Neuralog®

Products and Solutions

Neuralog

Product Overview

SOFTWARE

HARDWARE

About Neuralog

Neuralog offers practical, intuitive solutions to work with legacy and modern well log data. From data capture, preparation, and evaluation to management and delivery, Neuralog increases your personal and organizational productivity to help you "turn paper into petroleum."

Neuralog solutions are used in more than 70 countries by geoscientists, engineers, and others working in E&P, IT, and service industries. Since 1991, independent geologists and major corporations have been relying on Neuralog's products and services to get the job done.

Neuralog is the industry leader in data capture and conversion, powered by the widely used digitizing technology of NeuraLog and NeuraMap software. NeuraScanner, Neuralog Callisto, and Neuralog Z4 complement these solutions to easily capture and print well logs. NeuraSection provides geological evaluation and interpretation of prospects using modern and legacy data. Neuralog Desktop, coupled with an ESRI GIS-based interface or public domain map allows management, customization, and visualization of gathered data across multiple departments and software platforms into one interface.

Training & Support

Neuralog training and support ensures that your team has the capability and expertise to optimize workflows. Our support team has extensive knowledge of Neuralog products as well as other common applications you may use. Ultimately, our goal is to facilitate your success with our products.

Training

Introductory courses and custom workshops are available to meet your organization's specific needs. Training is offered at our Houston headquarters or can be scheduled at your location. One- or two-day introductory courses cover the basics of each product and allow for hands-on lab time using your data. Custom workshops can be arranged to cover special topics and allow for more in-depth focus.

Support

Neuralog's dedicated support staff is available by phone, email, and online to answer questions and resolve potential problems. Online support includes answers to FAQs, product updates, and real-time problem resolution using the latest technology to get you back on track.

NeuraLog digitizing software quickly and accurately transforms scanned logs into quality workstation-ready digital data.

Whether you need to depth-calibrate rasters; capture curves, dipmeters, point data, lithology, and text descriptions; or QC and process your digital data, NeuraLog is the tool for you.

NeuraLog is the most widely used log digitizing solution in the oil and gas industry. NeuraLog's automated tracing enhances productivity by streamlining workflows to obtain reliable data for time-critical projects. NeuraLog can correct for image distortion while quickly and accurately transforming raster images (color, grayscale, or black and white) into reliable digital data ready for analysis.

NeuraLog

Automated Log Digitizing and Preparation of Log Data

Digitizing

Interpreting your legacy logs can pose many challenges, such as degradation from age and handling, resulting in information loss and variable data quality. NeuraLog software addresses these problems through the use of advanced tools that enable digitizing, processing, and QC to ensure that your data is preserved.

NeuraLog's digitizing functions include:

- **Automated Curve Tracing**—makes it easy to capture and streamline the digitizing workflow. Neural network algorithms trace curves for best speed and accuracy.

- **Lithology, Text, Point, and Dipmeter Data Capture**—annotates data from mud and lithology logs for a complete analysis.

- **Image Warp and Stretch Correction**—automatically corrects for distortion and stretch in log images by using our proprietary gridding algorithms.

Data quality control is straightforward using NeuraLog's Virtual Light Table, Log Quality Index, and interactive editing. The Curve Calculator adds both log processing for QC and log analysis. User and data-related errors are quickly identified and corrected whether the log was originally digitized in-house or outsourced.

QC and Processing

NeuraLog software displays both the raster log image and traced data directly on your monitor. The Virtual Light Table feature overlays the original image and digital data, providing immediate QC.

NeuraLog's comprehensive LAS tools include Customizable LAS Curve Template, LAS Curve Edit, Baseline Shift, Depth Shift, LAS File Merge, and LAS Curve Calculator with pre-loaded equations.

Data Input:
Scanned Image Formats

IHS Well Fixed 297, GeoGraphix WellBase V2 (from GeoGraphix or PETRA), Generic ASCII or Excel.

Data Output:
Scanned Image Formats

LAS (1.2 & 2.0), IHS PETRA ASCII Well Data, PETRA Log Image Calibration (LIC).
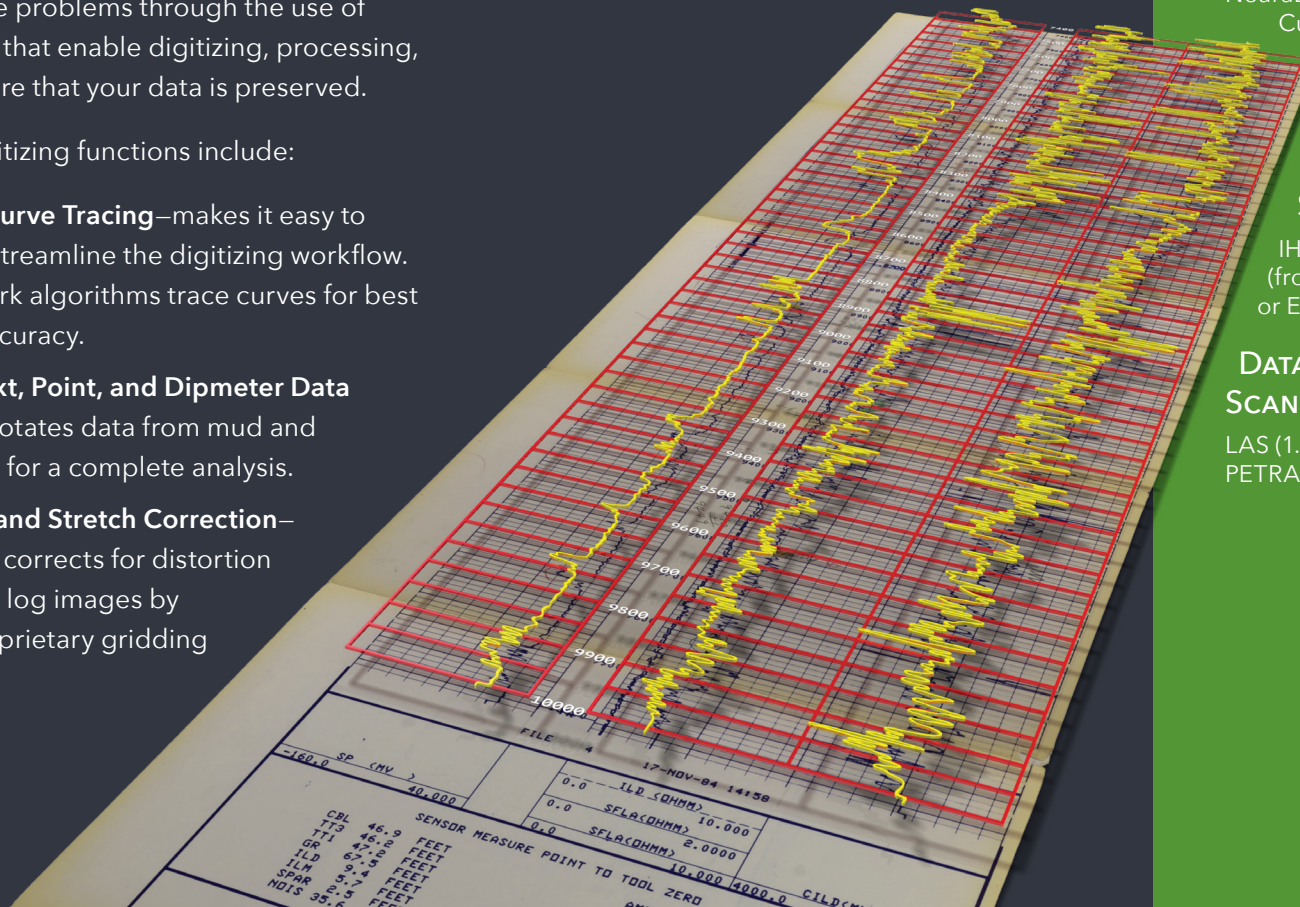
NeuraMap enables you to automatically recognize and capture map symbols on-the-fly to improve workflow efficiency and increase digitizing speed.

Using proprietary technology, the auto-tracing process is quick and precise. Symbol recognition enables you to capture base, geologic, seismic, and other map types into your project workflow.

NeuraMap applies fundamental technology on a wide variety of map types to calculate areas, volumes, and reserves with industry-standard equations for simple and modified methods. Results are available in custom reports for use in presentations, audits, or other documents.
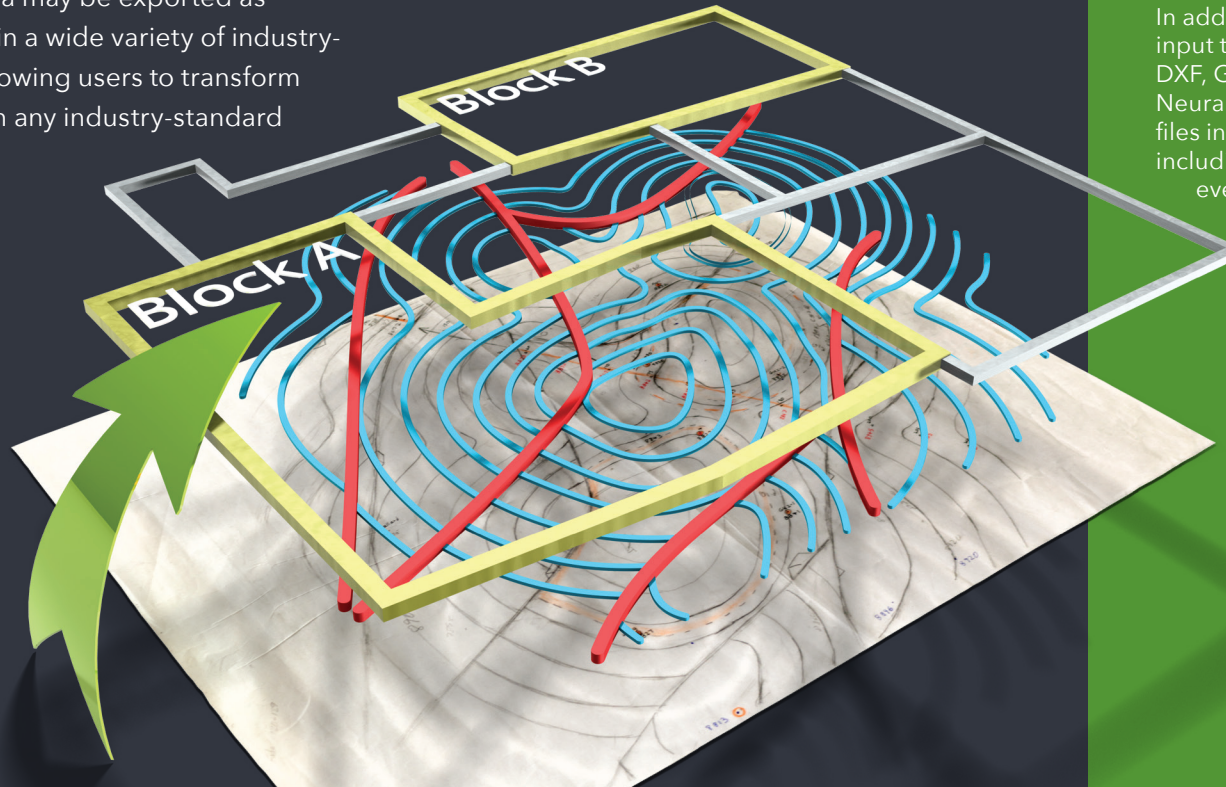
NEURAMAP

Volumetrics, Reserves and Map Digitizing

Calibration of legacy maps can be problematic in other software packages. NeuraMap utilizes Blue Marble projections and coordinate transformations for accurately calibrating maps. These proprietary tools permit users to eliminate image stretch and skew.

Additionally, to ensure data accuracy, our QC tools include Check Plot, Grid Check Calibration, and Error Finder. Data may be exported as vectors or GeoTIFFs in a wide variety of industry-standard formats, allowing users to transform output data for use in any industry-standard application.

VOLUMETRICS AND RESERVES

NeuraMap works with a range of map types in either relative scale or absolute coordinates. This gives you the ability to calculate distances, areas, volumes, and reserves contained by faults, leases, and other boundaries. Volumetric methods include many different mathematical algorithms—both standard and modified.

AUTOMATED DIGITIZING

Auto-tracing and auto-symbol search can digitize and capture different line types, basemap perimeter, wells, shotpoints, and other point data.

DISPLAY AND MERGE

Combine raster images and digital data from a variety of sources into your workflow.

QUALITY CONTROL

QC is made simple with NeuraMap tools. Digital data, such as seismic lines or contour maps from other workstations, can be overlaid on the original image. Point and click interaction with auto-tracing and editing tools enable edits to be made immediately.

DATA FORMATS

In addition to scanned images, NeuraMap can input the most common file formats, including DXF, GeoTIFF, and NeuraMap NDS formats. NeuraMap also gives you the ability to output files in many of the most popular formats, including DXF, Shapefile, Formatted ASCII, and even Landmark Graphics ZMAP+ ASCII.

A Closer Look at NeuraSection

Users can quickly create presentation logs, maps, cross-sections, and prospect montages from multiple imported data sources.

Logs Capability
- Import logs individually or batched, and display in any vertical scale and width.
- Create composite logs, display tops, bases, faults, PERF, CORE, IP, DST, Shows, and Production data.
- Use custom templates in LAS logs.

Cross Section
- Create cross-sections in minutes with easy well-to-well picking.
- Import or manually enter deviation survey information quickly.
- Create TVT cross-section displays.

Working & Presentation Maps
- Create and edit auto-generated contours for maps within the same AOI.
- Display faults or fault polygons showing optional throw and heave.
- Complete your map evaluation using our volumetrics tool to calculate reserves for your presentations.

Data Input
- Well data can be loaded from GGX Wellbase, PETRA, IHS, ASCII or Excel, and others.
- Automated DB Connections available.
- LAS Data can be loaded from multiple sources.

Data Output
- Well and log data can be exported as PETRA, GeoGraphix, Generic ASCII, MJ Systems LogSleuth, GCS Wells, and Tops.
- Map data can be exported as ArcView Shape, Landmark, AutoCAD DXF, DGI EarthVision, GeoQuest CPS, GeoQuest Finder, and MFD.

NeuraSection

Correlation, Cross Sections, Mapping, Montage, and Reserves

NeuraSection allows you to evaluate and display all available geological data, enabling you to create and present a total E&P concept.

Collecting and loading suitable data is your primary obstacle to accurate evaluation. NeuraSection solves this problem by giving you the flexibility to use various vendor formats and your proprietary data, which will help manage costs and save money.

Users can visualize, analyze, and annotate for quick evaluation of leases, new well locations, recompletions, and more by using logs, maps, and sections. A montage can then be created to present the total E&P concept as the capstone of your evaluation.

Visualization is a critical step to developing a comprehensive understanding of all of your geological data. NeuraSection provides a variety of specialized tools for visualization. After loading data, logs and maps can automatically post with tops, faults, completions, IP, and other associated well data, as well as, any other user-specified variables of a selected formation. Cross-Sections can display on-the-fly according to predefined templates or user-defined customization. Logs, maps, and sections are dynamically linked, so changes in one are reflected in the others.

Interpretation and integration are the final steps in completing your evaluation. Using NeuraSection's workflow wizards, you can complete an evaluation using whatever geological data you have available. Flexible correlation enables interactive interpretation of single logs or simultaneous interpretation of multiple logs. NeuraSection uses a unique single or multi-surface mapping system with auto-contouring that honors every data point and allows you to modify contours dynamically.

Interactive map editing lets you fine-tune and take direct control of your interpretation. Calculate reserves from your maps using the volumetrics tool in NeuraSection.
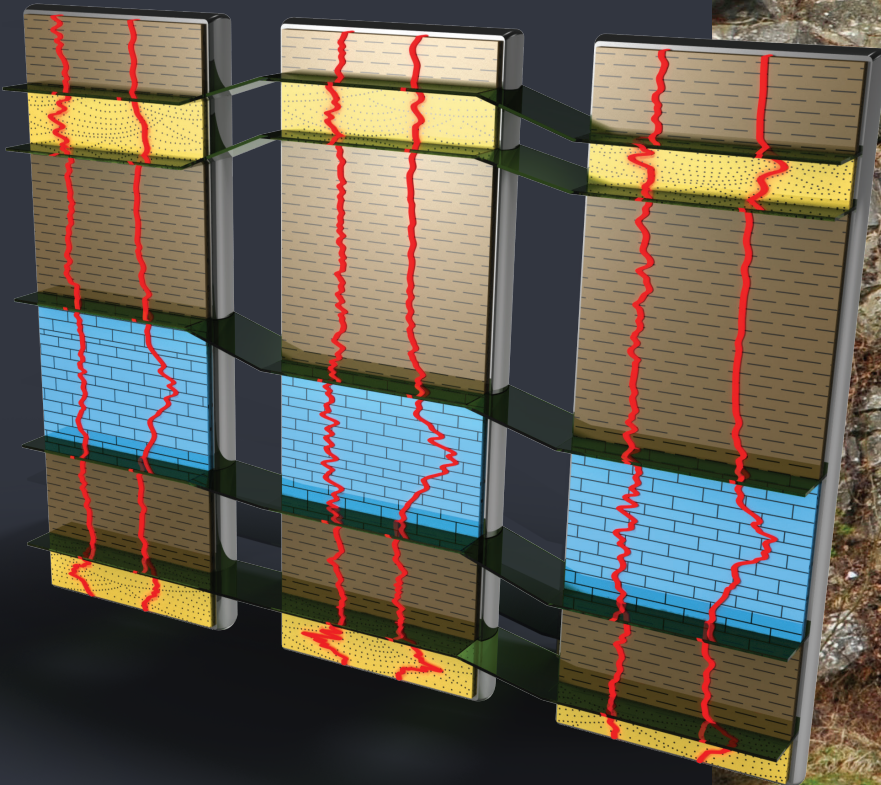
Neuralog Desktop is a GIS application that facilitates the organization, access, and visualization of your project within a single map view.

Neuralog Desktop empowers your E&P teams to make the best use of their data and interactively share analytical results with team members to drive a project forward. Data can be stored in a single SQL Server database or broken up into smaller project databases for convenience.

NEURALOG DESKTOP

E&P Data Access and Visualization

Neuralog Desktop enables your organization to use an easy-to-navigate map interface to manage projects, E&P documents and database information across the corporate workspace.

Well header data, logs, reports, and any other related documents can be conveniently stored at the well, lease, or field level or any user-defined entity and accessed immediately. Data Grids simplify management of well headers, file paths, surfaces, and interpreter information.

Neuralog Desktop opens up power and functionality to Esri ArcMap users by working directly with logs, maps, and sections from a single desktop application. Esri users can utilize integrated Neuralog toolbars to view and archive documents, create cross sections and define AOIs, directly from ArcMap. Log, map, and other data from multiple applications can be captured, edited, and saved in Neuralog Desktop and shared with others to drive your project forward.

A CLOSER LOOK AT NEURALOG DESKTOP

Neuralog Desktop is a powerful application for accessing and visualizing your project and E&P data. Neuralog Desktop can be used as standalone software with public domain maps or integrated into the ESRI ArcMap as a plugin. Smart filters and simple queries deliver needed information to users quickly. Neuralog Desktop supports data access from any SQL, Access, or Geodatabase as well as a variety of E&P application databases.

VISUALIZATION
- **Logs**—view spatially, data grids, trees, charts, and reports from multiple sources.
- **Documents**—for wells and regions, view in user's native handler.
- **Cross-sections**—create in NeuraSection to be seen and opened from the map.
- **Maps**—create and view spatial displays with pie charts, etc.
- **Reports**—generate well header, well documents, deviation data, scout tickets, etc.
- **Charts**—create and view log coverage and statistics, production decline curves, and custom cross plots.

CONNECT OR LOAD, ORGANIZE AND MANAGE

Neuralog Desktop can load or reference all E&P document types, i.e., AFEs, core reports, production data, leases, and 2D seismic and field reports.
- Project management can restrict different user levels.
- Users can locate data with simple and powerful filters or queries and view them on ESRI or public domain maps.
- Well information can be imported from external databases.

EXPORT
- Export well and log data with coordinate conversion capabilities to various vendor types.
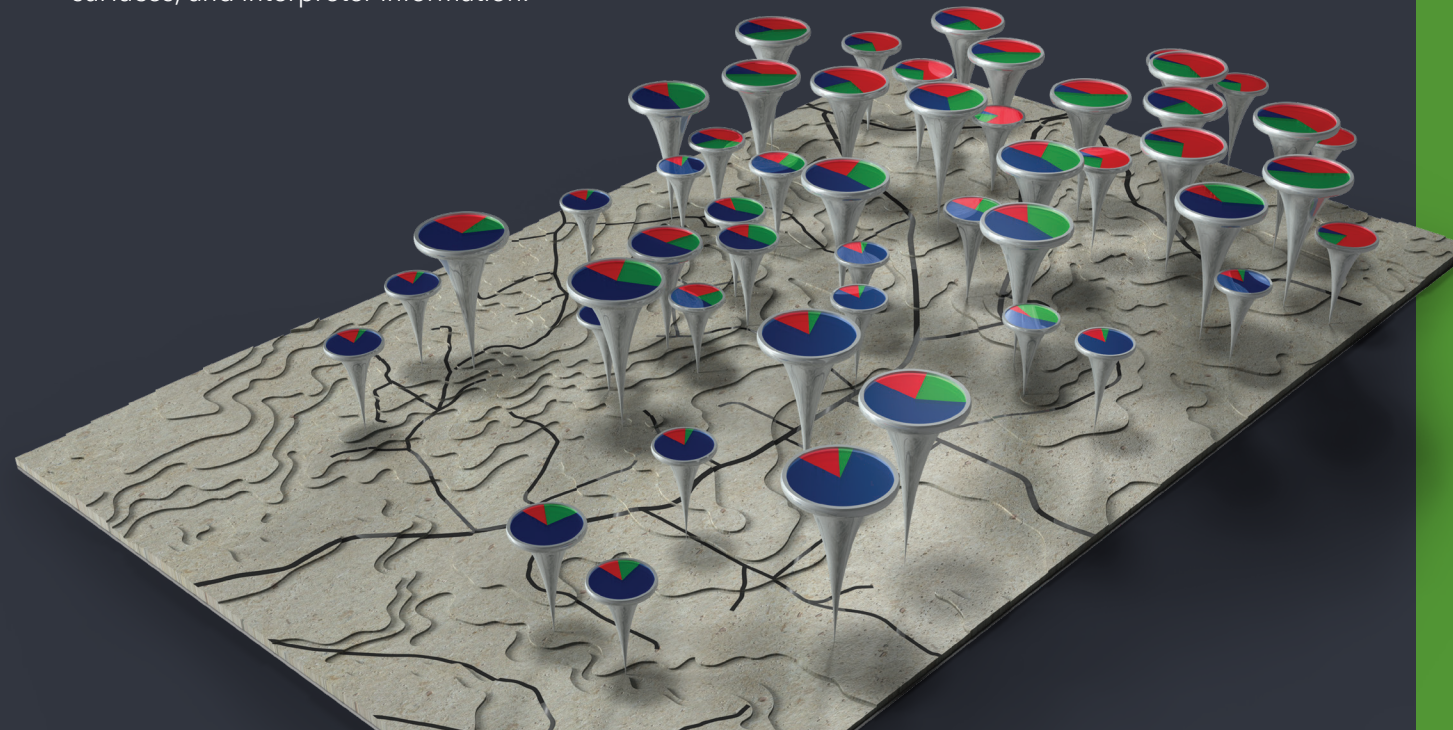
NeuraView is the solution for quickly viewing, processing, editing, converting and printing your raster and vector files.

Developed specifically to handle large documents such as well logs, and process industry-standard formats such as TIFF, JPG, BMP, PDS, PDF, CGM, EMF, and LAS.
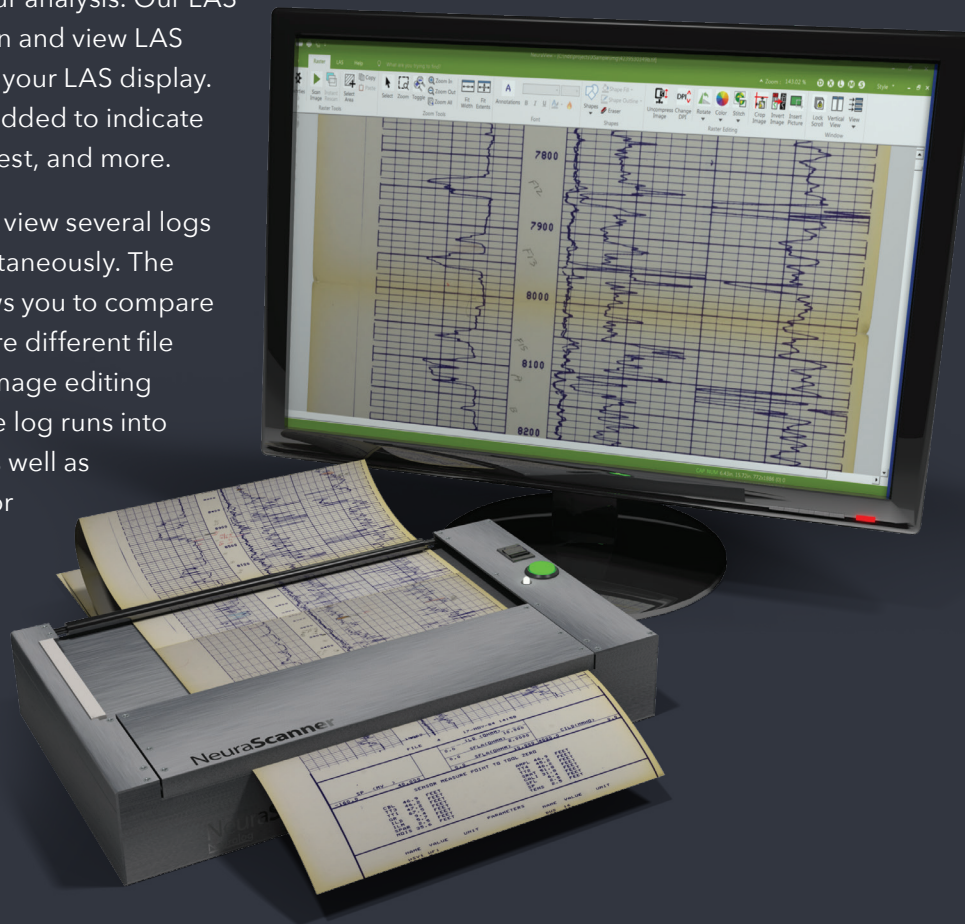
NEURAVIEW

View, Edit, and Print Well Logs and Maps

NeuraView makes it easier than ever to enhance your logs or documents using layout, annotation, crop, and stitch tools. Create type logs, quickly add notes, eliminate tracks, and combine logs or maps before you start your analysis. Our LAS features allow you to open and view LAS files, as well as customize your LAS display. Curve fill can be quickly added to indicate properties, zones of interest, and more.

NeuraView can open and view several logs of different formats simultaneously. The side-by-side display allows you to compare offset wells even if they are different file types. It is also ideal for image editing when combining separate log runs into one composite log file, as well as stitching maps together or laying out a presentation. NeuraView allows you to see and create the bigger picture.

Once editing is complete, logs or images can be saved and printed for closer analysis, presentation, and a permanent record of your work.

A CLOSER LOOK AT NEURAVIEW

LOAD, VIEW AND EDIT

Open and edit various file formats including JPG, BMP, TIFF, LAS, PDF, PDS, EMF, and CGM.
- Edit log colors while viewing images.

LAS SUPPORT

View LAS files in log format to verify curves and customize layout.
- Apply custom templates, use full LAS header, set custom logos.
- Set curve style, color, and type.

PDF SUPPORT

NeuraView handles PDF Multipage files with ease, reassembling your log into a single TIFF image for printing.
- Automatically remove page breaks.
- Export to PDF, JPEG, and TIFF formats.

CROP AND STITCH

NeuraView can stitch together logs or scanned maps for viewing and presenting.
- Assemble scanned maps and logs.
- Make composite logs.
- Clean up borders of scanned images.

INSTANT RESCAN
- Virtually rescan poor quality images to better visualize your data with grayscale thresholding.

SCANNING, PRINTING, AND COPYING
- Combine the NeuraScanner with the Z4 or Callisto for an instant log copying solution.
- Automatically scale logs to print on various size media without altering the vertical scale.

NeuraScanner is the industry-leading solution for your well log capture. It is the only scanner designed with a single purpose – scanning well logs and other continuous documents anywhere.

Digitizing your paper well logs is an essential business function in the E&P industry. The NeuraScanner is the preeminent scanning solution essential to safeguarding archives of paper-based logs. It can also be used to scan maps, core photos, outcrop descriptions, reports, and other data commonly found in the E&P environment.

NEURASCANNER

The Global Standard for Well Log Scanning

EASY OPERATION

The NeuraScanner scans at speeds up to 10 inches per second with a resolution up to 600dpi, while producing smaller, cleaner images than larger and more expensive scanners. The included software allows on-the-fly control of image settings, including brightness and detail, whether scanning grayscale or color logs. The NeuraScanner easily works with originals printed on paper, mylar, or even photographic film (with optional film lid) up to 12" wide and any length.

With NeuraScanner, you have full control of the log data.

For more delicate or poor original logs, a slower speed and smooth paper handling is built-in, ensuring that even the oldest and longest documents flow through the NeuraScanner to produce crisp raster images.

LIGHTWEIGHT AND PORTABLE

The NeuraScanner's compact size measures just 15" W x 9" D x 2.5" H while weighing less than 10 pounds, so it can be carried anywhere from the office, data room, or rig. Built to perform in even the most rugged environments, it is constructed of lightweight 7075 aluminum with stainless steel fasteners—the same materials used in many jet aircraft. The image sensor is shock mounted, and the light source is LED for durability and long life. Key surfaces are machined and anodized for smooth fit and feel.

SCAN FROM NEURAVIEW

VIEW, EDIT AND PRINT WELL LOGS AND MAPS

NeuraView is the ultimate solution for quickly viewing, editing, and printing the most common well log formats including LAS, TIFF, PDF, and many more. Critical processing features are incorporated for image manipulation and text annotation. Together, these create a total image tool for your E&P workflow.

Automated and quickly customizable templates simplify the viewing and printing of digital log data. Any portion of a log can be isolated with the selection tool and then saved or printed. NeuraView is the one-stop application for industry-standard log and map data.

The Neuralog Callisto is the industry standard for desktop log printers.

The Callisto instantly revolutionizes well log printing, with the power to print full-color well logs at speeds faster than any other printer on the market.

Neuralog Callisto

High-Speed Inkjet Well Log Printer

Printing well logs can be a time-consuming process, and your time is valuable. The Callisto printer is simply built to be fast and dependable by utilizing HP's PageWide™ printing technology. This innovative feature is constructed around a stationary printhead that spans the full width of the page. As a result, the Callisto prints in a single pass with fewer moving components, dramatically increasing the printer's speed and reliability. With 512MB of built-in memory, the Callisto is capable of processing and printing well logs as fast as 18 inches per second.

Versatility and Performance

The Callisto features a variable track for printing logs up to 12 inches wide. Easy paper loading and a short paper path make printing well logs easier than ever.

The Callisto reproduces critical detail at resolutions up to 1200dpi using Neuralog pigment inks that will not run, streak, or fade. High-capacity ink cartridges can print over 16,000 full-color pages or 35,000 black and white pages, and a custom Windows printer driver allows precision control of ink levels while maintaining brilliant color profiles. The Neuralog Callisto will keep your cost of operation low and your print quality high.

The Neuralog Z4 Well Log Printer is a proven solution to produce incredibly detailed well log documents. Advanced laser printhead technology and unique microfine toner produce exceptional image clarity at high speeds.

Neuralog Z4

Full-Color Laser Well Log Printer

Warranty & Support

The Neuralog Z4 and Callisto Support includes technical advice as well as driver, firmware, and software updates. Warranty support is included for the first year with an extended warranty available for subsequent years.

The Neuralog Z4 Well Log Printer is an enterprise-class commercial printer that uses HD Color Printing technology to provide sharp detail with rich, dramatic colors at resolutions up to 1200x600 dpi.

The Z4 is fast. Single Pass Color digital technology prints at speeds of 55 feet per minute with the highest quality for immediate presentation or preservation.

Flexibility And Speed

The patented Continuous Feeder Attachment (CFA) allows for accurate and fast printing of continuous well log media. In fact, the Z4 will begin printing the first full-color page in only a few seconds. The CFA automatically loads and cuts paper, keeping the media perfectly aligned in your printer. A convenient stacking tray is included to efficiently stack your printed well log.

The Z4 supports a wide variety of industry-standard well log formats and works with numerous software titles to print any standard-sized office document with a 550-sheet paper tray. The Z4 fits in the space of a desktop printer, and its footprint measures only 19" wide by 32" deep. This allows you to use the Z4 as your standard office printer, eliminating the need for multiple printers.
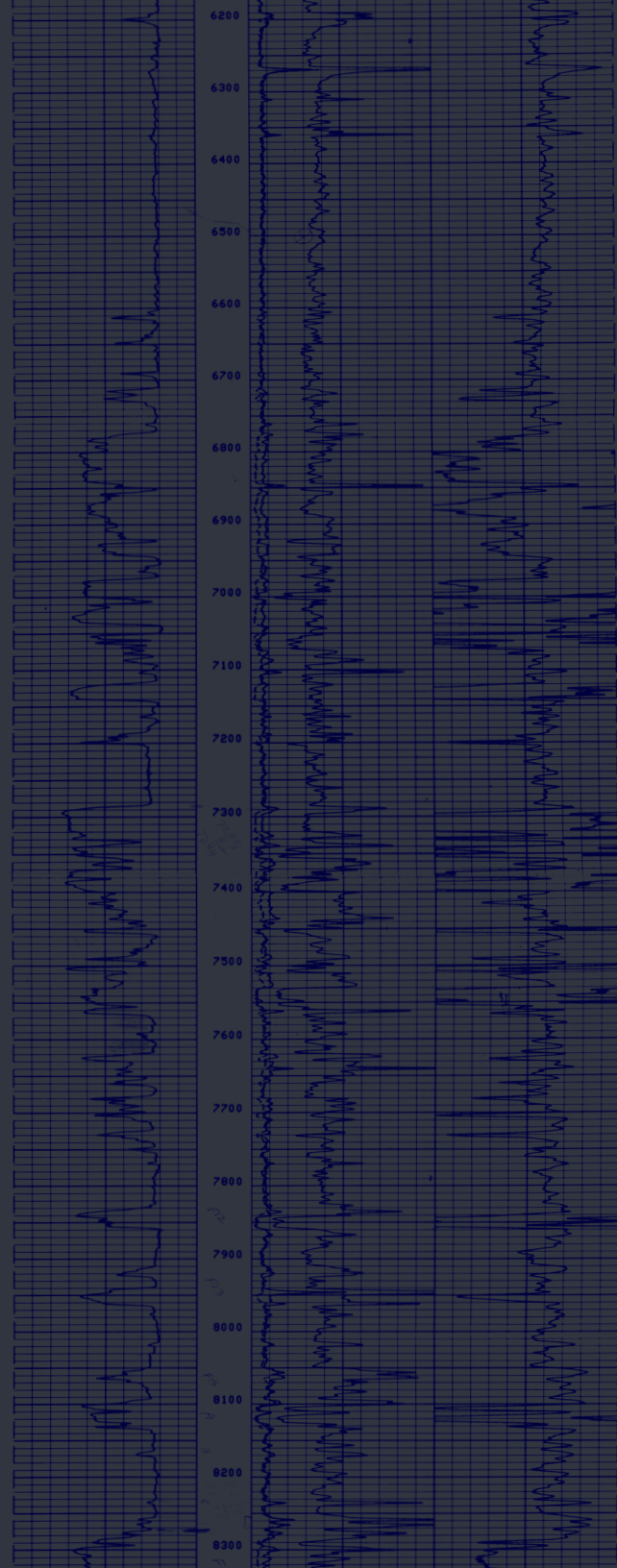
Low Cost Of Ownership

The Z4 is your cost-effective solution for printing well logs. The toner cartridges are rated for 12,000 pages CYM and 20,000 pages black. The fuser, belt, and imaging kit are all rated to 150,000 pages, further reducing your costs with this long-lasting printing solution.