February 13, 1986

Technical Program Chairman
EAEG
Wassenaarseweg 22
2596 CH The Hague, Netherlands

Gentlemen:

As an active member of the EAEG, I am pleased to submit this abstract for your consideration for possible presentation at the 1986 EAEG in Ostend. The submittal deadline slipped up on us, and we did not have time to write for special instructions concerning information to be included with the abstract.

If you require additional information, please phone, telex, or write. Also you could contact Dennis Forman in our London office if you need any immediate information. His address and phone is:

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Thank you for your consideration. We look forward to your response.

Sincerely yours,

H. Roice Nelson, Jr.
LANDMARK GRAPHICS CORPORATION

ABSTRACT

INTERACTIVE FAULT INTERPRETATION

by H. Roice Nelson, Jr. and Dr. H.A. Hildebrand
Landmark Graphics Corporation

European geology often necessitates fault interpretation be an integral part of an interactive seismic interpretation system. This is especially true as more interactive 2D interpretation is being done. With 3D interpretation, interpreters have used the additional spatial control to have fault heave lines fall out as gaps in horizon files. These gaps visually define fault patterns at a specific horizon. However, it is not easy to use these maps to define the fault patterns through the entire data volume. This paper introduces a new approach for interactive fault interpretation, which can be used to aid 2D or 3D seismic or well controlled fault data interpretation.

We demonstrate the procedures of interactive fault picking, editing, and display in this paper. Thrust, normal or strike-slip faults are interactively digitized on seismic sections. These sections can have well control posted on them to guide fault picks through noisy data. Each fault pick is called an unassigned segment. The unassigned segments are randomly picked or deleted on section displays. Using the fault mapping software, interpreters can assign or deassign segments to or from a fault plane. Control points can be added to extend or smooth a fault plane. Segments or control points can be specified by pointing. The user defines placement and sizes of windows within which different types of data can be placed. Besides a window for the color bar, there are map view windows for viewing fault segments, triangularized surfaces, or contour surfaces, windows for cross-sections through faults along lines or arbitrarily crossing the fault plane, as well as windows for perspective displays. Color can be used to highlight unassigned segments, assigned segments, and contours as a function of time (depth). Examples illustrate how these tools are used to build up fault patterns from both 2D and 3D seismic surveys.

BIOGRAPHY

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Mr. Nelson was formerly General Manager of the Allied Geophysical Laboratories and a Senior Research Scientist at the Seismic Acoustics Laboratory at the University of Houston. He spent six years as a practicing geophysicist and seismic interpreter for Mobil Exploration and Producing Services, Inc. and for Amoco Production Company.

Dr. H. A. Hildebrand, Ph.D. (1976, Illinois); Senior Vice President, Applications, Landmark Graphics Corporation, 1011 Hwy. 6 South, Suite 120, Houston, Texas 77077.

For several years, Dr. Hildebrand served as scientist at EXXON Production Research Company (EPRC) where he developed advanced algorithms for seismic data processing. After EXXON, Dr. Hildebrand co-founded Cyberan Geophysical Corporation and consulted in geophysics. His last accomplishment in Cyberan was the development of the Microseis workstation for Seiscom Delta United.