PACKAGE ID - 001283IBMPC00 GVIZ BETA VERSION

KWIC TITLE - A 3D Geostatistical Mapping Tool

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LIMITATION CODE -COPY **AUDIENCE CODE -** LIM

COMPLETION DATE - 03/25/1997 **PUBLICATION DATE -** 03/25/1997

DESCRIPTION - This software provides accurate 3D reservoir modeling tools and high quality 3D graphics for PC platforms enabling engineers and geologists to better comprehend reservoirs and consequently improve their decisions. The mapping algorithms are fractals, kriging, sequential guassian simulation, and three nearest neighbor methods.

PACKAGE CONTENTS - Media Directory; Software Abstract; User's Guide, Short User's Guide; Media includes Executable Module, Sample Problem Input Data, Sample Problem Output Data;

SOURCE CODE INCLUDED? - No

MEDIA QUANTITY - 2 3.5 Diskettes

METHOD OF SOLUTION - The software is written in object oriented C++ language. Libraries used are Open GL for graphics, Microsoft Foundation Class for the graphics user interface, Object Linking and Embedding to link the modules, and Drag and Drop to move files. The statistical analysis modules generate a histogram, a cumulative distribution histogram with normality based on the Kolmogorov-Smirnov test, a interactive variogram based on the Li and Lake method with an automatic best fit to a spherical, exponential, linear, fbm (fractal), or Gaussian model. Maps are generated with a kiging method or cokriging if two datasets are available, fractals using the successive random addition method, sequential Gaussian simulation based on the variance of the data, and the nearest neighbor methods rely on information from the raw dataset.

COMPUTER - IBM PC

OPERATING SYSTEMS - Microsoft Windows 95 or NT-4

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PROGRAMMING LANGUAGES - C++

SOFTWARE LIMITATIONS - Generating maps with more than 2,000,000 gridblocks are a problem.

SOURCE CODE AVAILABLE (Y/N) - N

UNIQUE FEATURES - The Gviz pre-processing module reads LAS and ASCII files. The pre-processing module facilitates selection of the stratigraphic units prior to processing by a nearest neighbor, kriging and co-kriging, conditional simulation, or fractal module. A user friendly GUI simplifies the examination of the statistical data and the geostatistical analyses using isotropic and anisotropic variograms. After completing the analyses, the post-processing the post-processing unit can generate 1D models of well logs, 2D models such as cross-sections. or a 3D model of any petrophysical property. Post-processing includes the display of reservoir slices, multiple cross-sections, rotation along any axis, and identification of geobodies (visually inspect the effect of porosity cutoffs on connected pore volume). The post-processor includes an up-scaling module to transform a fine scale grid into a reservoir simulation grid which can then be exported in an Eclipse format. Gviz emphasizes a self-explanatory GUI and visually oriented help pages which guides even a novice through the process of generating realistic, one to two million cell, 3D reservoir models.

RELATED SOFTWARE - Printer drivers are included in Gviz.

OTHER PROG/OPER SYS INFO - Gviz protection utilizes a hardware security lock from Dallas Semiconductor. The lock is an adaptor (DS 1410E) with a programable button (DS 1425). Both the button and te Gviz licence file are coded with a unique 128 bit user number. The evaluation copy does not have a security lock, but it will run only the dataset provided with the code.

HARDWARE REQS - IBM-PC or compatible with a 486DX/33 MHz or higher processor (recommend 90 Mhz or faster). 8 MB memory (recommend 32 MB). 10 MB of hard disc space. Super VGA, 256-color monitor (recommend 16-bit color) with minimum 640x480 screen resolution. A Microsoft Mouse or compatible pointing device.

TIME REQUIREMENTS - A kriged map based on a 20-well data set with 4 layers takes 2 minutes to generate. Gathering and formatting the input dataset is the most painful part of generating any computer map. Gviz is not an exception.

REFERENCES - Ouenes, A., Stevenson, C.S., Patel, K., and Wang, J., A Comprehensive Geostatistical Tool for PC Platforms, SPE 38128, presented at the Petroleum Computer Conference held in Dallas, 8-11 June, 1997.

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REFERENCES -(CONT)
ABSTRACT STATUS - Released AS-IS 2/15/1999

SUBJECT CLASS CODE - Z

KEYWORDS -
COMPUTER PROGRAM DOCUMENTATION
C CODES
MAPPING
ALGORITHMS
SIMULATION

EDB SUBJECT CATEGORIES -
990200

SPONSOR - DOE/ER

PACKAGE TYPE - AS - IS