Reconnaissance Geologic Map of the Dixonville 7.5' Quadrangle, Oregon

(digital database description)

By

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Digital Database

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Open - File Report 01-226

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Introduction

This Open-File report is a digital geologic map database. This pamphlet serves to introduce and describe the digital data. There is no paper map included in the Open-File report. The report does include, however, a PostScript plot file containing an image of a geologic map sheet with explanation, as well as the accompanying text describing the geology of the area in PDF format. For those only interested in a paper plot of information contained in the database or in obtaining the PostScript plot files, please see the section entitled "For Those Who Don't Use Digital Geologic Map Databases" below.

This digital map database, compiled from previously published data and new mapping by the authors, represents the general distribution of bedrock and surficial deposits of the Dixonville 7.5 minute quadrangle. The pamphlet for this quadrangle is a text file (geol.pdf, geol.txt) that provides current information on the geologic structure and stratigraphy of the area covered. Open File Report 01-226 may be found on the web at:

http://geopubs.wr.usgs.gov/open-file/of01-226/

The database delineates map units that are identified by general age and lithology following the stratigraphic nomenclature of the U.S. Geological Survey. The scale of the source maps limits the spatial resolution (scale) of the database to 1:24,000 or smaller. The content and character of the database, as well as three methods of obtaining the database, are described below.

For those who don't use digital geologic map databases

For those interested in the geology of the southwestern Oregon region of the Dixonville 7.5 minute quadrangle who do not use an ARC/INFO compatible Geographic Information System (GIS), we have provided two sets of plot files containing images of much of the information in the database. There is a set of images in PostScript format and another in Adobe Acrobat PDF format (see the sections “PostScript plot files” and “PDF plot files” below).

Those interested who have computer capability can access the plot file packages in any of the three ways described below (see the section "Obtaining the digital database and plot file packages"). However, it should be noted the plot file packages do require gzip and tar utilities to access the plot files. Therefore additional software, available free on the Internet, may be required to use the plot files (see section "Tar files").

Those without computer capability can obtain plots of the map files through USGS plot-on-demand service for digital geologic maps (see section "Obtaining plots from USGS Open-File Services") or from an outside vendor (see section "Obtaining plots from an outside vendor").

Digital Open-File contents

This Open-File report consists of three digital packages. The first is the **PostScript Plotfile Package**, which consists of a PostScript plot file of the geologic map (Sheet 1), as well as a PDF version of a geologic description pamphlet and a readme file in PDF format. The second is the **PDF Plotfile Package**, and contains the same plotfiles as the

first package, but in Portable Document Format (PDF). The third is **the Digital Database - metadata Package** containing the geologic map database itself, the supporting data, including a base map, map explanation, geologic description, references, and metadata.

PostScript plot file package

This package contains the images described here in PostScript and PDF format (see below for more information on PostScript plot files):

dix.ps	A PostScript plottable file containing an image of the geologic map, base map, cross sections, correlation of map units, and a list of map units of the Dixonville 7.5 minute quadrangle at a scale of 1:24,000.
geol.pdf	A PDF file of a report containing detailed unit descriptions, geological information, and references cited.
readme.pdf	A PDF file of this document.

PDF plotfile package

This package contains the images described here in PDF format (see below for more information on PDF plot files):

dix.pdf	A PDF containing an image of the geologic map, base map, cross sections, correlation of map units, and list of map units of the Dixonville 7.5 minute quadrangle at a scale of 1:24,000 (Sheet 1).
geol.pdf	A PDF file of a report containing detailed unit descriptions, geological information, and references cited.
readme.pdf	A PDF of this document.

Digital database - metadata package

The database package includes geologic map database files for the Dixonville 7.5 minute quadrangle. The digital maps, or coverages, along with their associated INFO directory have been converted to uncompressed ARC/INFO export files. ARC export files promote ease of data handling, and are usable by some Geographic Information Systems in addition to ARC/INFO (see below for a discussion of working with export files). Raster data are stored in ARC grid format rather than export format to reduce file size. The ARC export files and associated ARC/INFO coverages, grids, and directories, as well as the additional digital material included in the database, are described below:

ARC/INFO export file	**Resultant Coverage**	**Description of Coverage**
Dixonville_quadrangle		
dix_geo.e00	dix_geo	Faults, depositional contacts, and rock units in the quadrangle
dix _stx.e00	dix_stx	Fold axis as arcs, cross section line
dix_ann.e00	dix_ann	Annotation marking rock types

ARC/INFO grids	Description of Grid
dix_grd1	Dixonville color geology grid merged with grid of topographic base

The database package also includes the following files:

ASCII text files, including explanatory text, PostScript plot files, Encapsulated PostScript files from Adobe Illustrator 8 used as map collars and Figures (EPS) for the geologic report, ARC Macro Language (AML) files for plotting maps, custom ARC lineset and a AML file for conversion of ARC export files into ARC coverages:

metadata.txt	The metadata
metadata.pdf	The metadata as a PDF file
readme.txt	This file
readme.pdf	This file as a PDF file
import.aml	ASCII text file in ARC Macro Language to convert ARC export files into ARC coverages and ARC/INFO look up tables in ARC/INFO
dix_sh1.eps	Encapsulated PostScript Adobe Illustrator 8 file (map collar) for the Dixonville 7.5 minute quadrangle (Sheet 1)
dix.gra	ARC Graphics Metafile for Dixonville 7.5 minute quadrangle
dix_plot.aml	Plot AML generates uncompressed PostScript of Dixonville 7.5 minute quadrangle at 600 dpi
geol61.lin	Custom ARC lineset
johanna.txt	Custom ARC textset
uncom	Parameter file in dix_plot.aml to uncompress PostScript file
fnt034	Arc/Info font used with markerset
fnt035	Arc/Info font used with markerset
fnt038	Arc/Info font used with markerset
fnt039	Arc/Info font used with markerset
fnt040	Arc/Info font used with markerset
fnt339	Arc/Info font used with markerset
dix.tab	Arc/Info grid remap table for colors (Dixonville quadrangle)
info	Arc/Info directory
log	Arc/Info log file
alc1.shd	Arc/Info shadeset (custom)

geologyk.mrk	Arc/Info markerset (custom)
droid.lut	Arc/Info marker look up table (internal) exported as droid.lut.e00
dix_poly.lut	Arc/Info line look up table for polygons (internal) exported as dixpoly.lut.e00
dixln.lut	Arc/Info line look up table for arcs (internal) exported as dixln.lut.e00
dix_att1.lut	Arc/Info line look up table for fold arcs (internal) exported as dix_att1.lut.e00
dix_att2.lut	Arc/Info line look up table for fold arc markers (internal) exported as dix_att2.lut.e00
geol.pdf	A PDF file of a report containing detailed unit descriptions, geological information, and references cited.
geol.txt	A text file of a report containing detailed unit descriptions, geological information, and references cited.

Tar files

The three data packages described above are stored in tar (UNIX tape archive) files. A tar utility is required to extract the database from the tar file. This utility is included in most UNIX systems, and can be obtained free of charge over the Internet from Internet Literacy's Common Internet File Formats Webpage (*http://www.matisse.net/files/formats.html*). The tar files have been compressed, and may be uncompressed with **gzip**, which is available free of charge over the Internet via links from the USGS Public Domain Software page (*http://edcwww.cr.usgs.gov/doc/edchome/ndcdb/public.html*). When the tar file is uncompressed and the data is extracted from the tar file, a directory is produced that contains the data in the package as described above. The specifics of the tar files are listed below:

Name of compressed tar file	**Size of compressed tar file (uncompressed)**	**Directory produced when extracted from tar file**	**Data package contained**
of01226ps.tar.gz	4.81 MB	ofr_ps/	PostScript Plotfile Package
of01226pdf.tar.gz	3.26 MB	ofr_pdf/	Portable Document Format Package
of01226md.tar.gz	2.56 MB	ofr_meta/	Digital Database Package

PostScript plot files

For those interested in the geology of the southwestern Oregon region of the Dixonville 7.5 minute quadrangle who don't use an ARC/INFO compatible GIS system we have included a separate data package with a PostScript plot file. It contains a color plot of the geologic map database at 1:24,000 scale (dix.ps). Because this release is primarily a digital database, the plot file (and plots derived there from) has not been edited to conform to U.S. Geological Survey standards. Small units have not been labeled with leaders and in some instances map features or annotation overlap. Sample plots by the authors have proven to be quite legible and useful, however. The PostScript image of the geologic map is 48 by 36 inches, so it requires a large plotter to produce paper copies at the intended scale.

The PostScript plot files for maps were produced by the PostScript command using the uncompressed option in ARC/INFO version 8.0.2 for Unix. Encapsulated PostScript files, as well as the map template (dix_sh1.eps) contain a color plot of the cross-sections, figures, correlation of map units, and list of map units in map collar, (it was used as placed EPS in the PostScript file from ARC/INFO).

The final ARC/INFO PostScript file (dix.ps) contains an Encapsulated PostScript file generated by Adobe Illustrator version 8 (dix_sh1.eps) and placed into the ARC/INFO graphic metafile by an ARC plotting AML. This EPS file includes the marginal graphics and explanation of the map.

The Plot AML (dix_plot.aml) uses the coverages and grids to produce a printable PostScript file of the Dixonville files. The import.aml imports all the export (.e00) files into ARC/INFO.

PDF plot files

We have also included a second digital package containing a PDF version of the PostScript map sheet described above. Adobe Acrobat PDF (Portable Document Format) files are similar to PostScript plot files in that they contain all the information needed to produce a paper copy of a map and they are platform independent. Their principal advantage is that they require less memory to store and are therefore quicker to download from the Internet. In addition, PDF files allow for printing of portions of a map image on a printer smaller than that required to print the entire map without the purchase of expensive additional software. All PDF files in this report have been created from PostScript plot files using Adobe Acrobat Distiller. In test plots we have found that paper maps created with PDF files contain almost all the detail of maps created with PostScript plot files. We would, however, recommend that those users with the capability to print the large PostScript plot files use them in preference to the PDF files.

To use PDF files, the user must get and install a copy of Adobe Acrobat Reader. This software is available free from the Adobe website (*http://www.adobe.com*). Please follow the instructions given at the website to download and install this software. Once installed, the Acrobat Reader software contains an on-line manual and tutorial.

There are two ways to use Acrobat Reader in conjunction with the Internet. One is to use the PDF reader plug-in with your Internet browser. This allows for interactive viewing of PDF file images within your browser. This is a very handy way to quickly look at PDF files without downloading them to your hard disk. The second way is to download the PDF file to your local hard disk, and then view the file with Acrobat Reader. **We strongly recommend that large map images be handled by downloading to your hard disk, because viewing them within an Internet browser tends to be very slow.**

To print a smaller portion of a PDF map image using Acrobat Reader, it is necessary to cut out the portion desired using Acrobat Reader and the standard cut and paste tools for your platform, and then to paste the portion of the image into a file generated by another software program that can handle images. Most word processors (such as Microsoft Word) will suffice. The new file can then be printed. Image conversion in the cut and paste process, as well as changes in the scale of the map image, may result in loss of image quality. However, test plots have proven adequate.

Digital database format

The databases in this report were compiled in ARC/INFO, a commercial Geographic Information System (Environmental Systems Research Institute, Redlands, California), with version 3.0 of the menu interface ALACARTE (Fitzgibbon and Wentworth, 1991, Fitzgibbon, 1991, Wentworth and Fitzgibbon, 1991). The files are in either GRID (ARC/INFO raster data) format or COVERAGE (ARC/INFO vector data) format. Coverages are stored in uncompressed ARC export format (ARC/INFO version 8.0.1 for Unix). ARC/INFO export files (files with the .e00 extension) can be converted into ARC/INFO coverages in ARC/INFO (see below) and can be read by some other Geographic Information Systems, such as MapInfo via ArcLink and ESRI's ArcView (version 1.0 for Windows 3.1 to 3.11 is available for free from ESRI's web site: http://www.esri.com). The digital compilation was done in version 8.0.1 of ARC/INFO for Unix.

Obtaining the Digital Database and Plotfile Packages

The digital data can be obtained in any of three ways:

a. From the Western Region Geologic Information Web Page.
b. Anonymous ftp over the Internet
c. Sending a cd with request

To obtain tar files of database or plot file packages from the USGS web pages:

The U.S. Geological Survey now supports a set of graphical pages on the World Wide Web. Digital publications (including this one) can be accessed via these pages. The location of the main Web page for the entire USGS is

http://www.usgs.gov

The Web server for digital publications from the Western Region is

http://geopubs.wr.usgs.gov

Go to

http://geopubs.wr.usgs.gov/open-file/of01-226

to access this publication. Besides providing easy access to the entire digital database, the Western Region Web page also affords easy access to the PostScript plot files for those who do not use digital databases (see below).

To obtain tar files of database or plot file packages by ftp:

The files in these reports are stored on the U.S. Geological Survey Western Region FTP server. The Internet ftp address of this server is:

ftp://geopubs.wr.usgs.gov

The user should log in with the user name anonymous and then input their e-mail address as the password. This will give the user access to all the publications available via ftp from this server.

The files in this report are stored in the subdirectory:

pub/open-file/of01-226

To obtain tar files of database or plot file packages on CD:

Database files, PostScript plot files, and related files can be obtained

by sending a compact disk (CD) with request and return address to:

SE Oregon, Dixonville 7.5 minute Geologic Map Plotfiles
c/o Database Coordinator
U.S. Geological Survey
345 Middlefield Road, M/S 975
Menlo Park, CA 94025

Do not omit any part of this address!

NOTE: Be sure to include with your request the exact names, as listed above, of the tar files you require. An Open-File Report number is not sufficient, unless you are requesting the database package, plot file package for the report, and PDF package.

The compressed tar file will be returned on the compact disk.

Obtaining plots from a commercial vendor

Those interested in the geologic maps of the southwestern Oregon region of the Dixonville 7.5 minute quadrangles, but who use neither a computer nor the Internet, can still obtain the information. We will provide the PostScript plot files on digital compact disk (details below) for use by commercial vendors who can make large-format plots. Send a blank compact disk (CD) with request and return address to:

SE Oregon, Dixonville 7.5 minute Geologic Map Plotfiles
c/o Database Coordinator
U.S. Geological Survey
345 Middlefield Road, M/S 975
Menlo Park, CA 94025

Do not omit any part of this address!

The compressed tar file will be returned on the compact disk.

Make sure your vendor is capable of reading compact disks and PostScript plot files. Important information regarding compact disk format is included in the sections "Database Release Format", "Tar Files", and "PostScript Plot Files" above, so be certain to provide a copy of this document to your vendor.

Obtaining plots from USGS Open-File Services

U.S. Geological Survey is providing a plot-on-demand service for map files, such as those described in this report, through Open-File Services. In order to obtain plots, contact Open-File Services at:

USGS Information Services
Box 25286
Denver Federal Center
Denver, CO 80225-0046

(303) 202-4200
1-800-USA-MAPS
FAX: (303) 202-4695
e-mail: infoservices@usgs.gov

Be sure to include with your request the Open-File Report number and the exact names, as listed in the Database Contents section above, of the plot files you require. An Open-File Report number and its letter alone may not be sufficient, unless you are requesting plots of all the plot files for that report.

Converting ARC export files

ARC export files are converted to ARC coverages and ARC/INFO look up tables using the ARC command IMPORT with the options COVER and INFO. To ease conversion and maintain naming conventions, we have included an ASCII text file in ARC Macro Language that will convert all of the export files in the database into coverages and create the associated INFO directory. From the ARC command line type:

Arc: &run import.aml

ARC export files can also be read by some other Geographic Information Systems. Please consult your GIS documentation to see if you can use ARC export files and the procedure to import them.

Digital compilation

Several different coverages were generated during the construction of the geologic quadrangle map. The topographic base map separates remain as grids, and are merged at the last step with the colored geology polygrids. The raster geology grid was converted to a vector coverage with ARC/INFO's gridline routine. Alacarte and some

custom menus and amls were used to project, transform, edit, tag and build, lines, polygons, and points in the map. A digital layout or map collar was made with Adobe Illustrator. The plot aml runs in ARC/INFO and calls the coverages, grid, and EPS to make an uncompressed PostScript file. All maps are in Universal Transmercator, zone 10, units meters, 1:24,000 scale. The pamphlet that describes the geology was a Microsoft word document and was converted to PDF format for publicatioin.

Annotation

Within the structural coverage annotation is showing dip amount associated with each attitude. This annotation layer is called by the plot aml used by ARC/INFO, using a custom ARC textset, johanna.txt. The plot aml converts all coverages into a PostScript file. Map unit labels are used to label most geology polygons. Smaller polygons particularly important to the geology, in which the label would not fit, were identified using an annotation layer and leaders. Other unlabeled polygons can be identified on plots by the color of the polygon.

Base maps

The topographic base map is a Digital Raster Graphic provided by the U.S. Geological Survey, 1:24,000 scale, with 40-foot contour intervals (1987). These images were downloaded as georeferenced images with a Universal Transmercator Projection, zone 10. The image was then clipped using ARC/INFO grid to conform to the area of the geologic coverage and merged with the geology grid to give an apparent transparent color image of both combined. These base map-geology layers are digital images but no information other than location is attached to the lines. The base-geology maps are provided for reference only.

Spatial resolution

Uses of this digital geologic map should not violate the spatial resolution of the data. Although the digital form of the data removes the constraint imposed by the scale of a paper map, the detail and accuracy inherent in map scale are also present in the digital data. The fact that this database was edited at a scale of 1:24,000 means that higher resolution information is not present in the dataset. Plotting at scales larger than 1:24,000 will not yield greater real detail, although it may reveal fine-scale irregularities below the intended resolution of the database. Similarly, where this database is used in combination with other data of higher resolution, the resolution of the combined output will be limited by the lower resolution of these data.

Database specifics

The map databases consist of ARC coverages and supporting INFO files, which are stored in a Universal Transmercator projection (UTM) (Table 1). Digital tics define a 7.5 minute grid of latitude and longitude in the coverages corresponding with quadrangle corners.

Table 1 - *Map Projection*

The maps are stored in Universal Transmercator projection (UTM)

```
PROJECTION UTM
UNITS METERS          -on the ground
ZONE   10             -UTM zone
DATUM                 -NAD27
SPHEROID              -CLARKE1866
PARAMETERS
END
```

The content of the geologic database can be described in terms of the lines, points, and the areas that compose the map. Descriptions of the database fields use the terms explained in Table 2.

Table 2 - *Field Definition Terms*

ITEM NAME	name of the database field (item)
WIDTH	maximum number of digits or characters stored
OUTPUT	output width
TYPE	B-binary integer, F-binary floating point number, I-ASCII integer, C-ASCII character string
N. DEC.	number of decimal places maintained for floating point numbers

Lines

The lines (arcs) are recorded as strings of vectors and are described in the arc attribute table (Table 3). They define the boundaries of the map units, faults, and the map boundaries. These distinctions, including the geologic identities of the unit boundaries, are recorded in the LTYPE field according to the line types listed in Table 4.

Table 3 - *Content of the Arc Attribute Tables*

ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	Description
FNODE#	4	5	B		starting node of arc (from node)
TNODE#	4	5	B		ending node of arc (to node)
LPOLY#	4	5	B		polygon to the left of the arc
RPOLY#	4	5	B		polygon to the right of the arc
LENGTH	4	12	F	3	length of arc in meters
<DIX_GEO>#	4	5	B		unique internal control number
< DIX_GEO>-ID	4	5	B		unique identification number
LTYPE	35	35	C		line type (see Table 4)
SEL	1	1	I		user-defined field used to save a selected set
SYMB	3	3	I		user defined field used to save symbol assignments (such as color)

Table 4 - *Line Types Recorded in the LTYPE Field (listed by coverage name)*

dix_geo
contact, certain
contact, concealed
contact, inferred
contact, inferred, queried
fault, certain
fault, concealed
fault, inferred
map boundary
normal fault, certain
thrust fault, certain
thrust fault, concealed
thrust fault, inferred
thrust fault, inferred, queried
water boundary, certain

dix_stx
cross section
f.a., anticline, certain
f.a., anticline, certain, plunge
f.a., anticline, certainm

f.a., o.t. anticline, certain
f.a., o.t. anticline, certainm
f.a., syncline, certain
f.a., syncline, certainm
s.s., arrows

dix_anno
leader

Areas

Map units (polygons) are described in the polygon attribute table (Table 5) The identities of the map units from compilation sources are recorded in the PTYPE field by map label (Table 6). Note that ARC/INFO coverages cannot contain both point and polygon information, so only coverages with polygon information will have a polygon attribute table, and these coverages will not have a point attribute table. More complete descriptions of the various rock units can be found in the geologic report, geol.pdf.

Table 5 - *Content of the Polygon Attribute Tables*

ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	Description
AREA	4	12	F	3	area of polygon in square meters
PERIMETER	4	12	F	3	length of perimeter in meters
<DIX_GEO>#	4	5	B		unique internal control number
<DIX_GEO>-ID	4	5	B		unique identification number
PTYPE	35	35	C		unit label
SEL	1	1	I		user defined field used to save a selected set
SYMB	3	3	I		user defined field used to save symbol
TABLE#	4	5	B		assignments (such as color)

Table 6 - *Map Units*
(See or geol.pdf for descriptions of units)

dix_geo

Jri
Jris
Jrs
Jrv
Jrvs
KJag
KJd
KJd2
KJi
Qal
Qfl
Qls
Tbr
Tbr?
Tbrm
Tdi
Tm
Tm?

Tsc
Tsc?
Tsr
Twt
cht
gs
ls
sp
water

Points

Data gathered at a single locality (points) are described in the point attribute table (Table 7). The identities of the points from compilation sources are recorded in the PTTYPE field by map label (Table 8). Map units are described more fully in the PDF file geol.pdf. Note that ARC/INFO coverages cannot contain both point and polygon information, so only coverages with point information will have a point attribute table, and these coverages will not have a polygon attribute table.

Table 7 – *Content of the Point Attribute Table*

Geologic Attitudes

ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	Description
AREA	4	12	F	3	area of polygon in square meters
PERIMETER	4	12	F	3	length of perimeter in meters
DIX_STX#	4	5	B		unique internal control number
DIX_STX-ID	4	5	B		unique identification number
PTTYPE	35	35	C		unit label
DIP	3	3	I		user defined field used to represent geologic data
STRIKE	3	3	I		user defined field used to represent geologic data
SEL	1	1	I		user defined field used to save a selected set
SYMB	3	3	I		user defined field used to save symbol
RB100K	3	3	C		user defined symbol designed to omit specific polygons
65 DIX24	5	5	C		user defined symbol designed to omit specific polygons

Table 8 – *List of point data*

dix_stx

_ anticline _
approx bedding
bedding
bedding w/tops
crumpled bedding
crumpled foliation
fault dip
fault plane
fold axis
foliation
inclined cleavage

joint unmineralized
lineation
ot bedding
ot bedding w/tops
sfold
vert bedding
zfold

Acknowledgments

We wish to thank Karen Wheeler for the digital review of this Open File report.

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Wentworth, C.M., and Fitzgibbon, T.T., 1991, ALACARTE user manual (version 1.0): U.S. Geological Survey Open-File Report 91-587C.