NCBA News

March 2004 The Newsletter of the North Carolina Biomedical Association Vol. 24, No. 2

President's Forum

Brian R. Poplin, CBET
NCBA President

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Do you remember cycling the batteries on defibrillators?

I recently had the opportunity to take a vacation to an island that rendered me void of cell phone coverage and email for the better part of 8 days. Much to my surprise the world had not collapsed in upon itself when I returned! The opportunity to recharge and "cycle my batteries" proved to be needed more than I expected and much more enjoyable after being rendered incommunicado.

Thinking about cycling batteries during a PM cycle makes me wonder about current trends away from preventive maintenance. With the ever present need to reduce healthcare cost, the tightening of the belt sometimes leads us away from consistent verification that all systems are functioning as they should. I remember doing performance testing on monitors and finding slight deficiencies that were being overlooked by the clinical staff because the issue wasn't a "problem" yet. Today many of our systems include self-diagnostics that render regular testing redundant if not obsolete. Many times history repeats itself and I wonder if performance testing of some sort won't become the next "Naderism" to shift our chosen profession.

During my trip, I read an interview given by Jack Welch the former CEO of General Electric in which he mentions the future of medical equipment in healthcare. He gave an example of a CT scanner being made to last ten or more years and patient protocols being sold much like a cable subscription for your television. Each owning entity would subscribe for the options or "channels" that they are using at the current time. The entire transaction for improving equipment optimization would focus on the capabilities of tests being performed by the physician. This notion, while not a new idea in the clinical engineering field sparked some wonderment during my own island upgrade (read: too much time without e-communication).

What if the future of clinical engineering focuses less on the repair of hardware and more on the interaction of technology with improving the clinical interface? Our future roles as technicians might just return to scheduled maintenance of the technology that has rendered our healthcare system one of the very best in the world.

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2004 Board of Directors

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NCBA News is an information service of the North Carolina Biomedical Association (NCBA). It has a distribution of about 500 and is published six (6) times per year. Articles and ads are due on or before the first day of odd numbered months. The newsletter is mailed on or about the 15th day of the odd numbered months.

While the NCBA makes every effort to assure that its content is accurate, articles are the products of individual authors and the NCBA is not responsible for the content.

NCBA News intends to disseminate information and ideas to its subscribers. While the NCBA News accurately reflects the source of the articles, the content is of variable quality and validity. The Newsletter Committee will attempt to verify all articles, but neither the Editor nor the NCBA is responsible for information.

YOUR HELP IS NEEDED!!! Articles of interest to our readers are constantly needed and frequently in short supply. If you have written any articles that may be of interest to our readers, submit it to Newsletter Editor, Glenn Scales, at editor@ncbiomedassoc.com.

2004 Standing Committees

Rules and Bylaws
Brian Poplin(Chair), Boyd Campbell, Glenn Scales, David Wilson

Nominating Committee:
David Wilson (Chair), John Noblitt, Sam Wright

Finance Committee:
Sam Wright (Chair), Dale Allman, Linda Leitch, Brian Poplin, Charles Worrell

Membership Committee:
Glenn Scales (Chair), Obie Godley, Mark Renfroe

Education Committee:
Chad Granade (Chair), Chad Cook, Sally Goebel, Dan Harrison, Helen Jones

2004 Special Committees

Newsletter Committee:
Glenn Scales (Chair), Dan Harrison, John Noblitt, Manny Roman

Scholarship Committee:
Sally Goebel (Chair), Dale Allman, Linda Leitch, Dan Harrison, Mike McCoy

Vendor Coordination:
Tom Barnes (Chair), Chad Cook, Mike McCoy, Mark Renfroe

Hotel Coordination:
Helen Jones (Chair), Glenn Scales, Jim Tripp

Public Relations:
Brian Poplin (Chair), Tom Barnes, Sam Wright

Internet Committee:
Glenn Scales(Chair), Mark Renfroe, David Wilson

Professional of the Year:
Mike McCoy (Chair), Tom Barnes, Sally Goebel, Linda Leitch, John Noblitt, David Wilson

Historian:
Glenn Scales (Chair), Obie Godley, Lane Rushing

NCBA Board Minutes Friday, March 12, 2004
ARAMARK Clinical Technology Services – Charlotte, NC

I. Call to Order

Brian Poplin called the meeting to order at 10:05 am. The meeting was hosted by Brian, and held at the ARAMARK facility in Charlotte, NC.

Members present: Brian Poplin, Chad Granade, Helen Jones, Sam Wright, Mike McCoy, Tom Barnes, Glenn Scales, Sally Goebel, and David Wilson

Members absent: John Noblitt, Christina Flemming

II. Approval of November minutes

The November minutes were approved with no discussion. Motion to approve was made by Sam Wright, with a second from Sally.

III. Approval of Minutes from the Retreat

The minutes from the retreat were approved with minor corrections. The motion to approve was made by Tom Barnes, seconded by Mike McCoy.

IV. Review of 2004 Goals and Objectives

Brian reviewed the 2004 goals and objectives as set at the February retreat. Each goal that needed further discussion was addressed at this time.

Goal #2: To conduct a minimum of 3 stand alone classes in 2004

Some discussion took place concerning the cost for members to attend the courses versus the cost for nonmembers to attend. Also discussed was the cost for instruction of the courses.

Intellivue Monitor class will be a 3-day class. The central station monitor will be a 4-day class.

Respironics will be a 4-day class

Siemens ventilator – Sally will work to make this a stand alone class

JCAHO update – a class concerning updates and changes in JCAHO requirements was discussed. More information will be given at the next meeting.

Goal #3: Begin mentoring new perspective board members

The target will be toward non-corporate members.

The ultimate goal is to have 12 people on the ballot in fall

Some previous board members that have been silent for several years may be ready to serve again. Board feels that people that are more technical in their job description need to participate on the board. Brian will generate a letter to managers to ask that they allow technicians to participate in election and board functions.

Goal #4: Expand target area

Glenn is working to obtain a mailing list from medical equipment magazines and dealers. This will show new areas that the NCBA begin to target. Also mentioned as target areas were VA hospitals.

Brian encouraged board members to stay focused on these goals and work toward updates each meeting.

V. Reports

Treasurer Report: Sam reported on the current financial status. Profit and loss statements were given for the periods of January 2004 through March 11, 2004, and also from April 1, 2003 to March 11, 2004. Sam reported that the IRS had contacted him concerning 2002 issues that had not been resolved. A list of all vendor contributions will need to be sent to the IRS.

Other financial matters included:

Welch Allyn contacted Sam concerning a check that was never cashed. He will check with the bank on this.

Lee Hartman and Sons has invoiced NCBA for more money. Sam will check with Dan Harrison to get approval for this payment.

Kinko's was paid twice in 2003. We now have a credit of $4000 with them to be used on the printing of this year's newsletter.

The financial deadline for 2003 fiscal year is April 30. All financial matters should be taken care of by then.

The treasurer's computer will cost $500 to repair. Replacement of this unit should be around $800. Board members will solicit funds to assist in this matter.

Membership Report: Glenn reported on the status of the membership. We currently have 530 total members.

Education Report: Chad passed around a list of classes and confirmations for the 2004 symposium. It is apparent that Chad is doing an excellent job of recruiting educational assistance for the symposium. Suggestion was made to add a class on "How to Communicate with your Hospital Administrator".

Scholarship Report: Brian stated that there was no activity to report.

Rules and Bylaws Report: Brian stated that this section would be carried over to the new business discussion.

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NCBA News is accepting advertising that relates to biomedical equipment and of interest to our readers. Suggested subjects are: Positions Desired, Positions Available, Biomedical Equipment Wanted or For Sale (New or Used), or Announcements of Educational Opportunities or Service Schools in the area.

Advertising is open to all individuals, hospitals, and companies. The decision to carry a particular ad or classified will be the decision of the Editor with support of the NCBA Board. Either jpeg or tiff files of the actual size ads is required. **Corporate Members please remember what free advertisement your membership allows.** Please contact the Newsletter Editor for other pricing.

Prepayment of all advertising is required.

Classified Advertising

Except "Position Wanted" notices by members (one ad per year – limit 50 words – no charge) the following ad rates apply:

Full Page	$200.00
Half Page	$100.00
Quarter Page	$50.00

If the ad is a single page to be included as an insert, the advertiser will any pay all additional printing and handling costs. Placement of non-member ads is on a "space available basis. Advertising that is to be printed in color will include all additional costs to prepare and insert the color page.

Dollars and Sense
By Sam Wright, NCBA Treasurer

Account balances as of 3/19/2004:

Checking:		$10,604
CD's:	XX205	$25,213
	XX257	$24,729
Scholarships:	Eddie Whisnant	$603
	Norm Reeves	$603

(Income highlights)

Memberships	$44,475
Symposium income (2003)	$65,438
Symposium income (2004)	$5,000
Golf registration	$5,320
Interest income	$1,045

(Expense highlights)

Symposium expense	$109,715
Professional of Year	$1,000
Scholarships	$600
Taxes	$5,151
Office expenses	$9,767

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Windows Graphics Specs
By Glenn Scales, CBET

This is a continuation of an article titled, "Windows Grpahics Formats" featured in the September 2003 issue of NCBA News.

How Images Are Represented

For a computer to represent image information in a digital format, the computer uses units of picture elements, or pixels. The term pixel is sometimes used interchangeably with the term dot. An image file, for instance, is simply a representation of hundreds, thousands, or even millions of pixels arranged in a grid. Computers then record the intensity and color of a pixel in 1 or more bits of data. The greater the number of bits, or bit-depth, of an image, the more information it can store. For easy classification, images are categorized into single-bit, grayscale, or color.

Single-bit Images

Single-bit images are the simplest kind of images, using just one-bit of data to record each pixel. Single-bit images come in two types: line art, and halftone.

- Line art includes anything that is black and white, like an ink sketch. Line art may also include one-color images, such as mechanical blueprints or single-color drawings and logos. The most important thing to remember about line art is that they don't contain any shades of gray or any color shadings.
- Halftones are reproductions of images that give the illusion of gray. The illusion of gray is achieved only because the black-and-white dots that make up the image are arranged in such a way as to fool the eye into seeing shades of gray. Examples of halftone images are the pictures you see in a newspaper.

Grayscale Images

Grayscale images contain more than just black and white, and include actual shades of gray. In a grayscale image, each pixel has more information encoded in it than a black-and-white image, allowing more shades to be recorded and shown. For instance, 4 bits are needed to reproduce up to 16 levels of gray. Going higher, 8 bits can reproduce the 256 levels of gray required to represent most black-and-white photos accurately.

Color Images

Color images contain the most complex information. To capture color images, scanners use a process based on the RGB (Red, Green, Blue) color model, where every color is composed of a varying amount of those three colors.

In the RGB model, the absence of white light creates black, while the complete saturation of light creates white (100% of red, green, and blue). Equal amounts of red, green, and blue create intermediate shades of gray.

Your scanner can record and reproduce an enormous amount of color information – anywhere from 16.7 million colors for 24-bit scanners to 68.7 billion colors for 36-bit scanners and even more colors for higher-bit scanners. The extra bit of information that can be processed by 42-bit or 48-bit scanners, for instance, translates to more vivid color reproduction, as the scanner is able to show more subtle gradations of color and approach lifelike color accuracy.

Selecting an Image Type

With your scanner, you'll be able to select various types of images according to your need. For instance, you can scan a grayscale photo and output it in its original grayscale form, or you can output it as a halftone to create an interesting look. Whatever you do, it's important to remember that the quality of the original is critical in determining the quality of the final scanned image.

- TIFF: Short for Tagged Image File Format. TIFF is probably the most popular file format. It's good for storing bitmaps in many different resolutions, color models and compression types, and is supported by many commercial applications. Use the TIFF format whenever possible, since this is the most widely used.
- EPS: Short for Encapsulated PostScript. EPS is good for storing vector drawings but not for line art. EPS is ideal for print applications because it offers more control when printing to a PostScript printer.
- PICT, PICT2: PICT is generally used for line art with limited color (usually 256 colors). PICT2 is for 8-bit grayscale or 24-bit color images.
- GIF: A format used to store images with 256 colors or 256 shades of gray. GIF is a good file format for compressing images to be used on the Web, as long as the images are made up of solid blocks of color – like logos, or lettering. It's not as good for images with continuous tone or complex color shadings – like skin or images with rich shadow / highlight details.
- JPEG: A compression algorithm used to store large color or grayscale files. Some versions of this compression format may result in minor degradation of image quality, but in contrast to GIF, JPEG is the recommended file format for compressing images with continuous tone or complex color shadings.
- PCX: Developed by Z-soft for use in various paint programs. Also suitable for scanned images and is widely supported for PC use.
- PSD:Adobe Photoshop's internal image format. This file format allows you to take advantage of Photoshop's layering functions in creating composite images.

Resolution determines the level of detail recorded by the scanner, and is measured in dots per inch (dpi). The greater the dpi number, the higher the resolution.

Image quality improves with higher resolution, but only up to a certain point, after which increasing resolution simply makes file sizes unmanageable without yielding any visible improvement to the image. There are two types of resolution:

- Optical resolution is the "native" resolution of your scanner as determined by the optics in your scanner hardware.
- Interpolated resolution is resolution enhanced through software, and is useful for certain tasks like scanning line art or enlarging small originals.

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What Have You Done For Me Lately?
By Sam Wright

Do you feel like this is the mantra of our profession and that every customer you meet greets you with this question? I hope you have answered yes and that you are constantly thinking of what you can do to help your customers. The Biomedical profession is one of service with customer service as our number one priority. The customer will typically remember the last encounter they had with you or your department and respond accordingly.

Do you remember the encounters you have had with all your customers or all the encounters the rest of the Biomed's have had with the customers? If you answered yes you have an amazing memory, a psychic ability, or you do not take your customers seriously. Customer service is one of the easiest things to accomplish and one of the things so commonly overlooked in our daily routines.

I will now state some obvious benefits of good customer service such as increased work load, increased involvement in the customers business, decrease in coffee break time, and decrease in time spent talking with friends at work. I can see some of you shaking your heads in agreement and I see the rest of you wondering when I will be readmitted to the psyche ward. Good customer service means the customer is going to use your services for every aspect of their operations that they can possibly fit you into and they are going to respect your advice and come to rely on your assistance.

In my book these are the things you want all your customers to do and these are the customers that will stand behind you in those meetings where you are stretching your neck out or who will recommend your department or service to their peers. Are you there yet? How do you know when you get there? The answer to these questions is "what has your customer done for you lately."

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BOD Minutes continued from Pg. 3

Newsletter: Glenn stated that he needed a new president's forum and the minutes before the next newsletter could go to print. Glenn also needs more articles for the upcoming newsletters.

Nominating Committee: David reported that he is reaching out to local hospitals that have never had representation on the board. Some large facilities that supported the board in the past are also being solicited for current assistance.

Internet Committee: Glenn reported that he will publicize the stand alone classes on the website as soon as the information is available to him. He is looking a redesigning the site. The hope is that a new design will speed up the site. Glenn is also adding a spot for online contributions.

Vendor Committee: Tom passed out a preliminary of the vendor packet/ contract for this year's symposium. After review and discussion, Tom will make suggested changes and print a final draft for approval by the board.

Hotel Report: Helen stated that there was no activity to report

Motion to accept the reports as given came from Sam Wright with a second by Tom Barnes. Unanimous approval was given by board.

VI. Old Business

2004 Budget: Sam will distribute a 2004 budget via email to all board members. There will be an online vote for approval.

Audit Scheduling & 2003 Tax Submission – to be scheduled after the end of the fiscal year.

VII. New Business

Brian reported that AAMI wants the President of the NCBA to sit on the AAMI Technology Management Committee. The exposure of the NCBA can be increased with representation on the AAMI committee. Also discussed was NCBA advertisement in the AAMI publications. It was suggested that we make sure the new NCBA booth is ready before the AAMI convention.

Brian suggested that each member take the section that is pertinent their job and review it for changes. These changes will be sent to Brian's assistant and incorporated into the final document of Rules and Bylaws.

With no further business to be discussed, motion to adjourn came from Tom Barnes. A second was given by Sam Wright, and the meeting adjourned at 2:20 pm. The next meeting will be on May 7 in Hendersonville, NC.

NCBA Board Retreat Minutes, February 6-7, 2004

I. Call to Order

Brian Poplin called the meeting to order at 8:30 a.m. The meeting was held at the Ocean Reef Resort, in Myrtle Beach, SC

II. Review of Minutes

Approval of November, 2004 minutes was carried over pending review of the minutes by the board. Computer malfunction with the computer that the minutes are stored on has caused a delay in getting the minutes to the board.

III. Review of Minutes

Minutes for the January 16, 2004, were presented to the board. Sam Wright motioned for approval and John Noblit seconded the motion. Minutes were approved by unanimous vote.

IV. 2004 Goals and Objectives

Review of 2003 goals was given to the board. New goals 2004 goals were established as follows:

1. Create a track format for Symposium classes to include:
    a. Entry level
    b. General BMET
    c. Specialist
    d. Information Technology
    e. Management
2. Schedule a minimum of 3 stand alone classes
3. Begin mentor program by which board members will increase participation from current non-board members
4. Improve public image and expand target audience
5. Continue positive financial performance

Also discussed were critique notes from the 2003 symposium. Many suggestions from the 2003 critique led to formation of 2004 goals and objectives.

V. Reports- Summary of Action for 2004

A. Treasurer Report

Sam reported that the Pinehurst bill had now been paid. Budget for the 2004 fiscal year should be ready for approval at the March meeting. Audit of books will take place between March and May. Also promised for the March meeting will be the 2003 Profit/Loss statement. Income summary and Profit and Loss statement for December 2003 – February 2004 was distributed.

Membership Report

Glenn reported that the membership total as of February 2004 was 527. Question was raised by Glenn as to leaving the renewal information in the newsletter or sending it to persons that have not renewed their membership via mail. Consensus of the board was to do both. Mention was also made concerning researching subscribers of Radiology magazines as an avenue to achieve the goal of diversifying membership

population between general biomedical technicians and radiology technicians.

Education Report

Chad reported that the class survey from the symposium had been reviewed. All classes were rated on the upper end of the scale. Satisfaction levels for all classes fell between agree and strongly agree as far as content.

Scholarship Report

Brian reported that the two scholarships were given for 2003. There will be at least 2 for 2004. Consideration is being given toward starting another scholarship for individuals in the field that are returning to school.

Newsletter Report

Glenn reported that there would be six newsletters for 2004. Each issue is scheduled to have six to eight half-page ads from vendors. The newsletter editor needs more participation from NCBA members concerning happenings. Space will be allotted for such news as promotions, and special events at area medical equipment locations. Budget from the newsletter for 2004 will be $12,513. The September issue is mailed to 1960 recipients because of the symposium announcement being included, with 1400 of those being mailed to people outside the normal NCBA mailing list. This ads an extra $4000 to the September issue.

Nominating Committee

No activity needed reporting for this reporting period. Mentorship should be a goal of the board for the coming year.

Internet

Glenn reported that the website is current. All membership and Board of Director lists have been updated. Information for the 2003 symposium has been deleted and 2004 information is being prepared. A page with newsletter archives has also been added. A new Q & A section has been added to the website. Suggested for inclusion in the site were such things as a "Who to contact" list, and a suggestion page to submit new ideas for improvement.

Motion to approve was made by Sam Wright with a second coming from John Noblitt. Board unanimously approve acceptance of the reports.

IV. Appointment of Standing Committees

Selection of standing committee members was as follows:

See page 2 of this Newsletter for Committee appointments

V. Old Business

Discussion carried over from the January 16, 2004 board meeting was concerning the Vendor Product Fair from the symposium. (Comments from attendees concerning vendor times.) Discussed were lack of vendor participation on Wednesday and the small turnout of attendees for the Monday night vendor social. A suggestion was made to use email database to improve vendor participation on Monday night.

VI. New Business

A. The 2005 Board of Directors retreat will take place on February 11 & 12, 2005. The location will remain the same.

B. Other new business included a discussion concerning the laptop computer that the treasurer uses. It is in need of a

"BOD Retreat", Continued from Pg. 9

software upgrade as well as battery replacement. Sam Wright will work up a proposal to explore upgrading versus replacing.

C. Also discussed was the option of moving the storage facility. Currently the NCBA rents a storage building in Raleigh. Since the symposium is now held in Pinehurst, the storage facility may need to be closer to Pinehurst. Decision was made to leave storage in Raleigh until November and move the things out of it in conjunction with moving the things for the symposium.

D. The NCBA booth display at the symposium is in need of being remade. Tom Barnes and Mark Renfroe will get price estimates for this project.

VII. Seminar Planning

A. In holding to the 2004 goals and objectives a minimum of 3 stand alone seminars will need to be planned. Suggestion was made to send a survey to all members looking for areas of interest or suggestions for upcoming classes.

VIII. Symposium Planning

Planning for the 2004 symposium was as follows:

A. Improvements- Improvements for the symposium was established largely by comments made during the critique of the 2003 event. Suggested improvements were:

1. Minimize the distraction of vendors tearing down and setting up at times other than that allotted. More coordination between board and vendors as far as time constraints will be established.
2. Vendor availability during the day on Monday can be improved by moving the vendor social time from Monday at 5:00 to Monday at 4:00. This will eliminate the one-hour gap between classes ending and the social beginning.
3. Registration process is crowded and chaotic. Suggestions for minimizing the wait at the registration time were
   a. Push pre-registration. A method of online payment needs to be established. The only acceptable method of credit card payment seems to be Pay-pal. Glenn will work toward establishing a Pay-pal account for the NCBA to accept registration payment.
   b. Separate areas for registration such as a table for A-F, one for G-Z.
   c. Move vendor registration area to the downstairs pre-exhibit hall area. Such things to consider are a remote database link for computer communication and an extra person to man another computer for vendor registration. Vendor badges will be placed at the assigned table in the downstairs area. Each will receive two name tags.
   d. Assign stations for board members and helpers to work during

B. Education - Primary objective for the 2004 education of the symposium is the division of tracks for diverse population of NCBA members. Tracks and class designation was broken down as follows:

Entry - with classes based around Test equipment, Interviewing, Customer Service

General Biomedical Technician - Career Ladder (possibly a round-table discussion), HP/Phillips (Intelliview), Defibrillators, Dinamap, IV Pumps, ESU, Laser Imagers, Dressing for Success in Today's Workforce

Manager - Benchmarking, Negotiating, Basic Financials/ Budgeting, JCAHO updates/ Survey Structure, Safety Goals (possibly Round table discussion), Time Management

Specialist - Oscilloscope, Liner Accelerator (Siemens Class), Ultrasound (Intermed Class), Spectrum Analyzer, Mobile X-Ray Service, Injectors, CT/ MRI (overview of high-end imaging), Laser Imaging, Clinical Lab, Ventilators

Information Technology - Networking, Wireless Networking, PACS, Web Design

C. Vendor Relations - More discussion took place on the moving of the vendor registration. Also discussed was the contract for vendor participation. Added to this year's contract will be an area for vendor sponsorship of events at the symposium. Sponsor area will include Dinner, Lunch, Morning Breaks, and Vendor Social.

Sponsorship for vendors will be broken down into divisions. Platinum, Gold, Silver, and Bronze are the anticipated designations for the divisions depending on the degree of sponsorship.

Door prize drawings were an area of suggested improvement. Congestion at the site of the drawing makes for a crowded environment. Suggestion was made to move the drawing to the vendor booths. Door prizes also need to be offered on Monday and Wednesday. Decision was made to keep the vendor sign-in sheet as is, and establish a "must be present to win" policy for prize drawings.

Color change for this year's symposium was discussed. This was tabled to the sub-committee discussion. Also to be discussed by the sub-committee is the possibility of changing the size of the vendor booths.

D. Membership Committee - Board elected to no increase the membership cost for this year. Mentioned was a push for active military and VA hospitals to participate in the NCBA. Helen will provide an analysis for one, two and three day costs per person. Board will be establishing a new pen design. Suggested was a logo contest to kick off the "next 25 years".

E. Hotel Accommodations - Helen suggested that improvements needed to be made to the A/V equipment. Moving the equipment became cumbersome for this past year. More explanation to the A/V company about what we expect may take care of this situation.

With there being no further business to discuss, John Noblit made a motion to adjourn. Tom Barnes seconded and the meeting was adjourned at 12:00.

"Graphics" continued from Pg. 5

Choosing the Best Setting

When choosing a resolution setting, consider the type of image you're scanning and your printing method. An easy way to determine the best resolution for your intended output is to find out the lines per inch (lpi) capability of your output device and multiply it by 1.5 to 2.0.

Example**:** To tailor a scanned image to a typical magazine printing press that prints at 133 lines per inch, multiply 133 x 1.5 or 2.0. This gives 199.5 or 266. The optimal resolution setting for your image would then be 200 dpi to 266 dpi (depending on how high the output quality will be). Lpi will vary, depending on the quality of the printing job. A newspaper uses approximately 85 lpi; magazines from 133 to 150; and fine art books may go as high as 200 to 300 lpi.

If you're outputting images to a monitor (such as doing multimedia work), you don't need to scan images higher than 72 dpi, as monitors are capable of only showing images up to 72 dpi. A higher-resolution image will not be any clearer on the monitor and will simply create larger files.

Remember that the higher the resolution, the larger your image file will be and the longer it'll take to print. An 8.5" x 11" color photograph scanned at 75 dpi takes up about 1.6 megabytes (MB). Doubling resolution to 150 dpi will increase the file size four times - to approximately 6.3MB! Going to 300 dpi will increase file size to 26.2MB.

What you need to do is to select the lowest possible resolution that still gives you good image quality to keep file sizes manageable.

Using High or Interpolated Resolution

High resolution is important if you are processing an image through a high-end color system that carries continuous tone data from the scanner through the final film output. This is because high resolution can improve the sharpness and clarity of the dots that make up the image.

Interpolated resolution is useful for scanning line art or enlarging small originals. Line art is any black-and-white or single-color graphic, such as a logo, ink sketch, or mechanical blueprint.

For line art: Set the resolution equal to that of your output device. For instance, when producing line art to be printed by a 1200-dpi imagesetter, you can interpolate resolution to up to 1200 dpi for superior results. This will produce smoother lines and eliminate some of the jaggedness characteristic of line art scans.

For enlarging small originals: Assume that you are scanning a 1" x 2" photograph at 300 dpi, and that your maximum optical resolution is 300 dpi as well. To enlarge the image to two times the original size without loss of detail, interpolate the resolution to 600 dpi. This way, the image retains clarity and sharpness even if the print size was doubled.

Scaling

Scaling is the process of creating larger or smaller images in your scanning software so that you need not resize the images later when they are delivered to your image-editing program. Scaling has an inverse relation to resolution: The lower the resolution, the larger the image can be scaled. At the highest resolution, images can only be scaled smaller.

To illustrate the use of scaling: Assume you scanned a 2" x 2" image at 300 dpi. To double image size to 4" x 4" without loss of detail, increase scaling to 200% and maintain resolution at 300 dpi. This is the same as scanning the image at 600 dpi at 100% scaling - and then using your image-editing software to enlarge the output.

Terms

Brightness	The balance of light and dark shades in an image. Brightness is distinct from contrast, which measures the range between the darkest and lightest shades in an image. Brightness determines the intensity of shades; contrast determines the number of shades you get.
Contrast	The relationship between the light and dark areas of an image. Contrast is the range between the darkest and lightest shades in an image, while brightness is the balance of light and dark shades. Contrast determines the number of shades you get; brightness determines the intensity of the shades. An image with low contrast tends to look dull and flat.
Hue	The characteristic of a color that distinguishes it from another color; i.e., what makes a color red or green or blue.
Resolution	The level of detail in an image, expressed in dots per inch or dpi. The greater the dpi number, the higher the resolution and the resulting file size.

President's Forum continued from Pg. 1

Imagine for a moment the landscape in less than ten years where our teams become a critical link in helping care-givers optimize the physician to patient transaction. This notion doesn't mean that the world will be turned upside down, but rather a regular calibration of the technology benefits would be required to keep increasing the efficacy of the equipment. This return to "cycling the batteries" has the potential to keep many of the brightest stars in our field full of challenges for years to come.

Just as the technology is changing so too should we as professionals. Not only should we look for ways to continue working towards future roles in clinical engineering, but we should also return to a professional PM program that requires a "cycling of our batteries". During the last several years there seems to be affection for accumulating unused vacation time with myself and many close friends. What if this is indicative of issues we are overlooking because they aren't really a "problem" yet? Is it time to return to performing PM's on our most valuable asset?

What is your personal PM completion percentage?

P.S. As a follow-up to the President's Forum, I would like to encourage all of our members to lend a perspective to our readers. Tell us what you think the future could hold? Do you like the changing face of healthcare? Whatever you think our members would like to hear about send a letter to the editor at the following email address: editor@ncbiomedassoc.com

SCHEDULE of NCBA BOARD of DIRECTORS MEETINGS for 2004

March 12, 2004, Time: 10:00 a.m.
ARAMARK Clinical Technology Svs., Charlotte, NC
Host – Brian Poplin, Ph: 800-825-1786

May 7, 2004, Time: 10:00 a.m.
Margaret Pardee Hospital, Hendersonville, NC
Host – Chad Granade, Ph: 828-698-7194

July 9, 2004, Time: 10:00 a.m.
Duke University Hospital, Durham, NC
Host – Glenn Scales, Ph: 919-681-6638

August 27, 2004, Time: 10:00 a.m.
Baptist Medical Center, Winston-Salem. NC
Host – Sam Wright, Ph: 336-716-3437

November 5, 2004, Time: 10:00 a.m.
Pinehurst Resort & Hotel, Pinehurst, NC
Ph: 800-487-4653, www.pinehurst.com

December 5-8, 2004
2004 NCBA Symposium and Expo
Pinehurst Resort & Hotel, Pinehurst, NC

January 7, 2005, Time: 10:00 a.m.
Stanly Community College, Albermarle, NC
Host – David Wilson, Ph: 704-991-0277

February 11-12, 2005, Time: 8:30 a.m.
Board of Directors Planning Retreat
Ocean Reef Hotel, Myrtle Beach, SC

Board Meetings are open to the NCBA Membership.
Please plan to attend.

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