

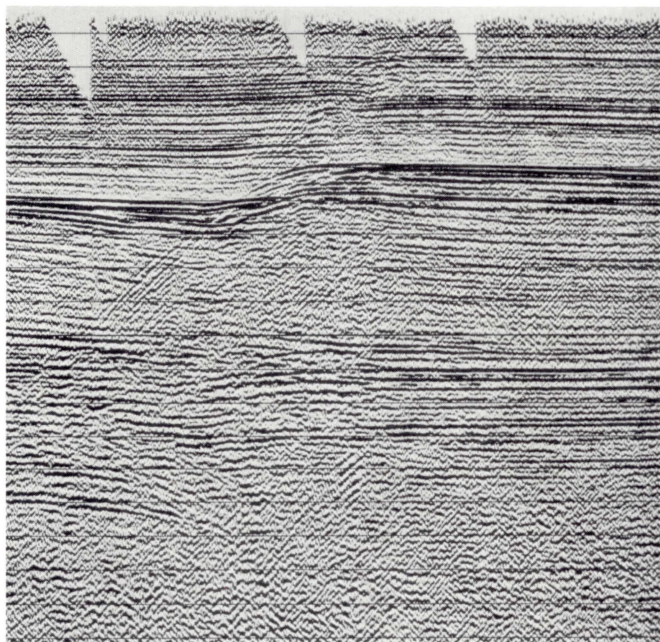


CONVEX

SEISMIC PROCESSING: An Applications Profile from Convex Computer Corporation



Vibrator equipment generates acoustic signals for seismic investigations.



This seismic section illustrates the usable results of seismic data processing.



The C1 XP2 used at Delft Geophysical B.V. allows this innovative firm to offer its expertise in 3-D processing at attractive, competitive prices.

Delft Geophysical B.V. is an innovative, fast-growing company that offers data acquisition, processing, and interpretation services to leading firms in the petroleum industry. In addition to exploring and evaluating oil, natural gas, coal, ore and geothermal re-

sources, Delft carries out an ambitious research and development program focused on such areas as pre-stack and post-stack depth migration, high-resolution seismic inversion, and interactive processing and interpretation. Delft Geophysical also undertakes on-

and offshore seismic studies as well as international surveys for the oil industry.

A current Delft project, organized under the auspices of the Geological Survey of The Netherlands (RGD), is a regional deep seismic survey onshore in that country. The plan for this important and far-reaching program was developed by Delft and RGD in consultation with British Petroleum Exploratie Maatschappij Nederland B.V., Mobil Producing Netherlands Inc., Petroland B.V. and Nederlandse Aardolie Maatschappij B.V. The findings from this massive undertaking have both strategic and scientific importance and will offer the first consistent seismic information developed along carefully planned regional lines.

THE PROBLEM

In 1986, Delft Geophysical decided to invest in new computer technology in order to improve the price/performance ratio it could offer in seismic processing services. Its then-current configuration, a VAX™ 780 minicomputer with two attached array processors, could not keep Delft competitive in this fast-moving marketplace.

Delft needed faster turnaround times than a minicomputer could offer; it needed a system that could handle several jobs simultaneously. In addition, it would soon need a computer that could handle the complexities of three-dimensional seismic research. Since the shift from two- to three-dimensional seismic processing can increase computational requirements by a factor of 50, these advanced techniques are well beyond the capabilities of a minicomputer. Finally, the computational demands of the regional survey called for increased computing power.

THE SOLUTION

Delft found the answer to these challenges in the Convex C1 XP2, a loosely coupled dual-processor minisupercomputer. The Cray®-like architecture of the Convex system assured Delft of the high performance and fast turnaround that were essential to its success. Convex systems offered Delft the best price/performance ratio, outdistancing both a Control Data machine and a VAX 8600 with four array processors.

Equipped with 128 Mbytes of memory, large disk capacity and

seven high-speed tapes, the Convex system offers performance four to 15 times faster than the alternatives. In addition, it handles more jobs and offers superior throughput.

The easy-to-use vector architecture of the Convex C1 means that Delft can achieve fast turnaround times and still offer its expertise in 3-D processing at attractive competitive prices.

Convex was the only system that could assure Delft access to a highly tuned version of the DISCO™ 3-D seismic processing software. This versatile, state-of-the-art processing package is optimized to take full advantage of the Convex system's fast, integrated scalar and vector processing. With DISCO running on the C1 XP2, Delft need not resort to cumbersome attached array processors to handle the large arrays of data that are commonplace in seismic research.

THE ORGANIZATIONS

Delft Geophysical B.V. is a joint venture of three Dutch organizations: the Royal Nedlloyd Group, one of the largest shipping companies in The Netherlands; Orange Nassau, a diversified international investment group; and The Netherlands Organization for Applied Scientific Research TNO, an alliance of more than 35 institutes and research groups. Delft Geophysical renders services to the oil industry for the exploration and evaluation of oil, natural gas, coal, ore and geothermal resources. Guiding its extensive research and development activities is a board of advisors chaired by Dr. Ir. A.J. Berkhout, Professor of Seismics and Acoustics, Delft University of Technology. Delft Geophysical is located in Delft, The Netherlands.

Convex Computer Corporation, headquartered in Richardson, Texas, was founded in September 1982 to design, manufacture, market and service affordable supercomputers for technical users. The Convex C1 features a 64-bit Cray-like architecture and combines memory and vector processing capabilities found on large-scale supercomputers with software and price advantages of minicomputers. A

worldwide network of offices provides service and support to customers using Convex systems for geophysical research, computer-aided engineering and design, defense, aerospace and general research.

“Delft Geophysical is committed to developing advanced techniques that are firmly grounded in sound and sophisticated theoretical principles. The Convex C1 offers an excellent environment for the in-house programming that is essential to our comprehensive research and development program. It is a vital resource in our quest for new ways to support and extend geophysical exploration.”

**Dr. Ir. A. J. Berkhout,
Professor of
Seismics and Acoustics,
Delft University of Technology**

“The C1's integrated vector and scalar architecture and its large physical memory enable us to do important seismic processing — as well as significant new development — that we could not accomplish on a minicomputer.”

**Dr. N. de Voogd,
Managing Director,
Delft Geophysical B.V.**

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