

## Board of Directors Appoints New Legal Counsel

As noted in President Shane's message, Roy M. Kinsey, Jr., who served as Legal Counsel of the IAI since June, 1989, has resigned from office. The Board of Directors has appointed Mr. W. Allen Barrett of Nashville, TN, as the new Legal Counsel of the Association, effective immediately.

## Electronic Exchange of Fingerprint Images

### Summary of the December 11, 1992 Compression Review Group Meeting

*The following summary was forwarded by Raymond T. Moore, one of the representatives from the IAI to the Compression Review Group.*

In compliance with Motion #1 of the NIST Workshop on the Electronic Exchange of Fingerprint Images held on March 4-6, 1992, the second meeting of the Compression Review Group was held at NIST. This meeting took place in Gaithersburg, MD on December 11, 1992. Organizations represented were the FBI, IAI, NIDL, and NIST.

The initial topic of discussion at this meeting addressed the progress and status of the development of the WSQ algorithm. On December 8, 1992, the implementors' "Technical Review Conference for the WSQ Compression Algorithm" was held at NIST. One of the main reasons for calling this meeting was to disseminate information regarding the operation of the WSQ approach to vendors and implementors. Prior to the start of the implementors meeting, the WSQ Compression Specification document was mailed to those who had preregistered for the meeting. During the meeting, presentations provided additional explanations of the information contained in the specification document. These presentations related to the flexibility, framework and constitu-

ent parts of the algorithm, details of the encoder and decoder, the required interchange formats, and compliance issues. Based on the document and the talks presented, attendees were requested to return comments and suggestions to Tom Hopper at the FBI by January 10, 1993. This information will be used to update the specification to Revision 2.0. This update is scheduled for completion by February 10, 1993.

Issues regarding algorithm speed and compliance were addressed. In addition to the FBI, a private organization and a university are reported to have developed software implementations of the WSQ algorithm. It was agreed that in order to significantly reduce the amount of processing time required, parallel processing techniques may be required at major installations. As additional software and hardware implementations of the algorithm are developed, they will have to be validated as complying with the WSQ technical specification. The compliance effort will require reference encoders and decoders for the algorithm. Tom Hopper suggested that NIST and the U.K. Home Office should consider developing such tools and collaborate on their validation.

The next topic of discussion at this review meeting dealt with image quality and card conversion. A major project under development at the FBI is the scanning and conversion of the fingerprint card file to electronic images. Although image compression will be a separate step after scanning, the completion of the WSQ algorithm will be necessary for the success of this effort. One of the goals of the WSQ framework is to provide flexibility for future improvements to the algorithm. In order to take advantage of potential future refinements to the algorithm, or to use other compression approaches, a lossless copy of the original scanned data will be retained. This will allow simultaneous progress to be made on both the file conversion process and the refinements to the WSQ algorithm while maintaining a high degree of flexibility.

The scanning resolution to be used for this file conversion process must be properly chosen to ensure adequate feature comparison between images. Tom Hopper stated that the user requirements will be mapped to the engineering specifications of the scanner system being developed for file conversion. The new grayscale scanner must support both automatic image processing and the people who perform comparisons.

Based on testing and user input to date, the baseline IAFIS system is currently designed to scan at 500 ppi and to quantize to 256 levels of gray. In an effort to further evaluate the latent comparison requirement, additional studies are planned. A small working group is currently developing the study designs.

These studies will require the participation of several latent examiners. Many of the latent examiners will be from outside of the FBI. Norman Smith, representing the IAI, stated that the IAI wants to be involved as much as possible in this study. He proposed that three latent examiners chosen from the IAI's list of certified latent examiners be provided to participate in the study.

The results of these studies will provide information to determine the required scanning resolution for card conversion and IAFIS operations. According to a MITRE study, based on a ten-year lifetime, \$100 million will be required to store and transmit the images using a 500 ppi scanning resolution and a 20: 1 compression ratio. As the scanning resolution increases or the compression ratio decreases, the costs will rise at a disproportionate rate to the observed improvement. For example, using a scanning resolution of 1000 ppi, rather than 500 ppi, will require four times as much storage to contain the images. Therefore, the appropriate scanning resolution must be chosen so as to not increase the cost beyond the point of diminishing returns.

Another part of the FBI's efforts to ensure image quality is the development of a prototype latent comparison workstation. This high-priority workstation is currently being developed, and the procurement awards for the hardware are pending.

The final topic of discussion at the meeting dealt with the status of the electronic loupe which is intended to be a small hand-held device resembling the optical loupe. Use of this device will augment the comparison process for the fingerprint examiner. The purpose of the electronic loupe will be to provide the examiner with a one-to-one presentation of electronic fingerprint images being compared.

It is Mr. Smith's belief that images displayed on a large monitor provide the examiner the opportunity to compare gross features between two images, such as minutiae. However, for parts of the comparison process, a presentation of the images approaching a one-to-one comparison with the actual size of the image is desirable. If a smaller

image is displayed on the large monitor, resolution is lost. Use of the large display for part of the comparison process and the electronic loupe for other parts will give the fingerprint examiner the tools that are needed.

Since the first review meeting, Dr. Winarsky investigated different aspects relating to the development of this device. He contends that it would be quite feasible to develop this device and that it could be comparatively inexpensive. Either an LCD or a very small CRT will be used in the design of this electronic loupe. The target date for a prototype of this device is the end of January, 1993.

## Submission of Juvenile Criminal Records

In a letter dated February 4, 1993, to all FBI Identification Division and Criminal Justice Information Services users, Assistant Director G. Norman Christensen stated the following:

Effective immediately, the FBI Identification Division (ID) will accept, maintain, and disseminate arrest fingerprint cards for juveniles who have been tried or otherwise adjudicated in juvenile proceedings. This change results from amendment of Title 28, Code of Federal Regulations, §20.32, which previously prohibited collection of juvenile records. Prior to the amendment, juvenile records were accepted by the ID only when the juveniles had been adjudicated as adults. The ID will now accept records of juveniles adjudicated in juvenile courts. Each state now has the responsibility of determining whether its own laws permit submission of records pertaining to persons adjudicated as juveniles.

Programming is currently underway to implement a sealing capacity for ID records which will enable a submitting agency to control the breadth of dissemination of a particular record. Until the sealing capability is implemented, juvenile records will be maintained and disseminated in the same manner as adult records. Juvenile fingerprint submissions should be made only if unrestricted dissemination is permitted by state law.