tions. Examples of maps and statistics were given for the Sirte basin of Libya.

GEORGE DOMPS, Schlumberger, Tripoli, Libya

COMPUTER USAGE IN WELL LOGGING

The use of computers in well logging has advanced from a research to an operational stage. Well-site computers may be either part of standard surface equipment, allowing direct reading of some formation parameters (density-porosity) or they are additional equipment permitting on-site merging of data from several logs. Digital computers in the office are used for the complete interpretation of all zones logged. Examples were given using logs from Nigeria. Eventually all well logs can be recorded on magnetic tape. Recording and processing of dipmeter logs on tapes currently are available in Libya.

KENNETH E. BERG, Geophysical Service International, Dallas, Texas

ADVENT OF DIGITAL TECHNOLOGY

New technology may be evaluated either by comparison with prior methods or by studying the requirements which led to its development. Several post-war advances permitted the development of digital technology. The first was the advent of statistical communication theory and its application to geophysical data by the Geophysical Analysis Group at M.I.T. The next involved the techniques for recording high-volume seismic data in digital format. Hardware and software were then combined applying statistical communication theory to the solution of complex seismic problems.

DAVID S. MATHEWS, Texas Instruments Inc., Houston, Texas

STANDARD DIGITAL SEISMIC FORMATS

Various factors must be considered in answering the question, "Which tape format?" Texas Instruments chose the 21-track format after 50 engineering man-years of study. Higher data transfer rates can be made using the 9 track rather than the 7 track. A comparison of 21 track versus 9 track capabilities is made in regard to ability to handle the number of seismic channels, format and gain recovery, efficiency, reliability, the recording of the actual time of the sample, edge effects, and economics.

F. REYNOLDS, Robert H. Ray (Mandrel Industries), Houston, Texas

BINARY-GAIN RECORDING AND PROCESSING

Binary gain refers to a seismic digital-recording system that switches gain for each seismic channel in steps of two in response to changes in signal energy. This technique allows data recovery with low distortion. Applications of the binary-gain system are likely in seismic data processing requiring data-shape recovery. Such applications may arise in stratigraphic-trap problems and in problems requiring true amplitude recovery. Examples of seismic-energy decay and binary-gain stepping are shown as a means of introducing SAR (synthetic amplitude recovery). SAR is used to gain control of the data while preserving the character of individual events.

T. CANTWELL, Robert H. Ray (Mandrel Industries), Houston, Texas

CONVOLUTION AND DECONVOLUTION

A seismogram is the result of the impulse response of the earth convolved with the shot impulse. Synthetic seismogram examples showing the convolution operators for models containing up to three near-surface layers are given. Models representing Libyan conditions were constructed, and their convolution operators studied. In some places, the effect on sharp impulses was to "stretch out" the impulses giving rise to reverberatory records. Also the shape of the convolved impulses differed dramatically down the line as subsurface conditions changed.

A deconvolution process, to remove the effects of the earth filter, is applied to the seismograms and the final deconvoluted traces are shown for comparison. The deconvolution operator is determined on each trace. Deconvolution is discussed also in terms of shaping a long pulse into an impulse.

M. COX*, Geophysical Service International, London, England

APPLICATION OF NEW SEISMIC METHODS TO STRATIGRAPHIC-TRAP EXPLORATION

Conventional seismic techniques are inadequate for delineating most stratigraphic traps. The effectiveness of the seismic methods is limited by unpredictable changes in near-surface layers, inadequate resolving power, additive noise, and multiple reflections. An effective solution is to transform each seismic trace into the equivalent of a smoothed multiple-free synthetic seismogram which could be constructed from an acoustic log at that location. The degree of smoothing will differ according to each exploration prospect but is basically defined by the band-width which will generate a wavelet sufficiently sharp to resolve the interfaces being investigated. Time and space varying problems are attacked by multi-channel filtering processes and by deconvolution. Controlled field tests in the United States and Canada illustrate the application of field and processing techniques to the problem of obtaining from field data the time traces which yield an adequate measure of subsurface response. Skillful blending of field-recording methods and processing techniques is required to develop a total system uniquely related to each set of seismic conditions.

* Delivered by J. Warren

CERTIFICATION APPLICATIONS APPROVED FOR PUBLICATION

The executive committee has approved for publication the names of the following candidates for Certification as Petroleum Geologists. This does not constitute certification but, in accordance with certification procedures, places the names of the candidates and sponsors before the membership for a period of sixty days. If any member has information bearing on the qualifications of these candidates, it should be sent promptly to the Executive Committee, Box 979, Tulsa, Oklahoma 74101.