS

PAC2001 did allow the use of special characters and diacritical marks in its abstracts, titles and author lists. This was accomplished using the Oracle database and a font created especially for PAC. Each supported character was assigned a "tag". For example α was represented as \alpha. This "tag" was then assigned a Unicode symbol for posting on the web and a font number for inclusion in the printed material. Since several of the characters did not have Unicode tags that were supported by both Netscape and IE, we used GIFs to represent them. All of this information was housed in a single database table and executed by database scripts (see Appendix A). In the end, we had to include one final item in the table—a plain text representation of the special character for the SPIRES database and the PDF hidden fields..

The implementation of special characters for PAC was successful. Though the system, scripts and font took quite some time to configure, other conferences are welcome to use and build on both the existing scripts and the PAC font. One drawback of our special character system is that the number of characters that can be included in the font is finite, and therefore we have to limit the number of special characters that authors can use.

4 WEBSITE AND INSTRUCTIONS FOR AUTHORS

PAC2001 made extensive use of the web, and it took a good deal of time to set up both the static and dynamic pages. Since so many of our procedures were new, the development was a continual process throughout the year prior to the conference, with abstract submission being activated in October 2000, templates available in February 2001 and paper submission beginning in April 2001.

4.1 Static Web Pages

While we took many ideas from the PAC99 and JACoW web pages, most of the static web pages for PAC01 were built from scratch. Writing instructions for all of our new procedures was a time-consuming process, but all of the web pages were written and ready to post well in advance of our October 1, 2000 deadline. Static web pages were maintained, changed and added throughout the process as needed.

4.2 Dynamic Web Pages

All of our dynamic pages were driven by the Oracle database. We were able to create an account system that housed all of an author's materials, from personal information to personalized copyright forms for each paper. With Oracle, we were also able to develop a search function that allowed authors to review abstracts as soon as they were posted and papers as soon as they were edited. It was eight weeks from the date of our first meeting until the dynamic pages were fully tested and posted on the web. Development continued throughout the year since our database administrator added new

functionality as it was required. In total he spent 6 full-time weeks on PAC database development.

5 TEMPLATES

The existing Microsoft Word templates were overhauled for PAC2001. Since our versions were newly developed and not well tested, these templates were posted on our own site rather than the JACoW site. In effect, PAC2001 tested the templates, which have now been adopted as the JACoW standard.

The largest change to the templates was the use of styles and macros. All styles were created per existing JACoW specifications and entered into a menu at the top of the page. In addition, two macros were created. The first allowed text to span the entire page with proper margins, and the second created text in two columns, also with proper margins.

The templates took some time to update. Each template was created on the correct platform and with the correct software version—we did not use the "save as" feature. The macros also had to be rewritten for each template (A4 and US Letter, software version and platform) because of the different ways that commands are interpreted in different versions of Microsoft Word. We also had to make extensive changes to the Microsoft Word instructions for authors to explain how to use the new template features.

The templates were well received by authors and editors, and a decrease in paper formatting problems is attributed to them. Continual development and maintenance of the templates is necessary since Microsoft releases a new version of Word for either Mac or PC nearly every year.

The LaTeX templates for PAC2001 remained nearly the same as those for EPAC 2000, with a few small updates made by Martin Comyn (TRIUMF).

6 SERVER CONFIGURATION

PAC2001 purchased two new database servers and two new web servers to support the abstract and paper submission system. One of each was configured and the other was ready as a spare in the event of a hardware failure.

The Oracle database was installed on a Dell Dimension 866 MHz Pentium III server running Windows NT. Four 18G hard drives made up two groups of functional storage with 36G capacity each. Each group had two mirrored hard disks. Oracle Application Server was installed on the web server, a Micron 650 MHz Pentium III also running Windows NT. The web server had two 10G hard disks that mirrored each other.

Both servers were networked via Fermilab's main network connection, which has two separate OC III web fiber lines in Chicago. The servers were also on the Fermilab UPS (uninterrupted power supply) program to assure access even in the event of a power loss at the laboratory. Tape backup was performed nightly, and Oracle transaction logs could be used to "redo" any transactions that occurred between backups. The servers remained at Fermilab during the conference. A T1 line was run directly from the conference site to Fermilab to enable editors and authors to communicate with the server. See Appendix B.

7 ELECTRONIC SUBMISSION

PAC2001 is the first accelerator conference to require full electronic submission of papers. Authors who arrived at the conference with a diskette were sent to the e-mail room to submit their files to the FTP server. This required some extra staff in the e-mail room to help authors but allowed the editors more time for processing papers. Authors were still required to bring a paper copy to the conference editorial suite since verification with a paper original is still a crucial step in the quality-assurance process.

7.1 File Upload

Our initial form of electronic submission was a web-based file upload system. Authors were required to upload papers into their user accounts, and the papers were stored directly in the Oracle database—associated with the proper abstracts.

We expected that the editors would download files directly from the database, work on them, and then post the PDF files on the web. This procedure was meant to prevent the type of network and backup problems that were experienced at EPAC 2000 [1].

This system worked beautifully when only several authors were submitting. Unfortunately in the days before the conference, with many authors submitting and editors downloading, the system began to hang and eventually became unusable. Since we were under pressure to have everything work properly for the conference, we decided to abandon web-based file upload instead of trying to fix it.

7.2 FTP System

Fortunately our good computer support staff was able to develop and implement an FTP system in a matter of a few hours.

With this new system, authors were required to enter their paper information (platform, version, etc.) into the database through their user account. After they completed this, they were given an FTP address to which to send their papers. This system caused some confusion since many authors forgot one of the two steps; however a modified version of this system may work for future conferences.

8 CONFERENCE COMPUTERS AND NETWORKING

The hardware requirements at the PAC2001 conference were based on those at EPAC 2000 and PAC99. We rented a total of 54 PCs, 14 Macs, 3 color printers and 4 b/w printers. All of the machines were equipped with CD-ROM readers and floppy drives. In addition, all of the

Macs and some of the PCs had 100MB zip drives. One Mac and one PC were delivered to Fermilab in advance of the conference. Our computer support personnel created ghost images, which were sent to the vendor for installation on the rented computers for the conference.

8.1 Pre and Post-Conference Editorial Suite

Editing took place in the Fermilab Training and Development (TAD) center during the week before and the week after the conference. Our computer support personnel created ghost images of the editorial software and loaded it onto the TAD machines. Editing in this venue was quite successful even though there were not any Macs available. It seems that Microsoft's claims of cross-platform and cross-version compatibility are more true with the onset of Word 2000 for PC and Word 2001 for Mac, and it was rare that we had to create a postscript on a specific platform or version in order to create a good PDF file.

8.2 Conference Editorial Suite

The editorial suite at the conference was home to 14 PCs (2 for paper reception and 12 for editing) and 4 Macs. Two of the PCs were equipped with Linux. There were two color and two b/w printers available for use in this area.

Since file sharing with Macintosh was not enabled on our server, we had to install "Dave" software to enable Macs to work on our NT server. Even when Macs were available, very few editors chose to use them. The Linux machines were not used since LaTeX was available on the PCs.

The computers in the editorial suite were equipped with the following software:

PC
   Windows 2000
   Norton Antivirus
   Netscape, IE, telnet and FTP
   Microsoft Office 2000
   Adobe Type Manager
   Ghost View
   Acrobat 4 with PitStop plug-in[*]
   PowerArchiver (for zipping and unzipping files)
   MixTex (LaTeX2e for Windows)
   Gemini (an Acrobat 4 plug-in that was added during the conference for editing images in PDF files)

Mac
   MAC OS 9
   Norton Antivirus
   Netscape, IE, telnet and Fetch
   Microsoft Office 2001
   Ghost View
   Acrobat 4 with PitStop plug-in
   StuffIt Expander
   Dave (to allow Macs access to our NT server)

---

[*] See Appendix C for guidelines on how to configure Adobe Acrobat and Acrobat Distiller.

8.3 Public Computing Area

The public computing area was more important at PAC01 than at any previous conference. Since we did not accept papers on floppy disks, extra machines and support were needed in the public area so that authors could submit their papers via FTP. Therefore, we allotted 39 PCs and 10 Macs to this area. In addition we provided 20 connections for laptop computers and two printers (1 b/w and 1 color). There were always at least two computing professionals or FTP experts available to assist authors. The computers in the public area were configured much the same as those in the editorial suite, except that they had the free Acrobat Reader instead of the full version of Adobe Acrobat.

8.4 Streaming Video, PowerPoint and Animation

At the 2001 JACoW meeting, the EPAC SPC brought up the idea of including the invited and contributed speakers' slides as part of the proceedings. PAC2001 decided to implement this suggestion by creating web based streaming video presentations of the opening plenary, closing plenary and special sessions.

The Fermilab Visual Media Services department oversaw the video taping of the three streaming video sessions, and the slides for these sessions were delivered to them. They created JPEG files of all of the slides and synchronized them with the video streams. The slides and video are available on the web at, http://www-visualmedia.fnal.gov/VMS_Site/r_PAC2001.html. The final slides and video streams will remain on the Fermilab streaming server, and the CD-ROM and web versions of the proceedings will link to this server. Streaming video was successful at PAC2001, but future conferences should note that a knowledgeable staff and a significant time investment is required to create a good quality product.

All speakers were allowed to use PowerPoint, and any speaker who used PowerPoint was required to submit the slides to the editorial staff prior to their presentation. A staff member reviewed the files for font compliance and loaded them onto the laptop for the proper session. We suggest that future conferences dedicate at least one full-time staff member to reviewing and loading PowerPoint presentations.

Finally, it is worth noting that one author requested and was allowed to include an animated figure with his paper on the CD-ROM and web version of the proceedings. We were able to link his PDF file to his HTML animation file with little trouble.

9 PROCESSING FILES

9.1 Processing Files at the Conference

The aim of the processing activities at the conference was to edit as many papers as possible while keeping authors up to date on the status of their papers. Although authors were required to submit papers electronically,

they still had to deliver hard copies to the paper reception room; copyright forms were also accepted here. There were five people on hand to handle paper reception, database updates, filing and dot board duties. These people also fielded all initial questions regarding paper status and file upload. It is suggested that more people be devoted to paper reception in the future.

The editorial staff consisted of eleven full time workers with several drop-in volunteers. For the first time at PAC2001, all papers were assigned to editors through the database. A paper was available for assignment to an editor as soon as the paper information and the accompanying files were received. Papers were assigned based on the editor's platform (Mac or PC). Editors were able to choose whether they wanted to edit Word or LaTeX papers and whether they wanted to edit papers from Asia, the FSU or other areas. After learning that newer versions of Word are more compatible with each other, we added the option to edit a Mac paper on a PC platform.

All editorial comments were tracked in the database, so no processing sheets were necessary. During the conference, we found the need to make the editorial comments available to the staff in the paper reception room. Future conferences should have this ability available at the beginning of the conference, and all editors should be encouraged to make clear comments so that the paper reception staff can advise the author of any changes that need to be made to the paper.

As usual, processing the files consisted of :

- Distilling the postscript
- Checking fonts
- Cropping the pages†
- Checking margins
- Printing the file
- Checking overall quality

9.2 Post Conference Paper Processing

The primary post conference activity was to send e-mail to all authors who did not submit their papers at the conference. This task was simplified by using an automatic e-mail function from the database. These authors were notified that they had two weeks to submit their papers.

By Sunday after the conference, the editorial staff had finished processing all of the files, and quality assurance began. One person remained dedicated to processing any new or corrected files that arrived. Quality assurance, the second step in post-conference processing, consisted of the following activities:

- Opening the file and checking for page errors
- Checking that the file (especially graphics and LaTeX math fonts) displays properly on the screen
- Checking the margins and fonts

---

† See Appendix D for information on setting up a page resizing procedure.

- Comparing the editor printout to the author original
- Cross checking the title and list of authors with the database and making any necessary changes
- Entering the number of pages into the database

After the quality assurance was finished, all author names and titles were double and triple checked. The number of pages for each paper was not verified another time but should have been, as some mistakes were found when the numbered output was printed.

During the quality assurance process, the decision was made to fix as many LaTeX Type 3 fonts as possible (even in the maths). While we were successful in correcting many of the problem files, the process proved to be quite labor-intensive. Any effort made in the future to inform the community about the difficulties of Type 3 fonts would represent time well spent.

9.3 Pre Publication Processing

A new process for numbering pages was developed by Leif Liljeby (MSI). This process enabled us to add page numbers to the PDF files without going back to postscript and without combining the files into one large document. It utilized a program called WinBatch and a plug-in called Impress Pro. The Oracle database was used to assign page numbers and create a text file that the WinBatch script used to complete its processing. The script opened each PDF file, cropped it, added the hidden field information, numbered it, added the conference stamp, added the copyright information and saved the file. The Acrobat batch processor was then used to generate thumbnails and set opening options. See Appendix E for information on the WinBatch script.

10 PUBLICATION

10.1 Preparing the Book

The Table of Contents and Author Index for the proceedings book were created from the database, and an Acrobat plug-in (BatchPrint PDF) was used to print the PDF files in sequential order. The printed pages were carefully checked with the Table of Contents before sending the camera-ready output to the printer.

10.2 Preparing the CD-ROM and Website

We followed the example of PAC99 and created an HTML based CD-ROM. All of the indexes (table of contents, author index, classification index and keyword index) were written in HTML. The HTML files were generated with database scripts. An index was also created using Acrobat Catalog to allow full text searching. The information on the final website will be identical to that on the CD-ROM.

11 STATISTICS

11.1 Manpower

Table 1: Manpower resources for the PAC proceedings.

	Time in Person Weeks
Planning	5
Database development and maintenance	8
Abstract processing	3
Conference computing setup and support	8
Pre conference processing	7.5
Conference processing	16
Post conference processing	
First week	6
Subsequent time	14
Publication	7

One full time staff member was hired to manage the PAC publications office. She worked full time for 1½ years on PAC2001. In addition to her time, the conference editor spent approximately 10% of his time for 1½ years on this project.

11.2 Platforms

The statistics presented here are based on a sample of all of the files that were submitted to the conference. Information was obtained from the file upload section of the PAC database.

The number of PC, Mac and UNIX users appears to have remained steady since EPAC 2000 [1], with PC users at 61%, UNIX at 27% and Mac at 12%.

11.3 Software

The software packages used by authors remains limited to Microsoft Word and LaTeX. Less than 1% of the papers (1 paper) were created with non-standard software.
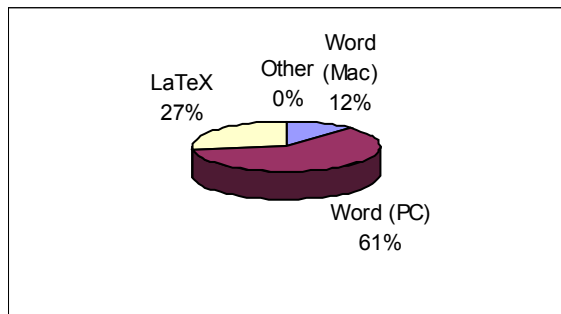

Figure 1: Software used for the preparation of PAC01 papers.

These numbers also appear consistent with the EPAC 2000 findings.

11.4 Failure Rates

At the end of the conference 5% of the papers still had serious problems that needed to be fixed by the author, and another 2% had been fixed by the editors and were awaiting author approval.[‡] During the quality assurance stage, the staff found errors in many of the papers that were previously deemed acceptable. A large number of papers were corrected and authors were asked to review the changes on the web and send approval via e-mail.

11.5 Fault Analysis

One new margin problem appeared at PAC01. Since only electronic files were accepted, many authors worked on their papers in the e-mail center. When Word papers authored on the A4 template were made into postscript on a printer driver set for US letter paper, the text shrunk and the margins came out wrong. Authors in the e-mail center could not fix this problem themselves because they were not allowed to choose US letter paper as a printer option. This problem could, however, be fixed by editors, who used Acrobat Distiller as the driver to create postscript. Future conferences should take care to ensure that there is a postscript printer driver that supports both A4 and US letter on all public computers and that authors are directed to create their postscript files on the correct paper size.

Other problems remained the same as in past years. Other than the A4/US letter problem, most margin problems occurred because tables or figures extended outside the margins. This problem was easy to fix with PitStop. Font problems remain for some of the papers, the largest being LaTeX Type 3 fonts and improper translation of MathType fonts in Microsoft Word.

Some figures were slow to display in the PDF files. Many of these were fixed using a new Acrobat plug-in, Gemini (introduced to us by Leif Liljeby), which allowed authors to replace slow-to-draw line art and EPS files with more efficient JPEG files.

As a final note, the instructions for authors stated that if a paper did not fill its final page, the two columns on that page should be of approximately equal length. This is as opposed to filling the first column to the bottom of the page and leaving a short, or nonexistent, second column. Papers look better when completed in this manner. In general authors did not follow these instructions for PAC2001, and efforts for fixing this problem were half-hearted at best. It is suggested that the improvement be kept, but emphasized more strongly in the future.

12 PROBLEMS ENCOUNTERED

12.1 File Upload

One serious problem encountered at PAC2001 was the failure of our file upload procedure. Authors were supposed to upload their files directly from the web into their account on our Oracle database. However, the large number of authors submitting in the few days before the conference caused the system to hang and become unusable. In a matter of a few hours, we were able to switch to a mode of FTP submission. This system was

---

[‡] It is estimated that another 2% of papers were fixed by the authors at the conference and that 5% of the papers that had been fixed by editors were approved at the conference.

more difficult than file upload for both authors and editors because it had several steps. In addition, many authors had to submit their papers at the conference because firewalls at their home institutions prevented them from accessing the FTP site. While the FTP system did work well, we hope that future conferences can find a system that is a bit more seamless for both author and editor.

12.2 LaTeX Type 3 Fonts

LaTeX Type 3 fonts are still a large problem. While we no longer see many papers that are comprised entirely of Type 3 fonts, many papers contain Type 3 math fonts. During quality assurance it was decided that we should fix as many of these Type 3 fonts as possible. This proved to be a time consuming process both because of the steps required to reprocess these papers and the limited number of editors with knowledge of LaTeX.

12.3 Math Type Fonts

One problem that we discovered when we checked the PDF file against the original was the disappearance of certain special characters. After some research we determined that the error occurred when editors made changes to an original Word file that used Math Type fonts. It seems unfair to ask authors not to use Math Type since it produces equations that are far superior to those produced by Word's Equation Editor. Luckily the Math Type font installers are available at no charge from: http://www.mathtype.com/support/fonts/default.stm. Math Type fonts should be loaded on all editorial and public machines to avoid loss of information.

13 IMPROVEMENTS FOR THE FUTURE

13.1 Automatic Distillation and Cropping

It is suggested that future PAC conferences use an automatic distillation process like the one implemented in PAC99. This system would make it possible for an author to automatically review the PDF file upon submission and resubmit if the PDF displayed any errors. With this type of system it might also be possible to eliminate paper originals in the future.

An automatic cropping procedure should also be implemented with this process to ensure uniformity in cropping between all papers.

13.2 Automatic LaTeX System

As mentioned before, LaTeX Type 3 fonts are still a major problem, and our decision (during quality assurance) to eliminate all Type 3 fonts led to a time consuming process. Since most authors work on a lab-wide LaTeX system, they are unable to change their dvips configuration file to use the correct math fonts. See Appendix E. Our attempts to work with the labs to fix this problem have been futile. Therefore, we suggest that future conferences try to implement an automatic LaTeX system (like that at LANL) to deal with the Type 3 fonts and ensure uniformity between the papers.

13.3 Training Session for Processing Staff

While all of the editors invited to participate in PAC conferences are skilled in the area of paper processing, it is imperative to run a short training session. Each conference implements new technology, and each editorial staff has different requirements for acceptable and unacceptable papers. Training editors with examples of acceptable and unacceptable papers would greatly reduce the number of papers that must be corrected during the quality assurance stage.

13.4 File Upload System

FTP is becoming increasingly difficult as accelerator laboratories face increased computer security, and it is clear that a web upload system should be implemented at future conferences. One option for file upload is available with the new Oracle database and webserver software. It is a mode of FTP that has a web interface and allows all papers to be stored in the database, as was our intention at PAC2001.

However, storing information in the database might cause difficulty in implementing the automated distilling and cropping procedure and the automatic LaTeX system suggested above.

13.5 ISO 9660 Standard

It is imperative that conferences follow the ISO 9660 naming standard, which requires file names to be uppercase and consist of no more than eight characters plus a three-digit extension, from the beginning. Many changes had to be made to file and folder names during our final processing to ensure that the CD-ROM would be fully compatible on all platforms. Following these conventions from the start would reduce the workload at the end.

14 ACKNOWLEDGEMENTS

Cynthia Crego (FNAL)
Myra Fultz (ORNL)
Sandra Lee (FNAL)
Celina Paul (FNAL)
Cyndi Rathbun (FNAL)
Gayle Sundeen-Coleman (TJNAF)
Sherry Thomas (TJNAF)

We appreciate the efforts of those who worked on AV and Streaming Video at the conference:

Dan Haid (ORNL)
Jim Shultz (FNAL)
Fred Ullrich (FNAL)

The following people deserve thanks for assisting with quality assurance after the conference:

Beth Anderson (FNAL)
Cynthia Crego (FNAL)
Catherine Eyberger (ANL)
Kelly Jaje (ANL)

Finally we would like to thank the following people for providing computer and web support before, during and after the conference:

John Bellendir (FNAL)
Kip Kippenhan (FNAL)
Andy Rader (FNAL)
Jean Slisz (FNAL)
John Urish (FNAL)
Kevin Williams (FNAL)

REFERENCES

[1] P. LeRoux and J. Poole, "Post Mortem of the Electronic Publication of the EPAC 2000 Proceedings", CERN-SL-Note-2001-007 MR, February 2001.

Appendix A

Special Character Database Table

Screen image	Code entered by author	Unicode for the web	GIF file for unsupported unicode	Byte code from PAC font	Plain text code for SPIRES & hidden fields
Á	\Aacute	Á		130	A
Â	\Acirc	Â		131	A
À	\Agrave	À		129	A
Å	\Aring	Å		134	Aa
Ã	\Atilde	Ã		132	A
Ä	\Auml	Ä		133	Ae
Ç	\Ccedil	Ç		135	C
Δ	\Delta	Δ	DELTAU.GIF	206	[Delta]
É	\Eacute	É		137	E
Ê	\Ecirc	Ê		141	E
È	\Egrave	È		136	E
Ë	\Euml	Ë		170	e
Γ	\Gamma	Γ	GAMMAU.GIF	209	[Gamma]
Í	\Iacute	Í		144	I
Î	\Icirc	Î		145	I
Ì	\Igrave	Ì		143	I
Ï	\Iuml	Ï		146	I
Λ	\Lambda	Λ	LAMBDAU.GIF	244	[Lambda]
Ñ	\Ntilde	Ñ		147	N
Ó	\Oacute	Ó		149	O
Ô	\Ocirc	Ô		150	O
Ò	\Ograve	Ò		148	O
Ω	\Omega	Ω	OMEGAU.GIF	215	[Omega]
Õ	\Otilde	Õ		151	O
Ö	\Ouml	Ö		152	Oe
Φ	\Phi	Φ	PHIU.GIF	207	[Phi]
Π	\Pi	Π	PIU.GIF	210	[Pi]
Ψ	\Psi	Ψ	PSIU.GIF	211	[Psi]
Š	\Scaron	Š	SCARONU.GIF	153	S
Σ	\Sigma	Σ	SIGMAU.GIF	213	[Sigma]
Θ	\Theta	Θ	THETAU.GIF	212	[Theta]
Ú	\Uacute	Ú		155	U
Û	\Ucirc	Û		156	U
Ù	\Ugrave	Ù		154	U
Y	\Upsilon	Υ	UPSILONU.GIF	214	[Upsilon]
Ü	\Uuml	Ü		157	Ue

Ξ	\Xi	Ξ	XIU.GIF	216	[Xi]
Ý	\Yacute	Ý		186	Y
Ÿ	\Yuml	Ÿ	YUMLU.GIF	159	Y
Ž	\Zcaron		ZCARONU.GIF	138	Z
á	\aacute	á		161	a
â	\acirc	â		162	a
à	\agrave	à		185	a
α	\alpha	α	ALPHAL.GIF	140	[alpha]
≈	\approx		APPROX.GIF	168	[approximate]
å	\aring	å		165	aa
ã	\atilde	ã		163	a
ä	\auml	ä		164	ae
β	\beta	β	BETAL.GIF	217	[beta]
ç	\ccedil	ç		166	c
·	\cdot		CDOT.GIF	180	x
χ	\chi	χ	CHIL.GIF	218	[chi]
°	\circ	°	DEGREE.GIF	193	[degree]
δ	\delta	δ	DELTAL.GIF	219	[delta]
÷	\divide	÷		253	/
é	\eacute	é		173	e
ê	\ecirc	ê		174	e
è	\egrave	è		172	e
ε	\epsilon	ε	EPSILONL.GIF	220	[epsilon]
η	\eta	η	ETAL.GIF	224	[eta]
ë	\euml	ë		175	e
ƒ	\fnof	ƒ	FNOG.GIF	254	[function]
γ	\gamma	γ	GAMMAL.GIF	223	[gamma]
≥	\geq		GEQ.GIF	246	>=
ℏ	\hbar		HBAR.GIF	179	hbar
í	\iacute	í		181	i
î	\icirc	î		183	i
ì	\igrave	ì		176	i
∫	\int	∫	INT.GIF	255	[integer]
ι	\iota	ι	IOTAL.GIF	225	[iota]
ï	\iuml	ï		190	i
κ	\kappa	κ	KAPPAL.GIF	226	[kappa]
⇐	\lArr		LARRDBL.GIF	251	<--- [double]
λ	\lambda	λ	LAMBDAL.GIF	227	[lambda]
←	\larr	←	LARR.GIF	249	<---
≤	\leq		LEQ.GIF	247	<=
μ	\mu	μ	MUL.GIF	228	[mu]

ñ	\ntilde	ñ		191	n
ν	\nu	ν	NU.GIF	229	[nu]
ó	\oacute	ó		194	o
ô	\ocirc	ô		195	o
ò	\ograve	ò		192	o
ω	\omega	ω	OMEGAL.GIF	240	[omega]
ø	\oslash	ø		198	oe
õ	\otilde	õ		196	o
ö	\ouml	ö		197	oe
∥	\parallel		PARALLEL.GIF	124	[parallel]
∂	\partial	∂	PARTIAL.GIF	167	[partial]
⊥	\perp		PERP.GIF	245	[perpendicular]
φ	\phi	φ	PHIL.GIF	221	[phi]
π	\pi	π	PIL.GIF	230	[pi]
±	\pm		PM.GIF	252	+-
Π	\prod	∏	PROD.GIF	178	[product]
ψ	\psi	ψ	PSIL.GIF	242	[psi]
⇒	\rArr		RARRDBL.GIF	250	---> [double]
→	\rarr	→	RARR.GIF	248	--->
®	\registered		REG.GIF	189	[registered]
ρ	\rho	ρ	RHOL.GIF	235	[rho]
š	\scaron	š	SCARONL.GIF	199	s
σ	\sigma	σ	SIGMAL.GIF	236	[sigma]
√	\sqrt		SQRT.GIF	127	[square root]
∑	\sum	∑	SUM.GIF	187	[sum]
τ	\tau	τ	TAUL.GIF	238	[tau]
θ	\theta	θ	THETAL.GIF	232	[theta]
ú	\uacute	ú		201	u
û	\ucirc	û		202	u
ù	\ugrave	ù		200	u
υ	\upsilon	υ	UPSILONL.GIF	239	[upsilon]
ü	\uuml	ü		203	ue
φ	\varphi		VARPHI.GIF	222	[phi variant]
ϖ	\varpi		VARPI.GIF	231	[pi variant]
ς	\varsigma	ς	VARSIGMA.GIF	237	[sigma variant]
ϑ	\vartheta		VARTHETA.GIF	234	[theta variant]
ξ	\xi	ξ	XIL.GIF	241	[xi]
ý	\yacute	ý		204	y
ÿ	\yuml	ÿ		205	y
ž	\zcaron		ZCARONL.GIF	139	z
ζ	\zeta	ζ	ZETAL.GIF	243	[zeta]

Appendix B

Hardware and Network Backup Architecture Summary

Cisco System Device

*

Oracle Application Server (Micron) **

Pentium III 650 MHz

10G	←→	10G

Oracle Application Server (Micron)

Pentium III 650 MHz

10G

Spare Oracle Database Server (Dell)

Pentium III 866 MHz

18G	18G

Spare Oracle Database Server (Dell) *

Pentium III 866 MHz

18G	←→	18G
18G		18G

Tape Back Up
****

Transaction Logs (Micron) *****
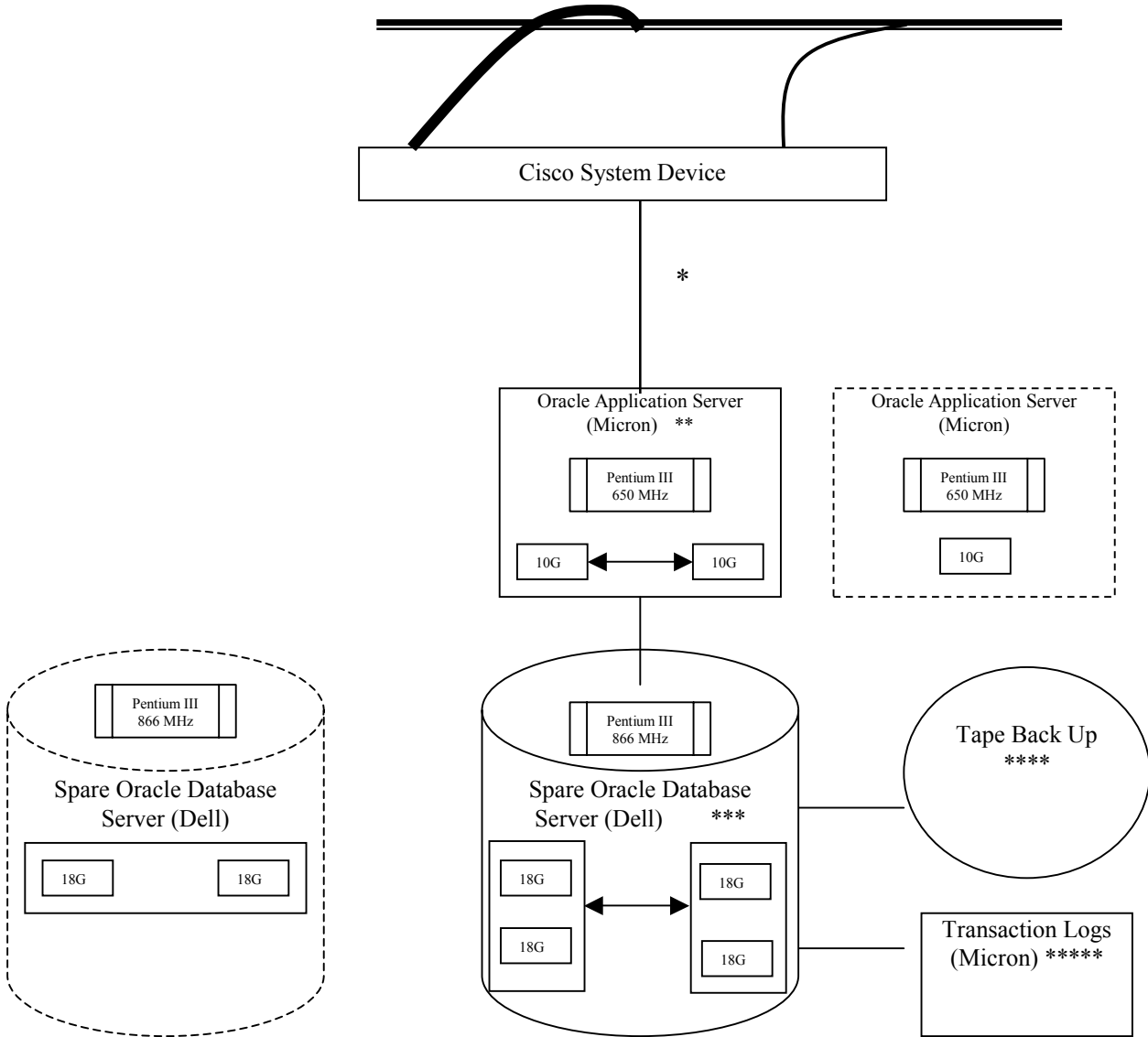
* Uninterrupted network connection with two separate OC III web fiber lines in Chicago composing two different paths backup each other.

** Two hard disks in the web server mirrored each other to eliminate halt time due to single hard disk failure. A spare Micron was available to take these hard disks in case the web server's CPU failed.

*** Four 18G hard disks made up two groups of functional storage with 36G capacity each. Each group had two hard disks that mirrored each other supported by the operating system. This mechanism significantly reduced the risk of data loss.

**** Tape back up was implemented daily, weekly and monthly by the PC group and handled by a backup expert. PAC support group members were able to monitor the backup process regularly. There was approximately 30 minutes of down time when processing these backups.
Daily Backup: Backup data in the past 24 hours nightly.
Weekly Backup: Backup data in the past 5 weeks weekly.
Monthly Backup: Backup data in the past 12 months monthly.

***** In order to deal with transaction failure, Oracle relies on the use of a "log" — a sequential file that stores information about transactions and the state of the system at certain instances. There are two types of logs: undo log and redo log. The process of removing the effects of an incomplete or aborted transaction for preserving automatically is known as UNDO. The process of reinstating the effects of a committed transaction for durability is known as REDO. Undo and Redo logs helped system recovery to ensure that (1) the updates of all transactions that had committed prior to the failure were reflected in the database and (2) all updates of aborted or in progress transactions at failure time were removed from the database.

Appendix C

Acrobat Distiller Setup

For standard PDF files on the web, it is generally acceptable to use Acrobat Distiller's default "ScreenOptimized" option with a few changes.

1. In the Compression tab, change the standard 72 dpi downsampling to 200 dpi, and change the Color Bitmap quality to maximum. The 200 dpi images are necessary to create a quality printed product, and the size of the file is generally acceptable for posting on the web.
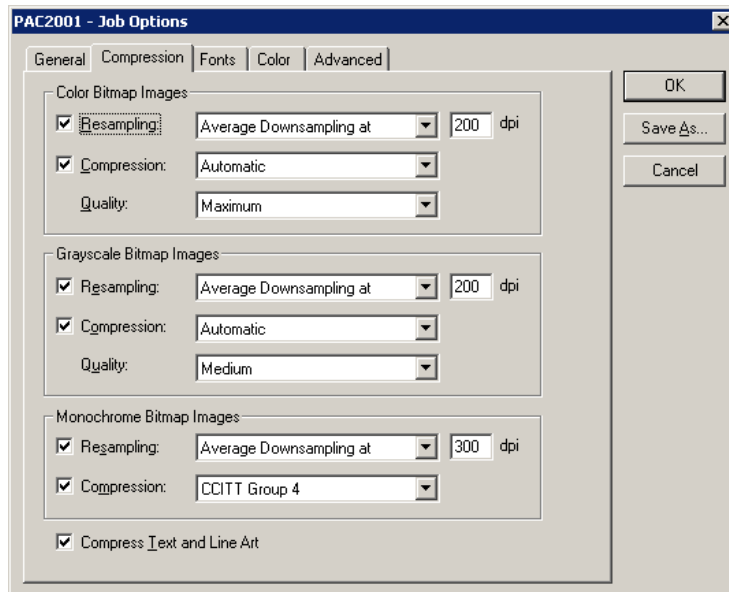
2. <u>ALWAYS</u> embed all fonts. Though we ask authors to use standard fonts, they do not always do so. Choosing not to embed fonts will create a PDF file that will only display and print properly on machines that have the correct fonts installed.
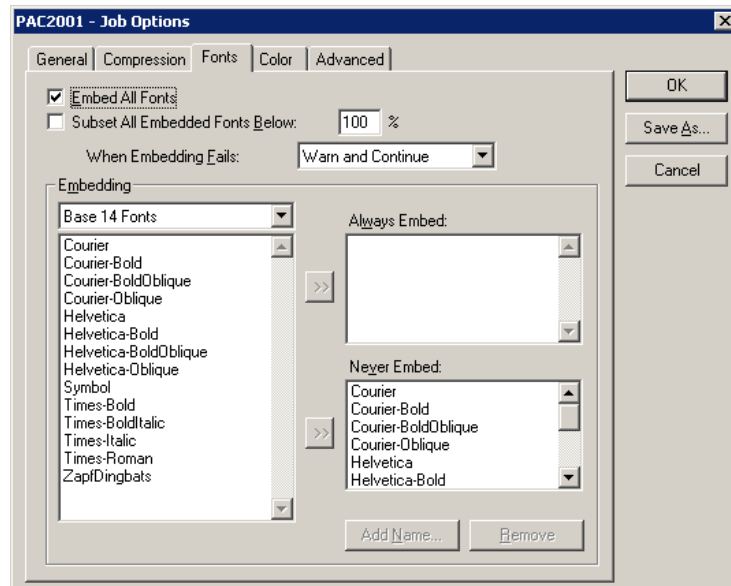
3. When you have a file that contains EPS or other line art, it may be necessary to change the default color option, Convert All Colors to CalRGB, to Leave Color Unchanged. This will ensure that figures will print properly on all printers (color and black and white).
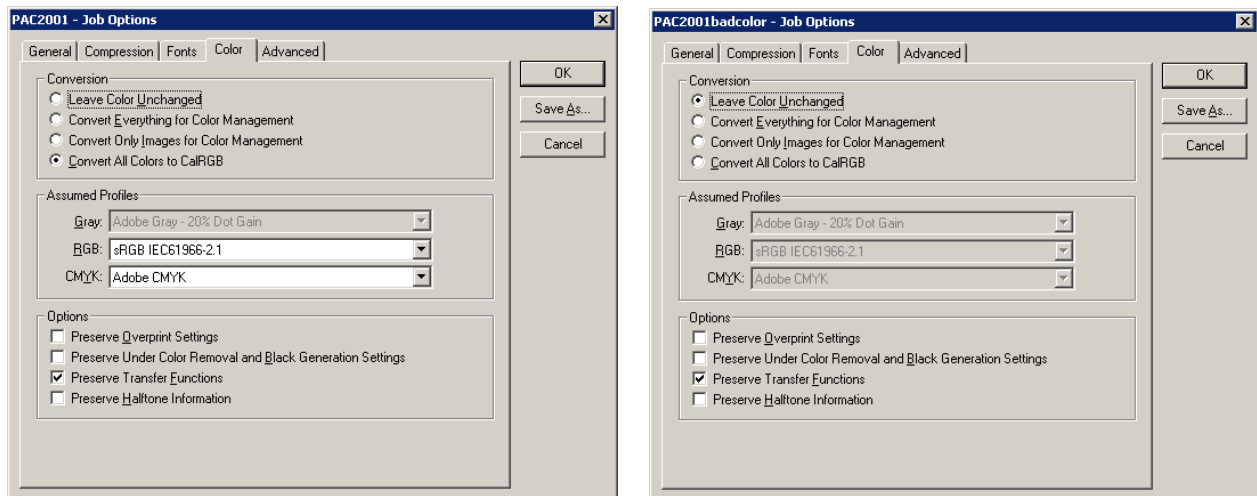

Adobe Acrobat Setup

1) Acrobat's General Preferences (**File>Preferences>General**) should be configured as indicated in the screen capture below. More specifically, the page units should be defined as points.
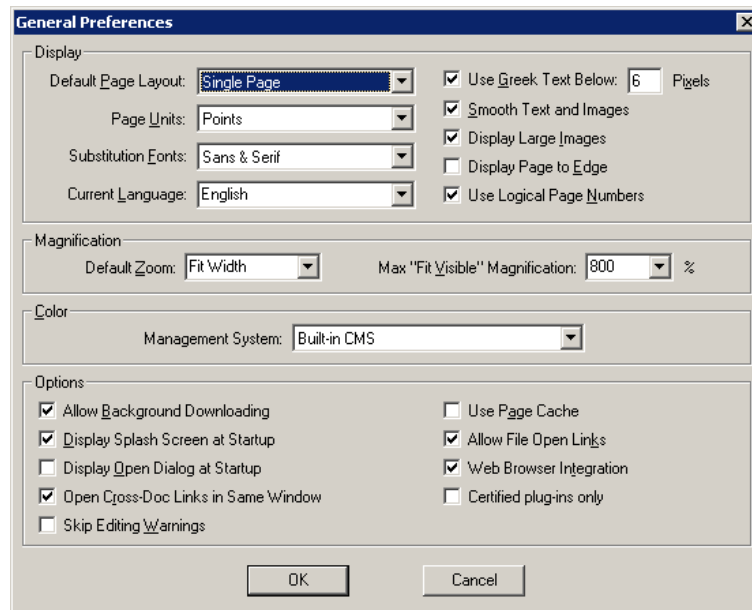
2) Acrobat's Form Grid should be configured so that editors can check the margins on the screen. In order to do this, configure the Form Grid (**File>Preferences>Form Grid**) as indicated in the screen capture below.
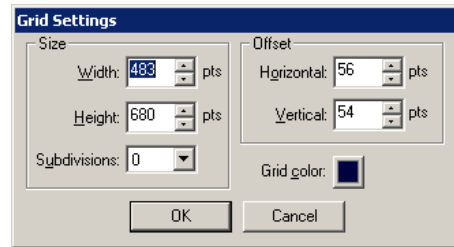

3) Files should always be saved using the Save As feature (**File>Save As**), and the optimize option should always be chosen.
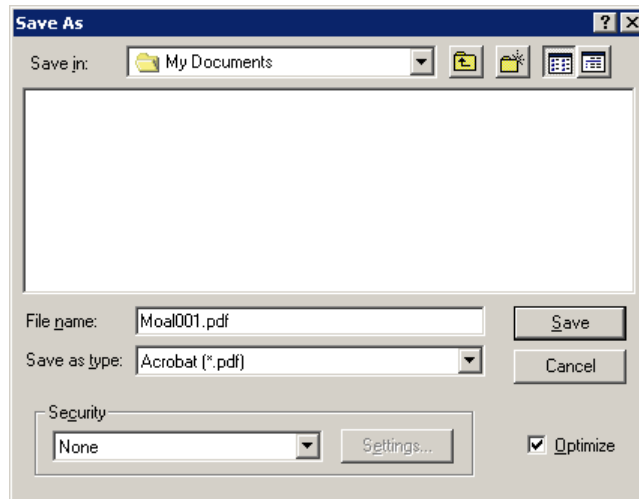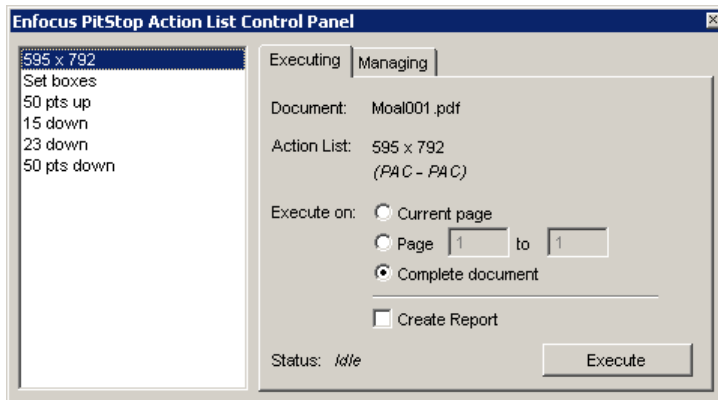
Appendix D

Resizing Pages

Pages must be cropped to 595x792 pt to ensure that they can be printed on A4 and US Letter paper. While it is possible to use cropping in Acrobat to resize the page, it is much easier to use PitStop's Global Change capabilities. Using Global Change will also ensure that all papers are cropped to exactly the same size.
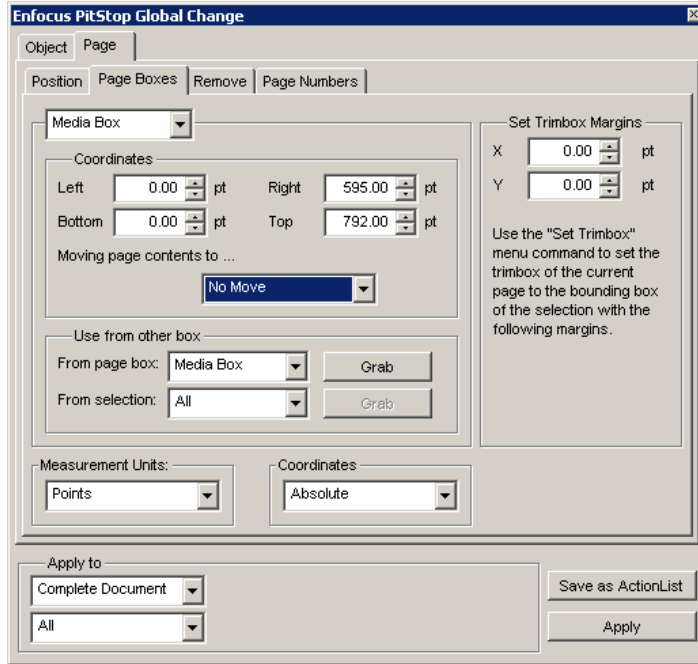
It is a good idea to create Action Lists for PitStop functions that you perform regularly. This will save time in your paper processing. The screen capture below is an example of the resizing procedure as an action list.

Appendix E

Win Batch Script

Leif Liljeby (MSI) wrote the Win Batch Script. It was used to crop PDF files, enter PDF hidden field information, and add the conference title, page numbers and copyright information to papers. The script is written as follows:

```
AcroFileName = "G:\Program Files\Acrobat\Acrobat.exe"
FileListPath = "c:\JaCoW\"
OutDir = "c:\Jacow\PdfOut"
OutName = "FileList.Txt"
AverageTime = 0.5
if FileExist("c:\PdfBatch.Ini") then
  IniFile = FileOpen("c:\PdfBatch.Ini","READ")
  AcroFileName = FileRead(IniFile)
  FileListPath = FileRead(IniFile)
  OutDir = FileRead(IniFile)
  AverageTime = FileRead(IniFile)
  FileClose(IniFile)
endif
InFileName = AskFileName("FileList",FileListPath,"*.txt","FileList.Txt",1)
FileListPath = FilePath(InFileName)
InFile = FileOpen(InFileName,"READ")
NoFiles = 0
while @TRUE
  InLine = FileRead(InFile)
  ParseData(InLine)
  if StrUpper(param1) == "END" then break
  if InLine == "*EOF*" then break
  if StrUpper(param1) == "FILE" then NoFiles = NoFiles +1
endwhile
TotTime = NoFiles * AverageTime
Message("ListFile",StrCat(NoFiles," will be processed in ",TotTime/60,"
Minutes"))

OutDir = AskDirectory("Output directory","",OutDir,"",0)
FileNo = 0
Run(AcroFileName,"")
WinWaitExist("Adobe Acrobat",20)
NotFirst = @FALSE
InFile = FileOpen(InFileName,"READ")
StartTime = TimeYmdHms()
NotFinished = @TRUE
while NotFinished
  InLine = FileRead(InFile)
  ParseData(InLine)
  if StrUpper(param1) == "END" then NotFinished = @FALSE
  if InLine == "*EOF*" then break
  if StrUpper(param1) == "AUTHOR" then sAuthor = StrSub(InLine,8,-1)
  if StrUpper(param1) == "SUBJECT" then sSubject = StrSub(InLine,9,-1)
  if StrUpper(param1) == "TITLE" then sTitle = StrSub(InLine,7,-1)
  if StrUpper(param1) == "KEYWORDS" then sKeyWords = StrSub(InLine,10,-1)
  if ((StrUpper(param1) == "FILE") || (StrUpper(Param1) == "END")) then
    if NotFirst then
      FileNo = FileNo + 1
      if FileExist(StrCat(InFilePath,InFileName)) then
        FileDelete(StrCat(Outdir,InFileName))
      endif
      SendMenusTo("Adobe Acrobat","File Open")
      WinWaitExist("Open",20)
      SendKeysTo("Open",StrCat(InFilePath,InFileName,"{ENTER}"))
      WinWaitClose("Open")

      SendKeysTo("Adobe Acrobat","!^a")
      WinWaitExist("Enfocus PitStop Action List Control Panel",20)

      MouseClickBtn("Enfocus PitStop","","Execute")
      WinClose("Enfocus PitStop")
      WinWaitClose("Enfocus PitStop")
```

```
        SendMenusTo("Adobe Acrobat","File Document Info General")
        WinWaitExist("General",20)
        SendKeysTo("General",StrCat("{TAB}{TAB}",sTitle,"{TAB}",sSubject,"{TAB}"))
        SendKeysTo("General",StrCat(sAuthor,"{TAB}",sKeyWords))
        MouseClickBtn("General","","Ok")

        SendMenusTo("Adobe Acrobat","Plug-Ins Impress Pro")
        WinWaitExist("Impress",20)
        SendKeysTo("Impress","{TAB}{TAB}{TAB}{TAB}{TAB}{TAB}{TAB}{TAB}{TAB}{TAB}")
        SendKeysTo("Impress","{TAB}{TAB}{DOWN}{DOWN}")

SendKeysTo("Impress",StrCat("{TAB}{TAB}{TAB}{TAB}{TAB}<PageNumber:",StartPage,">
{TAB}"))
        MouseClickBtn("Impress","Impression","Save")
        Display(1,"Resting","Don't know why I have to do this..")
        SendKeysTo("Impress","^{TAB}^{TAB}^{TAB}^{TAB}")
        SendKeysTo("Impress","{DOWN}{DOWN}{TAB}{TAB} +{DOWN}+{DOWN}{TAB} ")
        MouseClickBtn("Impress","Apply","Current document")
        SendKeysTo("Impress","{TAB}{TAB}{TAB} ")
        MouseClickBtn("Impress","","Close")

        SendMenusTo("Adobe Acrobat","File Save As")
        WinWaitExist("Save As",20)
        SendKeysTo("Save As",StrCat(OutDir,InFileName,"{ENTER}"))
        WinWaitClose(InFileName)
        SendMenusTo("Adobe Acrobat","File Close")
        OutList = FileOpen(StrCat(OutDir,OutName),"APPEND")
        FileWrite(OutList,StrCat("file ",OutDir,InFileName," ",StartPage+1))
        FileWrite(OutList,StrCat("author ",sAuthor))
        FileWrite(OutList,StrCat("title ",sTitle))
        FileWrite(OutList,StrCat("subject ",sSubject))
        FileWrite(OutList,StrCat("keywords ",sKeywords))
        FileClose(OutList)
      endif
      if NotFinished == @TRUE then
        NotFirst = @TRUE
        InFilePath = FilePath(param2)
        InFileName = StrCat(FileRoot(param2),".",FileExtension(param2))
        InFileName = StrUpper(InFileName)
        StartPage = param3-1
      endif
    endif
  endwhile
WinWaitClose(InFileName)
SendMenusTo("Adobe Acrobat","File Exit")
Now = TimeYmdHms()
Time = TimeDiffSecs(Now,StartTime)
AverageTime = Time / FileNo
IniFile = FileOpen("c:\PdfBatch.ini","WRITE")
FileWrite(IniFile,AcroFileName)
FileWrite(IniFile,FileListPath)
FileWrite(IniFile,OutDir)
FileWrite(IniFile,AverageTime)
FileClose(IniFile)
OutList = FileOpen(StrCat(OutDir,OutName),"APPEND")
FileWrite(OutList,"end")
FileClose(OutList)
Message ("",StrCat("PdfBatch finished in ",Time/60," Minutes"))
```

Appendix F

LaTeX DVIPS Configuration

A LaTeX system must be properly installed and configured to ensure that all Type 3 math fonts are eliminated. A proper LaTeX installation must utilize the most recent version of LaTeX2e because it uses the BlueSky postscript fonts. These fonts ensure that the text of a LaTeX files is not bitmapped.

There are, however, some configurations that need to be changed in order to ensure that the LaTeX math fonts are not bitmapped. The changes indicated below should be made in the dvips configuration file (config.ps). This file can be found on a PC using the following path: C:\Program Files\MikTeX\dvips\config\config.ps. Unfortunately authors who work on a lab wide UNIX installation are generally unable to make this change themselves.

The change that must be made is to uncomment the highlighted lines below.

```
% Partially download Type 1 fonts by default.  Only reason not to do
% this is if you encounter bugs.  (Please report them to
% @email{tex-k@@mail.tug.org} if you do.)
j

% An "all-in-one" psfonts.map.
p psfonts.map
% and the LaserWriter 35 fonts *not* in Acrobat. pdftex loads
% these differently
p +lw35extra.mapfile

% Instead of psfonts.map, you can use smaller "modules".
% See updmap script for how they are concatenated to make psfonts.map

% To use the CM Type1 fonts. Or use -Pcmz and -Pamz
% p +bsr.map
% "real" bakoma instead of interpolated bsr
% p +bakomaextra.map
% this one *or* the previous one. Not both!
% p +bsr-interpolated.map
```

A correct file will look like the following:

```
% Partially download Type 1 fonts by default.  Only reason not to do
% this is if you encounter bugs.  (Please report them to
% @email{tex-k@@mail.tug.org} if you do.)
j

% An "all-in-one" psfonts.map.
p psfonts.map
% and the LaserWriter 35 fonts *not* in Acrobat. pdftex loads
% these differently
p +lw35extra.mapfile

% Instead of psfonts.map, you can use smaller "modules".
% See updmap script for how they are concatenated to make psfonts.map

% To use the CM Type1 fonts. Or use -Pcmz and -Pamz
% Changed by S. Webber 6/23/2001
p +bsr.map
% "real" bakoma instead of interpolated bsr
% p +bakomaextra.map
% this one *or* the previous one. Not both!
% Changed by S. Webber 6/23/2001
p +bsr-interpolated.map
```