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 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.](image-url)
High-Level Graphics Commands  GEODEVE'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.

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 transcluency 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
GEOVIEW allows the user to easily visualize and manipulate geological data and transform contour maps into 3-D shaded surfaces for analysis.

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
- Set Lighting
- Set Orientation
- Set Perspective
- Set Scaling
- Depth Sectioning
- Annotate Model
- Display Box
- Change Color
- Save Model
- Fetch Model
- 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

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<td>GEOVIEW Functionality</td>
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(Host software also required.)

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