

LEX 90/35 GEOVIEW Geological Interpretation Package

GEOVIEW™ is a complete surface display application software package designed specifically for the interpretation of geological data. A high-performance computer graphics tool, GEOVIEW offers interactive graphics capabilities to the explorationist at an affordable cost. Instead of working with line drawings or 3-D wireframe representations, GEOVIEW allows the user to digitize contour maps or regular gridded data into 3-D *shaded surfaces* for analysis. This enables the interpreter to easily visualize and manipulate geological surfaces and vectors in a fast, interactive environment.

Available on selected LEX 90™ raster graphics display processors, in conjunction with a host computer, GEOVIEW offers analysis capabilities previously unavailable for the interpretation of geological data. GEOVIEW presents a true picture of how horizons are shaped and interrelated so that analyses can be presented quickly to others in a concise manner.

Advanced Surface Display Software The GEOVIEW application package incorporates Lexidata's patented SOLIDVIEW™ display technology. With SOLIDVIEW, shaded surfaces are constructed *incrementally* in seconds, providing the user with a

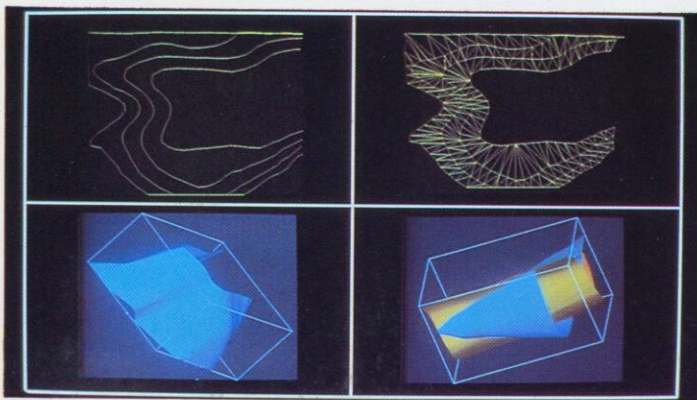
FEATURES	BENEFITS
Advanced Surface Display Functions	Enables Interpreter to Accurately Visualize the Shapes of Surfaces and Their Relationships
Large Graphic and Image Display Memory	Allows Simultaneous Storage of Many Large Picture Files for Instant Display
Special Purpose Processor Performs 2-D Graphics and 3-D Surface Modeling	Offers All Required Display Functions in One High-Speed Processor
Written in FORTRAN 77 Programming Language	Provides a High-Performance Programming Environment for Proprietary Code Generation

clear representation of how the various geological surfaces relate. Since pre-generated 3-D pictures may be confusing when first viewed, incremental construction is extremely valuable in the interpretation process.

GEOVIEW also allows the user to build a master "model" by displaying *multiple* geological surfaces in any sequence. This feature makes it possible to perceive both structural relationships and interval thicknesses between the various horizons.

The GEOVIEW package uses command menus and an interactive data tablet to control the system. Input can come from two sources: contour maps digitized through use of routines provided; or x,y,z gridded data from the user's already existing data files. Input data are quickly transformed into 3-D shaded surfaces and displayed on the graphics monitor. The operator may then rotate the geological surface or surfaces to any orientation for alternate views. Colors may also be assigned to any surface of interest as desired.

Sectioning and Translucency By selecting a plane parallel to the display surface, the user may remove a section of the surface allowing closer inspection of the interior. Cross-sections are easily displayed in this manner. Also, the operator may apply translucency to any surface so that areas inside or behind can be studied. All of these capabilities are under the control of the user while GEOVIEW is running on the LEX 90 display processor interfacing with a host. The large display memory allows the interpreter to store up to two, 640x512 views and alternate between them as desired. Additional views may be stored at lower display resolutions for longer cinematic sequences.

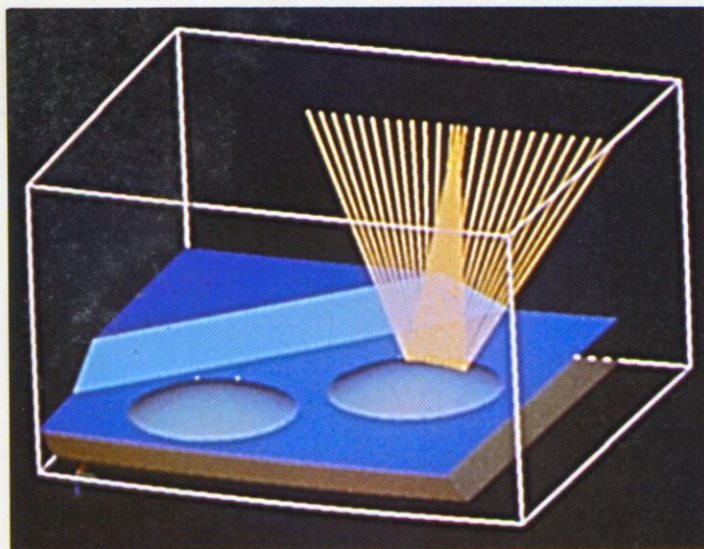


Contour map data as displayed by Lexidata's GEOVIEW application package. Top (L to R): Partially digitized section of a subsurface contour map; Tiled surface of same. Bottom (L to R): Shaded surface redrawn at new orientation; Multiple shaded surfaces.

High-Level Graphics Commands GEOVIEW's functions are divided into two command libraries: Extended Graphics Operating System (EGOS), and SOLIDVIEW. These high-level commands are performed in the LEX 90 display processor, off-loading the host and freeing it to perform other tasks. The user may access any of these commands, even if they are stored in different libraries.

EGOS A powerful command set that provides 2-D graphics, pixel manipulation, and hardware control functionality, EGOS contains all the graphics primitives such as arcs, circles, vectors, and polygon fill modes. EGOS also includes other fundamental graphics tools such as block move and copy, and input/output (I/O) functions such as run-length encoded write. A series of commands is provided to control the display processor hardware such as pan/zoom functions, initialization, and Color Lookup Table (CLUT) commands. A large number of text commands allow the user to perform advanced text manipulation in the display processor through the use of the on-board character generation capability. EGOS allows images to be quickly loaded into various regions of the display.

SOLIDVIEW SOLIDVIEW is a set of commands specifically designed for the display of solid surfaces. SOLIDVIEW performs hidden surface removal and visible surface shading *in the display processor*. SOLIDVIEW greatly reduces the work load of the host and provides shaded surface generation at the high speeds required for interactive applications.



This 3-D geological model shows computer simulated rays of seismic energy reflecting from a subsurface rock layer.

SOLIDVIEW consists of a series of commands and processing modes to allow solids generation from 3-D polygon, line, and point data. This format provides a high-level interface to user software, and greatly reduces I/O and storage requirements on the host. SOLIDVIEW displays the construction of objects incrementally, and no sorting of primitives is required in advance.

Several well-known shading techniques are available. By selecting various processing modes, the programmer can apply translucency to designated polygons or surfaces, and slice through surfaces to display cross-sections. Color and shading are selected by the programmer through use of the display processor's CLUTs, and special effects such as specularity can be applied easily.

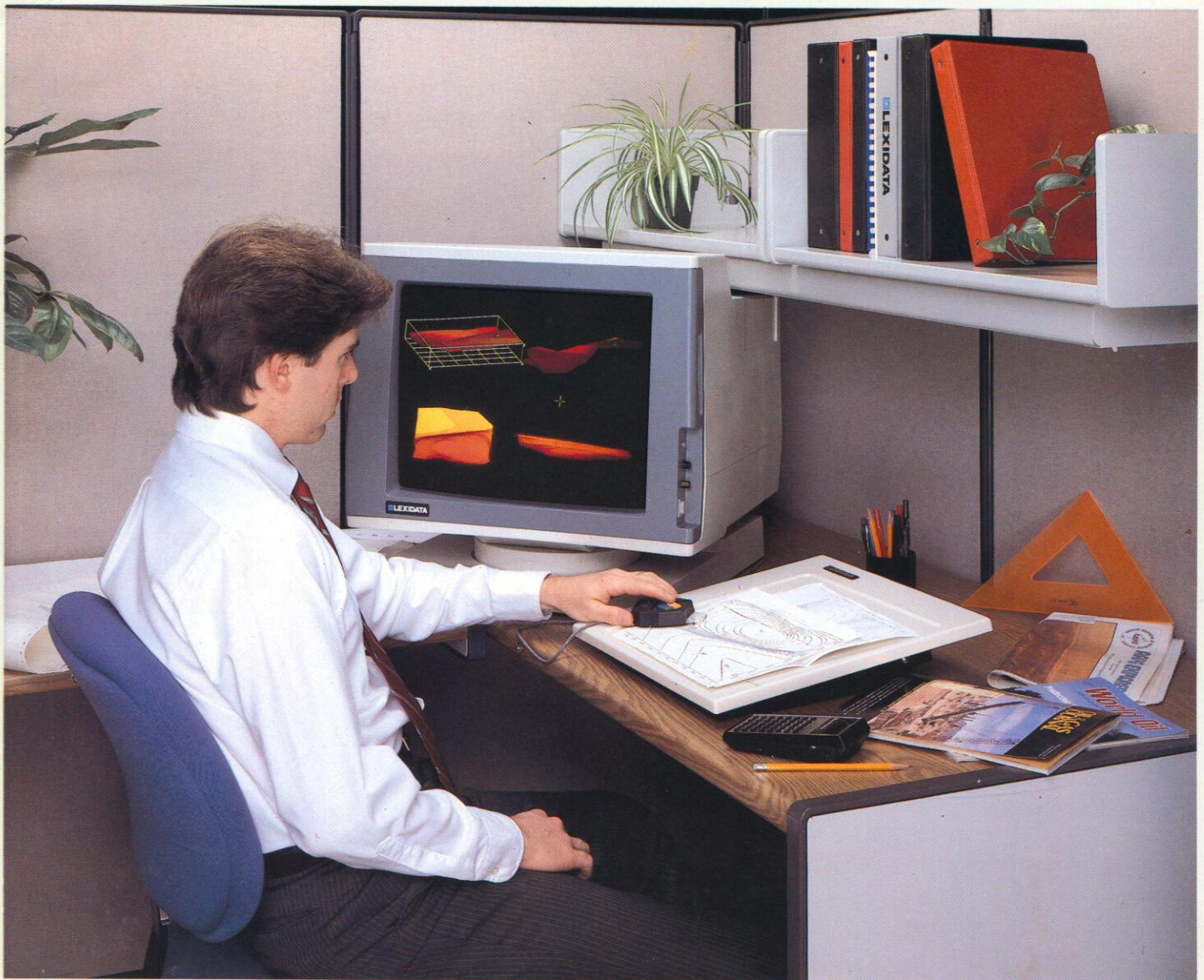
High-Performance LEX 90 Display Processor The high-performance LEX 90 display processor performs all primitive generation and pixel processing. LEX 90 accepts high-level commands from the host, performs pixel operations, and controls the color and content of what is displayed on the system monitor.

The display processor operates at writing speeds of up to 57 million pixels-per-second (in block mode). When not writing in blocks, LEX 90 writes vectors at 600 nanoseconds per pixel. These high speeds are critical for quick response when displaying complicated contour maps, well log data, wiggle traces, or other graphical data. The display processor performs a variety of different operations including 2-D vectors and 3-D shaded polygons.

The LEX 90 display processor features a flicker-free (60Hz non-interlaced) raster display with a 640x512 resolution. Almost two megabytes of addressable display memory may be included so that the operator may keep several images in memory. Up to four, 640x512 areas can be stored simultaneously in memory, each of these being up to eight bits plus four overlays in depth.

The user can therefore combine seismic sections in a greyscale or color raster image format with graphic overlay data. A real-time hardware pan and zoom controller allows the user to roam on this area, or alternate between multiple display areas instantaneously for a "movie" effect.

LEX 90's resolution can be switched to display 1280x1024 for



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truly high resolution maps and contours. The LEX 90 Lookup Table allows 256 simultaneous colors from a palette of 16.7 million.

Documentation and Support Lexidata is dedicated to helping GEOVIEW users make optimal use of their purchase. Complete documentation is provided so that the user can learn the operation of the GEOVIEW package. Informative in-house or on-site training courses regarding the operation and programming of GEOVIEW are offered through the Lexidata Technical Education Department. Systems engineering support is also

available for fast response to technical questions.

Summary GEOVIEW is a high-performance application software package which provides the explorationist with a valuable interactive graphics tool for visualizing and manipulating geological data. Available on selected LEX 90 graphics display processors, in conjunction with a host computer, GEOVIEW provides powerful graphics functionality for use in the development of special proprietary software. This inherent capability, enhanced by user-developed or third party software, makes GEOVIEW a complete geological interpretation package.

GEOVIEW Menu Map

GEOVIEW COMMANDS

Make Surface
View Surface
Terminate GEOVIEW
Escape to OS

SURFACE MAKING 1

Create Contours*
Edit Contours*
Display Contours
Erase Contours
Save Contours*
Remove Contours
Fetch Contours
Show Contour Info
Annotate Contours*
Display Annotation
Erase Annotation
Return To Top Menu

SURFACE MAKING 2

Edit Tiles*
Display Tiles
Erase Tiles
Save Tiles*
Remove Tiles
Fetch Tiles
Fetch Gridded Data
Annotate Tiles*
Display Annotation
Calibrate Tablet*
Set Window*
Return To Top Menu

SURFACE VIEWING 1

Frame Actions*
Select Tiles*
Display Surfaces
Erase Surfaces
Set Lighting
Set Orientation
Set Perspective
Set Scaling*
Depth Sectioning
Annotate Model*
Display Box
Return To Top Menu

SURFACE VIEWING 2

Select Vectors*
Display Vectors
Erase Vectors
Annotate Model*
Display Annotation
Erase Annotation
Display Box
Change Color
Save Model
Fetch Model
Return To Top Menu

*This function displays subordinate menus.

LEX 90/35 GEOVIEW Specifications*

Resolution

640x512 or 1280x1024 (selectable)

Refresh Rate

512-Line Component: 60Hz non-interlaced
1024-Line Component: 30Hz interlaced

Input Device

Data Tablet

Software

GEOVIEW application package
EGOS command library
SOLIDVIEW command library

*Note: Consult other LEX 90/35 data sheets
for additional hardware specifications.

LEX 90/35 GEOVIEW Ordering Guide

Order No.	Description
FW-03	GEOVIEW Functionality (Host software also required.)



Lexidata Corporation
755 Middlesex Turnpike
Billerica, MA 01865
(617) 663-8550 TWX: 710-347-1574

UNITED KINGDOM: Lexidata Ltd., Hook (025672) 3411

FRANCE: Lexidata SARL, Rungis (1) 686-56-71

JAPAN: Lexidata Technical Center, Tokyo 486-0670