Geologic Cross Section *D*–*D*′ Through the Appalachian Basin from the Findlay Arch, Sandusky County, Ohio, to the Valley and Ridge Province, Hardy County, West Virginia

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Geologic Cross Section *D–D′* Through the Appalachian Basin from the Findlay Arch, Sandusky County, Ohio, to the Valley and Ridge Province, Hardy County, West Virginia

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This chapter is a re-release of U.S. Geological Survey Scientific Investigations Map 3067, of the same title, by Ryder and others (2009). For this chapter, two appendixes have been added that do not appear with the original version. Appendix A provides Log ASCII Standard (LAS) files for each drill hole along cross-section *D–D'*; they are text files which encode gamma-ray, neutron, density, and other logs that can be used by most well-logging software. Appendix B provides graphic well-log traces and lithologic descriptions with formation tops from each drill hole.

To access sheet 1, click here.

To access sheet 2, click here.

To access the accompanying text for the report, click here.

Reference Cited

Ryder, R.T., Crangle, R.D., Jr., Trippi, M.H., Swezey, C.S., Lentz, E.E., Rowan, E.L., and Hope, R.S., 2009, Geologic cross section *D–D'* through the Appalachian basin from the Findlay arch, Sandusky County, Ohio, to the Valley and Ridge province, Hardy County, West Virginia: U.S. Geological Survey Scientific Investigations Map 3067, 2 sheets, 52-p. pamphlet. (Also available at http://pubs.usgs.gov/sim/3067/.)

[1]U.S. Geological Survey, Reston, Va.

Appendix A. Log ASCII Standard Files for Wells Along Geologic Cross Section *D–D′*

Log ASCII[2] Standard (LAS) files are a simple, standard way of encoding the wavy line patterns of gamma-ray, neutron, density, and other types of well-log data in a text file that can be read and used by most well-logging software. To create these files, staff from the U.S. Geological Survey (USGS) scanned the original paper well logs and digitized the log curves using the software program Neuralog.[3] The data were then saved and exported into a text file using the LAS format. The files are presented exactly as exported, without any refinement. In some cases, multiple files were created for a well, each representing different depth ranges in the well; these files have names with the suffixes A, B, C, and so on. The text file can be opened and examined using a text editor program that reads plain text; however, the user should not edit the LAS files in any way, or they may become unusable by other software programs.

The top section of the LAS file contains header information from the well logs including well name, drilling company, field, county, State, country, well logging company, drilling date, and American Petroleum Institute (API) well-identification number. The main body of the LAS file is a list of drill depths matched with values for gamma-ray, neutron, density, or other types of data. These values can be read by well-logging software programs to redraw the curves on a computer, or they can be used as simple X and Y values in spreadsheet software to redraw the curves. An explanation of all abbreviations used in the LAS files is included in table A1.

To access the LAS files, click here.

Table A1. Abbreviations used in the Log ASCII Standard (LAS) files, in alphabetical order.

[This list covers abbreviations used in the LAS files in the appendixes for chapters E.4.1 and E.4.2 of this volume. Multiple abbreviations may exist for the same item because wells were drilled by different companies over a long period of time. Not all wells contain all of the information listed here]

Abbreviation	Explanation
API	American Petroleum Institute number.
BHT.F	Bottom hole temperature, in degrees Fahrenheit.
BLI.ft	Bottom of log interval, in feet.
BS.inch	Bit size, in inches.
CAL.IN	Caliper log value, in inches.
CMNT1	Comment 1.
CNTY	County.
COMP	Well-drilling company.
CSS.inch	Casing size, in inches.
CTD1.ft	Casing depth as measured by driller, in feet.
CTL1.ft	Casing depth as measured by logger, in feet.
CTRY	Country.
CWLS	Canadian Well Logging Society.
DATE	Date of drilling.
DD.ft	Depth of hole as determined by driller, in feet.
DEPT.f	Depth, in feet.
DEPT.F	Depth, in feet.
DEPT.FT	Depth, in feet.
DEPTHLABELFREQ	Depth label frequency (only for use by Neuralog software).
DEPTHSCALE	Depth scale value (only for use by Neuralog software).

[2]American Standard Code for Information Interchange.

[3]Neuralog LP, Houston, Tex.

Table A1. Abbreviations used in the Log ASCII Standard (LAS) files, in alphabetical order.—Continued

[This list covers abbreviations used in the LAS files in the appendixes for chapters E.4.1 and E.4.2 of this volume. Multiple abbreviations may exist for the same item because wells were drilled by different companies over a long period of time. Not all wells contain all of the information listed here]

Abbreviation	Explanation
DEPTHSTEP.F	Step distance, in feet.
DEPTHSTOP.F	Stop depth, in feet.
DEV	Devonian.
DFL.mL	Drill fluid loss, in milliliters.
DFM	Deepest geologic formation encountered.
DFPH	pH of drill fluid.
DFT	Type of drill fluid.
DFV.sec	Viscosity of drill fluid, in seconds.
DGBY	Name of person or company who digitized data.
DL.ft	Depth of hole as determined by logger, in feet.
DT or Dt	Sonic log (interval transit time) value.
DT.usec/ft	Sonic log (interval transit time) value, in microseconds per foot.
DT.US/F	Sonic log (interval transit time) value, in microseconds per foot.
E.FT	Stretch coefficient of cable (E), in feet.
EDF.F	Elevation of drilling floor, in feet.
EGL.F	Elevation of ground level, in feet.
EKB	Elevation of kelly bushing.
EKB.F	Elevation of kelly bushing, in feet.
EKB.ft	Elevation of kelly bushing, in feet.
EMT.F	Mud measured temperature, in degrees Fahrenheit.
ENDTRACK	End of track data section (only for use by Neuralog software).
ENGI	Name of engineer who recorded data.
EPD.F	Elevation of permanent datum, in feet.
EPD.FT	Elevation of permanent datum, in feet.
FLD	Oil and (or) gas field.
FNL	Distance measured from north line of section or quarter section.
FWL	Distance measured from west line of section or quarter section.
GR	Gamma ray.
GR.API	Gamma ray, in API units.
GR.GAPI	Gamma ray, in gamma API units.
GR.MTON	Gamma ray, in micrograms of radium equivalent per metric ton.
HEAVYGRIDFREQ	Heavy grid line frequency (only for use by Neuralog software).
KB	Kelly bushing.
LAT	Latitude, in decimal degrees north.
LEFTX	X value for leftmost line (only for use by Neuralog software).
LIGHTGRIDFREQ	Light grid line frequency (only for use by Neuralog software).
LOC	Location description.
LONG	Longitude, in decimal degrees west.
MCSS	Source of mud cake.
MCST.F	Measured temperature of mud cake, in degrees Fahrenheit.
MFSS	Source of mud filtrate.

Table A1. Abbreviations used in the Log ASCII Standard (LAS) files, in alphabetical order.—Continued

[This list covers abbreviations used in the LAS files in the appendixes for chapters E.4.1 and E.4.2 of this volume. Multiple abbreviations may exist for the same item because wells were drilled by different companies over a long period of time. Not all wells contain all of the information listed here]

Abbreviation	Explanation
MFT.F	Measured temperature of mud filtrate, in degrees Fahrenheit.
MEDIUMGRIDFREQ	Medium grid line frequency (only for use by Neuralog software).
MNEM.UNIT	Mnemonic (program name for data storage location), unit of measure.
MRT.F	Maximum recorded temperature, in degrees Fahrenheit.
NAPI.API	Neutron log value, in API units.
NEUT	Neutron log.
NEUT.CU	Neutron log, in calibration units.
NPHI.%	Neutron porosity, in percent.
NPHI.V/V	Neutron porosity, in volume per volume ratio.
NRUN	Number of runs.
NULL	Null value.
NUMCHARTDIVISIONS	Number of chart divisions (only for use by Neuralog software).
OPER	Operator.
ORDOV	Ordovician.
ORIG	Log origin.
PDAT	Permanent datum.
PEF.barns/elec	Photoelectric factor log values, in barns per electron.
PLOTDEFVERSION	Plot definition version (only for use by Neuralog software).
PROJ	Project.
PROS	Prospect.
RESOLUTION	Resolution value (only for use by Neuralog software).
RGE	Range.
RHOB or RhoB	Bulk density.
RHOB.G/C3	Bulk density, in grams per cubic centimeter.
RHOB.G/CC	Bulk density, in grams per cubic centimeter.
RHOB.gm/cc	Bulk density, in grams per cubic centimeter.
RIGHTX	X value for rightmost line (only for use by Neuralog software).
RM.ohmm	Resistivity of mud, in ohm-meters.
RMB.ohmm	Resistivity of mud at bottom hole temperature, in ohm-meters.
RMC.ohmm	Resistivity of mud cake, in ohm-meters.
RMF.ohmm	Resistivity of mud filtrate, in ohm-meters.
RSRN	Rose Run Sandstone.
RUN	Run number.
SCALETYPE	Scale type (only for use by Neuralog software).
SD	Sandstone.
SEC	Section.
SRVC	Service company.
STARTTRACK	Start of track data section (only for use by Neuralog software).
STAT	State.
STEP.F	Step distance, in feet.

Table A1. Abbreviations used in the Log ASCII Standard (LAS) files, in alphabetical order.—Continued

[This list covers abbreviations used in the LAS files in the appendixes for chapters E.4.1 and E.4.2 of this volume. Multiple abbreviations may exist for the same item because wells were drilled by different companies over a long period of time. Not all wells contain all of the information listed here]

Abbreviation	Explanation
STEP.FT	Step distance, in feet.
STOP.F	Stop depth, in feet.
STOP.FT	Stop depth, in feet.
STRT.F	Start depth, in feet.
STRT.FT	Start depth, in feet.
TD.F	Total depth, in feet.
TD.FT	Total depth, in feet.
TLI.ft	Top of log interval, in feet.
TVD	Flag on true vertical depth.
TWP	Township.
UWI	Unique Well Identifier (digits 6 through 10 of API number).
VERS	Version.
WELL	Well name.
WITN	Name of witness of recorded data.
WRAP	Word wrap (on or off) for data in log.
WSS	Source of sample.
WSTA	Well status.
Y	Code for gamma ray curve (only for use by Neuralog software).

Appendix B. Well-Log Traces, Lithologies, and Formation Tops in Wells Along Geologic Cross Section *D–D′*

Graphics displaying well-log traces and lithologic descriptions with formation tops listed were created by staff of the U.S. Geological Survey (USGS) for each of the 13 wells located along geologic cross section *D–D′*. The original paper well logs were scanned and digitized using the software program Neuralog,[4] and the image of the well log trace was saved in a raster format (TIFF, or tagged image file format). The lithologic descriptions captured on paper strip logs created by the now-defunct Geological Sample Well Log Company were entered into spreadsheet software by USGS staff. Using the LITHOS program (Daniel O. Hayba, U.S. Geological Survey, unpub. data, 2004), the descriptions were converted into a graphical representation.

This appendix contains one graphic file for each of the 13 wells along the cross section. Each file includes a lithologic column as it was output from the LITHOS program along with graphical representations of well logs as they were output from Neuralog. The symbols and colors used in the lithologic graphical representations are explained in an explanatory file (ExplanationOfLithoSymbology.pdf), which is included in the folder with the graphic files. The formation names are listed at their appropriate depths in the column to the right of the lithologic descriptions. In addition to the explanatory file, an explanation of all abbreviations used in the graphic files is included in table B1.

To access the graphic well-log files and the explanatory file, click here.

Table B1. Abbreviations used in the graphic well-log files, listed in alphabetical order.

Abbreviation	Explanation
API	American Petroleum Institute.
carb	carbonates.
Cent	Central.
Dol or dol	Dolomite (formal) or dolomite (informal).
equiv	equivalent.
Fm or fm	Formation (formal) or formation (informal).
Gp or gp	Group (formal) or group (informal).
Ig	igneous.
incl	including.
Ls or ls	Limestone (formal) or limestone (informal).
Md	Measured depth
Mem or Mbr	Member.
Met	Metamorphic.
mid	middle.
OH	Ohio.
PA	Pennsylvania.
Rx	Rocks
Sh or sh	Shale (formal) or shale (informal).
Sil	Silurian.
Ss or ss	Sandstone (formal) or sandstone (informal).
undiv	undivided.
USGS	U.S. Geological Survey.

[4]Neuralog LP, Houston, Tex.