

























## GIS Documentation

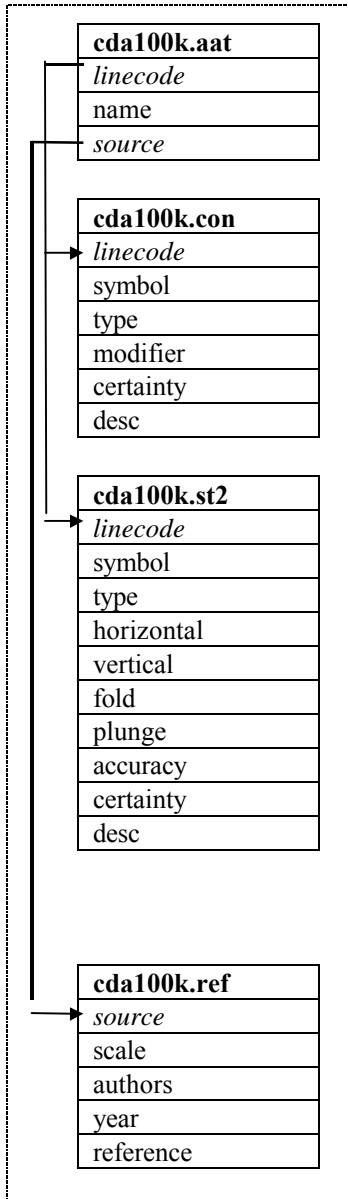
The digital geologic map of the Coeur d'Alene 1:100,000 quadrangle includes a geologic linework arc attribute table, CDA100K.AAT, that relates to the CDA100K.CON, CDA100K.ST2 and CDA100K.REF files; a rock unit polygon attribute table, CDA100K.PAT, that relates to the CDA100K.RU and CDA100K.REF files; and a geologic map symbol point attribute table, CDA100KP.PAT, that relates to the CDA100KP.SYM and CDA100KP.REF files (see Fig. 4). These data files are described below.

### **Linear Features**

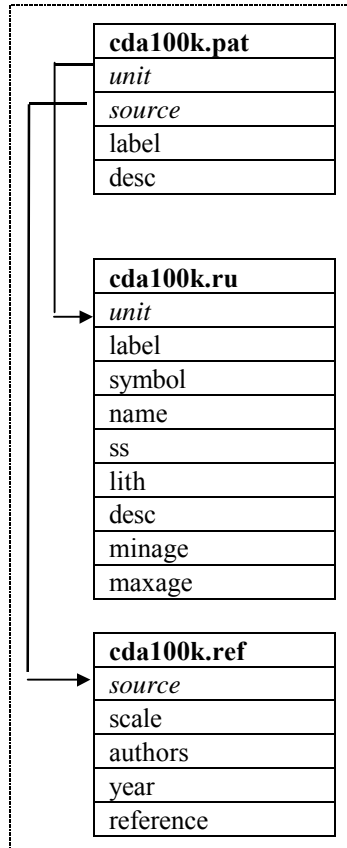
Descriptions of the items identifying linear features such as contacts, boundaries (e.g., lines of latitude and longitude, state boundaries) and structures in the arc (or line) attribute table, CDA100K.AAT, are as follows:

<b>CDA100K.AAT</b>			
<b>ITEM NAME</b>	<b>ITEM TYPE</b>	<b>ITEM LENGTH</b>	<b>ATTRIBUTE DESCRIPTION</b>
<b>linecode</b>	integer	3	Numeric code used to identify type of linear feature. Linecodes < 100 are used for contacts and boundaries which are described in the CDA100K.CON file. Linecodes > 100 and < 600 represent structural features which are described in the CDA100K.ST2 file.
<b>name</b>	character	30	Name given to structural feature.
<b>source</b>	integer	4	Numeric code used to identify the data source for the linear feature. Complete references for the sources are listed in the CDA100K.REF file.

Arc attribute table and related look-up tables:



Polygon attribute table and related look-up tables:



Point attribute table and related look-up tables:

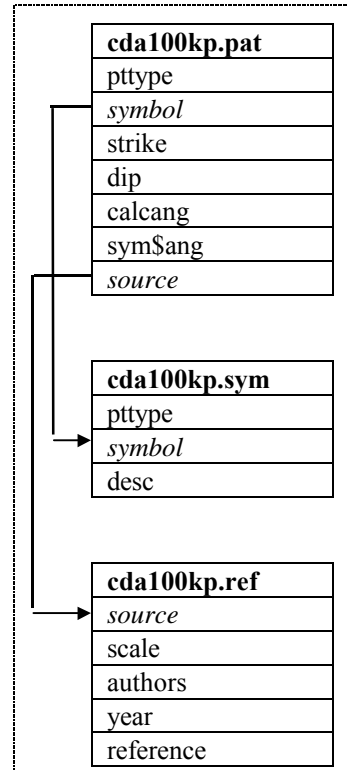


Figure 4: Relationships between feature attribute tables and look-up tables.

Attribute descriptions for items in the contact (and boundary) look-table, CDA100K.CON [for use with the CARTO.LIN and GEOL\_SFO.LIN linesets], are as follows:

<b>CDA100K.CON</b>			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
<b>linecode</b>	integer	3	Numeric code (a value < 100) used to identify type of contact or boundary. (This item also occurs in CDA100K.AAT.)
<b>symbol</b>	integer	3	Line symbol number used by Arc/Info to plot lines. Symbol numbers refer to the <b>CARTO.LIN lineset</b> for linecodes gt 42 and lt 100 and to the <b>GEOL_SFO.LIN lineset</b> for linecodes gt 0 and lt 43.
<b>type</b>	character	10	Major type of line, e.g., contact, state boundaries, lines of latitude and longitude used for neatlines.
<b>modifier</b>	character	20	Line type modifier, i.e., approximate, concealed, gradational. No entry implies 'known.'
<b>certainty</b>	character	15	Degree of certainty of contact or boundary, i.e., inferred, uncertain. No entry implies 'certain.'
<b>desc</b>	character	100	Written description or explanation of contact or boundary.

Attribute descriptions for items in the structure look-up table, CDA100K.ST2 [for use with the GEOL\_SFO.LIN lineset], are as follows:

<b>CDA100K.ST2</b>			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
<b>linecode</b>	integer	3	Numeric code (a value > 100 and < 600) used to identify type of structural feature. (This item also occurs in CDA100K.AAT.)
<b>symbol</b>	integer	3	Line symbol number used by Arc/Info to plot arc (line). Symbol numbers refer to the <b>GEOL_SFO.LIN lineset</b> .
<b>type</b>	character	10	Major type of structure, i.e., fault, fracture, fold, other.
<b>horizontal</b>	character	20	Type of horizontal fault movement, e.g., left-lateral, right-lateral. No entry implies 'unknown.'
<b>vertical</b>	character	20	Type of vertical fault movement, e.g., normal. No entry implies 'unknown.'
<b>fold</b>	character	15	Type of fold, e.g., anticline, syncline.
<b>plunge</b>	character	15	Type of plunge on fold, i.e., horizontal, plunging, plunging in, plunging out.
<b>accuracy</b>	character	15	Line type modifier indicating degree of accuracy, i.e., approximately located, concealed, gradational. No entry implies 'known.'
<b>certainty</b>	character	15	Degree of certainty of contact or boundary, i.e., inferred, uncertain. No entry implies 'certain.'
<b>desc</b>	character	100	Written description or explanation of structural feature.

### **Areal Features**

Descriptions of the items identifying geologic units in the polygon attribute table, CDA100K.PAT, are as follows:

<b>CDA100K.PAT</b>			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
<b>unit</b>	integer	4	Numeric code used to identify the rock unit which is described in the CDA100K.RU look-up table. (This item also occurs in CDA100K.RU.)
<b>source</b>	integer	4	Numeric code used to identify the data source for the rock unit. Complete references for the sources are listed in the CDA100K.REF file.
<b>label</b>	character	10	Rock unit label (abbreviation) used to label unit on map.
<b>desc</b>	character	250	Formal or informal unit name.

Attribute descriptions for items in the lithology (rock unit) look-table, CDA100K.RU (for use with the CALCOMP1.SHD shadeset), are as follows:

<b>CDA100K.RU</b>			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
<b>unit</b>	integer	4	Numeric code used to identify rock unit. (This item also occurs in CDA100K.PAT.)
<b>label</b>	character	10	Rock unit label (abbreviation) used to label unit on map.
<b>symbol</b>	integer	3	Shadeset symbol number used by Arc/Info to plot a filled/shaded polygon. The symbol numbers used in this file refer to the <b>CALCOMP1.SHD shadeset</b> .
<b>name</b>	character	7	The prefix portion of the rock unit label that does not include subscripts. (If subscripting is not used in the original unit label, then the 'name' entry is the same as the 'label' entry.)
<b>ss</b>	character	3	The suffix portion of the geologic unit label that includes subscripts.
<b>lith</b>	character	20	Major type of lithostratigraphic unit, i.e., unconsolidated sediments, sedimentary rocks, metasedimentary rocks, intrusive rocks, extrusive rocks, metamorphic rocks, water, ice.
<b>desc</b>	character	250	Formal or informal unit name
<b>minage</b>	character	7	Minimum stratigraphic age of lithologic unit, i.e., CRET, TERT, PCY.
<b>maxage</b>	character	7	Maximum stratigraphic age of lithologic unit

### Point Features

Descriptions of the items identifying geologic map symbols are given in the point attribute table, CDA100KP.PAT, which is defined as follows:

CDA100KP.PAT			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
<b>pttype</b>	character	32	Type of point symbol, e.g., strike and dip of inclined bedding, strike and dip of inclined cleavage, geochemical sample location. (This item also occurs in the CDA100KP.SYM file.)
<b>symbol</b>	integer	3	Marker symbol number used by Arc/Info to identify type of geologic map symbol. Symbol numbers refer to the <b>GEOSCAMP2.MRK markerset</b> (Matti and others, 1997). (This item also occurs in the CDA100KP.SYM file.)
<b>strike</b>	integer	3	Strike of bedding, foliation or cleavage. Strike is an azimuthal angle (measured in degrees from 0 to 360 in a clockwise direction from North).
<b>dip</b>	integer	3	Dip of bedding, foliation or cleavage. This value is an angle measured (in degrees from 0 to 90) down from the horizontal; thus a horizontal dip is 0 degrees and a vertical dip is 90 degrees.
<b>calcang</b>	integer	4	An interim value used to calculate sym\$angle. The various structural map symbols in the GEOSCAMP2.MRK markerset (Matti and others, 1997) had to be rotated by different amounts to achieve their proper map orientation. For the strike and dip symbols, calcang = strike – 270.
<b>sym\$ang</b>	integer	4	The angle used to complete the mathematical rotation of the structural map symbol to its proper orientation on the map. This value is the \$angle pseudoitem value for the point.
<b>source</b>	integer	4	Numeric code used to identify the data source for the structural map symbol. Complete references for the sources are listed in the CDA100KP.REF file.



Attribute descriptions for items in the geologic map symbols look-up table, CDA100KP.SYM, [for use with the GEOSCAMP2.MRK markerset (Matti and others, 1997)], are as follows:

<b>CDA100KP.SYM</b>			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
<b>pttype</b>	character	32	Type of point symbol, e.g., strike and dip of inclined bedding, strike and dip of inclined cleavage. (This item also occurs in the CDA100KP.PAT file.)
<b>symbol</b>	integer	3	Marker symbol number used by Arc/Info to identify type of structural map symbol. Symbol numbers refer to the <b>GEOSCAMP2.MRK markerset</b> (Matti and others, 1997).
<b>desc</b>	character	250	Written description or explanation of map symbol.

### **Source Attributes**

Descriptive source or reference information for the CDA100K and CDA100KP ArcInfo datasets is stored in the CDA100K.REF and CDA100KP.REF files, respectively. Attribute descriptions for items in the CDA100K.REF and CDA100KP.REF data source files are as follows:

<b>CDA100K.REF / CDA100KP.REF</b>			
ITEM NAME	ITEM TYPE	ITEM LENGTH	ATTRIBUTE DESCRIPTION
<b>source</b>	integer	4	Numeric code used to identify the data source. (This item also occurs in the CDA100K.AAT, CDA100K.PAT, and CDA100KP.PAT files.)
<b>scale</b>	integer	8	Scale of source map. (This value is the denominator of the proportional fraction that identifies the scale of the map that was digitized or scanned to produce the digital map.)
<b>authors</b>	character	200	Author(s) or compiler(s) of source map entered as last name, first name or initial, and middle initial.
<b>year</b>	integer	4	Source (map) publication date
<b>reference</b>	character	250	Remainder of reference in USGS reference format.

## Obtaining Digital Data

The complete digital version of the geologic map is available in Arc/Info interchange format with associated data files. These data and map images are maintained in a Universal Transverse Mercator (UTM) map projection:

Projection:	UTM
Zone:	11
Y-offset (false northing):	-5,000,000 meters
Units:	meters

To obtain copies of the digital data:

Download the digital files from the USGS public access World Wide Web site on the Internet: **URL = <http://pubs.usgs.gov/of/2000/0135/>**

The Internet site contains the digital geologic map of the Coeur d'Alene 1:100,000 quadrangle both in ArcInfo exchange-format files (cda100k.e00 and cda100kp.e00) and as a HPGL2 plot file (cda100k.hp) of the map area, as well as the associated data files and Arc/Info macro programs which are used to plot the map at a scale of 1:100,000.

To manipulate this data in a geographic information system (GIS), you must have a GIS that is capable of reading Arc/Info interchange-format files.

## Obtaining Paper Maps

Paper copies of the digital geologic map are not available from the USGS. However, with access to the Internet and access to a large-format color plotter that can interpret either HPGL2 (Hewlett-Packard Graphics Language), or PDF (portable document format) files, a 1:100,000-scale paper copy of the map can be made, as follows:

Download the digital version of the map, **cda100k.hp** or **cda100k.pdf**, from the USGS public access World Wide Web site on the Internet using the **URL = <http://pubs.usgs.gov/of/2000/0135/>**

This file can be plotted by any large-format color plotter that can interpret HPGL2 or PDF files. The finished plot is about 30 inches by 42 inches.

Paper copies of the map can also be created by obtaining the digital file as described above and then creating a plot file in a GIS.

## References Cited

- Bookstrom, A.A., Box, S.E., Jackson, B.L., Brandt, T.R., Derkey, P.D., and Munts, S.R., 1999, Digital map of surficial geology, wetlands, deepwater habitats, Coeur d'Alene River valley, Idaho: U.S. Geological Survey Open-File Report 99-548, 121 p. and 13 digital plates.
- Derkey, P.D., Johnson, B.R., and Carver, Michael, 1996, Digital geologic map of the Coeur d'Alene district, Idaho and Montana: U.S. Geological Survey Open-File Report 96-299, 6 p. and one digital plate.
- Griggs, A.B., 1973, Geologic map of the Spokane quadrangle, Washington, Idaho, and Montana: U.S. Geological Survey Miscellaneous Geologic Investigations Series Map I-768, 1:250,000
- Harrison, J.E. and Jobin, D.A., 1963, Geology of the Clark Fork quadrangle, Idaho-Montana: U.S. Geological Survey Bulletin 1141-K, 38 p.
- Joseph, N. L., 1990, Geologic map of the Spokane 1:100,000 Quadrangle, Washington – Idaho: Washington Division of Geology and Earth Resources Open-File Report 90-17, 29 p., 1 sheet.
- Matti, J.C., Miller, F.K., Powell, R.E., Kennedy, S.A., Bunyapanasarn, T.P., Koukladas, C., Hauser, R.M., and Cossette, P.M., 1997, Geologic-point attributes for digital geologic-map data bases produced by the Southern California Areal Mapping Project (SCAMP): U.S. Geological Survey Open-File Report 97-859, 7 p.
- Weis, P. L., 1968, Geologic map of the Greenacres quadrangle, Washington and Idaho: U.S. Geological Survey Geologic Quadrangle Map GQ-734, 4 p., 1 pl., scale 1:62,500.
- Weissenborn, A. E. and Weis, P. L., 1976, Geologic map of the Mount Spokane quadrangle, Spokane County, Washington and Kootenai and Bonner Counties, Idaho: U.S. Geological Survey Geologic Quadrangle Map GQ-1336, 1 sheet, scale 1:62,500.

## Appendix A - List of digital files in the Coeur d'Alene GIS

- Use the 'importfile.aml' to IMPORT all of the \*.E00 files for use in ArcInfo.
- Use the ArcInfo 'DRAW' command to plot the \*.GRA file to your screen. (Make sure the display is set with the ArcInfo 'DISPLAY' command.)
- Use the ArcInfo 'HPGL2' command to create a HPGL2 file from the \*.GRA file.
- Use the UNIX 'lpr -P<plotter\_name> cda100k.hp' command to send the cda100k.hp file to a large-format color plotter that can interpret Hewlett-Packard Graphics Language.
- To re-create the \*.GRA file, open the ArcPlot module, enter 'display 1040', enter a new filename for the graphics file, enter '&run cda100k'.

### Primary ArcInfo exchange-format (\*.e00) and metadata (\*.met) files for the digital geology:

- cda100k.e00 – line and poly GIS
- cda100kp.e00 – point GIS
- cda100k.met - metadata

### Arc/Info graphics (\*.gra), HPGL2 map plot (\*.hp), and portable document format (\*.pdf) files for the geologic map sheet:

- cda100k.gra /.hp
- cda-map.pdf

### Additional ArcInfo exchange -format files (\*.e00) necessary to re-create the geologic map sheet:

- calcomp1.shd.e00 - shadeset
- cdabu11.e00 - exterior boundary of the Coeur d'Alene quadrangle
- fnt037.e00 – font 37
- fnt038.e00 – font 38
- fnt040.e00 – font 40
- geoscamp2.mrk.e00 - markerset
- hypsog.e00 - hypsography

### AML, graphics, key, symbolset (\*.lin), and text files (\*.dat, \*.prj, \*.txt) necessary to re-create the geologic map sheet:

- cda100k.aml – program that creates a graphics file of the geologic map of the Coeur d'Alene quadrangle
- importfile.aml – program to import ArcInfo exchange-format (\*.e00) files

- scale2a.aml – program to plot scale bar
- cdasourc.gra –map of data sources and 15-minute quadrangle outlines graphic file
- indexcda.gra - index map graphic file
- usgslogo.gra – USGS visual identity
- cda\_line.key - lineset symbol values and descriptive text for lines on the map sheet
- cda\_poly.key - shadeset symbol values and descriptive text for geologic map units on the map sheet
- cda\_sym.key - markerset symbol values and descriptive text for map symbols (markers) on the map sheet
- geology.lin – lineset
- geol\_sfo.lin – lineset
- cal.dat – plotter calibration data file
- geo.prj - a text file used to identify real-world (geographic) coordinates - for use in adding latitude and longitude notation around the margins of the map quadrangle
- u11.prj - a text file to identify UTM, zone 11 map projection - for use in adding latitude and longitude notation around the margins of the map quadrangle
- cdacrd.txt - text file listing map credits
- cdaref.txt - text file listing map references

## Appendix B - ArcInfo Macro Language program (cda100k.aml) used to plot the geologic map of the Coeur d'Alene quadrangle

```

/* cda100k.aml, 11/28/00, SRM

/* This Arc/Info Macro Language (AML)
program will plot the geologic map plate for the
Coeur d'Alene quadrangle at 1:100,000 scale.

/* To run this AML:
/* 1. Type 'ap' at the 'Arc:' prompt to enter the
ArcPlot module,
/* 2. Type 'display 1040' at the 'Arcplot:'
prompt to create a GRA file,
/* 3. Enter a filename of your own choosing
(such as cda100k) at the 'Enter ARC/INFO
Graphics filename :' prompt for the GRA to be
created,
/* 4. Type '&run cda100k' at the 'ArcPlot:'
prompt to start the program,
/* 5. Run the Arc/Info HPGL2 command to
convert the GRA file to an HPGL2 file, i.e.,
hpgl2 cda100k cda100k.hp # 1.0 opaque # 0 # #
# cal.dat
/* 6. Execute the UNIX 'lpr' command to
print the 1:100,000-scale geologic map plot on
your plotter, i.e., lpr -Ppicasso cda100k.hp
/* *****

&set key1 cda_poly.key
&set key2 cda_line.key
&set key4 cda_sym.key
/* where cda_sym.key uses geoscamp2.mrk
symbols
&s credits cdacrd.txt
&s refs cdaref.txt
&s disclaimer cdadisc.txt

/* where 'cover' contains contacts, structures and
dikes;
/* 'pntcover' contains structural symbols for
bedding and foliations;
/* and 'quad' is the quadrangle boundary.

mape %quad%

/*draw outside box
linesymbol 9
linecolor 1
box 0.5 0.5 40.0 28.5

textquality proportional
textfont 94021
linedelete all
lineset plotter
lineset carto

/* cut marks
markerset plotter
markersymbol 1
markersize 0.1
marker 0 0
marker 0 29
marker 40.5 0
marker 40.5 29

&label shadepolys
/* color polygons for geologic rock units
shadedelete all
shadeset calcomp1
mapangle -0.3
polygonshade %cover% unit %cover%.ru

&goto contacts
/* remove the above line of code if contour lines
are to be added
/* to the map.

clear
clearselect

pagesize 40.5 29.0
pageunits inches
mapunits meters
mapscale 100000

maplimits 0.25 2.4 32 27

&set quad cdabu11
&set cover cda100k
&sv logo = usgslogo.gra

/* hypsog is hypsography coverage
&set cover11 hypsog
&set pntcover cda100kp
/* where cda100kp uses symbols from
geoscamp2.mrk

```

```

&label hypso
/* (contours)
linedelete all
lineset color.lin
linecolor 14
asel %cover11% arcs
arcs %cover11%
linedelete all

&label contacts
/* plot contacts
linedelete all
lineset geol_sfo.lin
asel %cover% arcs
res %cover% arcs linecode gt 0 and linecode lt
42
arclines %cover% linecode %cover%.con
/*arcs %cover%
asel %cover% arcs

&label structures
/* plot structures with line patterns
linedelete all
lineset geol_sfo.lin
asel %cover% arcs
res %cover% arcs linecode gt 100 and linecode
lt 800
arclines %cover% linecode %cover%.st2
asel %cover% arcs

&label mapquad
/* plot quadrangle boundary
linedelete all
lineset plotter
linesymbol 5
arcs %quad%

&label geolabels
textsize 0.10
res %cover% poly area gt 300000
labeltext %cover% unit %cover%.ru cc
asel %cover% poly
/*label Qls unit
resel %cover% poly unit = 759
labeltext %cover% unit %cover%.ru cc
asel %cover% poly

&label points
/* plot points for map symbols
markerdelete all
markerset geoscamp2.mrk
pointmarkers %pntcover% symbol

&label anno
/* plot annotation for all points
textset font.txt
/* annotext cover subclass # {level...level}
annotext %pntcover% dip # 1 2

&label titles
plot %logo% box 1.7 26.9 4.7 27.9
textfont 93715
textquality kern
textsize 0.35
move 4.8 27.55
text 'U.S. DEPARTMENT OF THE INTERIOR'
move 4.8 27.05
text 'U.S. GEOLOGICAL SURVEY'
move 39.3 27.55
text 'Open-File Report 00-135' lr
move 39.3 27.05
text 'Database, version 1.0, (Sheet 1)' lr
move 17.85 27.55
text 'Prepared in cooperation with the Idaho
Geological Survey'

textfont 93711
textsize 0.4
move 16.65 2.75
text 'Digital Geologic Map of the Coeur d'Alene
1:100,000 Quadrangle, Idaho and Montana' lc
textsize 0.3
move 16.9 2.1
text 'Digital compilation by Steven R. Munts' lc

move 17 1.45
text '2000' lc

&label explan
/* plot explanation - geologic units
shadedelete all
shadeset calcomp1
textfont 93711
textsize 0.20
move 33.25 25.7
text 'Explanation'
textsize 0.12
textquality proportional
textfont 94021
/*keyarea 33.25 17.5 41.4 25.45
Keyarea 33.25 18.9 41.4 25.45
/*keybox 0.6 0.35
keybox 0.5 0.25
keyseparation 0.2 0.2
keyshade %key1%

&label linekey
/* plot explanation - line key

```

```

linedelete all
lineset geol_sfo.lin
keyarea 33.20 11.2 41.4 18.7
keybox 0.8 0.0
keyline %key2% nobox
linedelete all

&label strikedip
/*plot explanation - symbol key
textsize 0.12
textquality proportional
textfont 94021
markerdelete all
markerset geoscamp2.mrk
keyarea 33.20 10 42.4 14.5
keybox 0.8 0.0
keymarker %key4% nobox
markerdelete all
textsize 0.10
textquality proportional
move 33.6 14.0
text '10'

/* plots combined topo index and source map
&label topindex
plot cdasourc.gra box 33.2 9.4 39.4 13.9
textfont 93713
textquality proportional
textsize 0.12
move 33.4 9.3
text 'Index map showing geology data sources
and 15-minute quadrangle names within the'
move 35.6 9.1
text 'Coeur d"Alene 1:100,000 quadrangle.' lc

&label index-map
plot indexcda.gra box 34.77 7.2 36.8 8.67
textfont 93713
textquality proportional
textsize 0.12
move 35.6 7
text 'Index map showing Coeur d"Alene
1:100,000 quadrangle' lc

&label refs
/* plot references
textfont 93711
textsize 0.20
textcolor 1
move 33.55 6.4
text 'References'
move 33.85 6.3
textsize 0.12

textquality proportional
textfont 94021
textfile %refs%

&label disclaimer
textfont 93713
textquality proportional
textsize 0.12
move 34.12 3.6
textfile %disclaimer%

&label scalebar
/* plot scale bars
linedelete all
lineset plotter
textfont 94021
textsize 0.12
&r scale2a 3 2.5 other 100000

&label credits
/*plot credits
textfont 94021
textquality proportional
textsize 0.12
move 28.85 3.6
textfile %credits%
move 28.85 2.45
text 'Database approved for publication Oct.
5, 2000'

&label proj
/*plot map projection notes
textfont 94021
textquality proportional
textsize 0.12
move 1.75 3.7
text 'Map Projection: UTM, zone 11, NAD27'

&label lat-long
/* plot neat line labels (latitude and longitude)
mape %quad%
linecolor 1
mapprojection geo.prj u11.prj
neatline -117 47.5 -116 48 geo.prj
neatlinehatch 0.125 0.125 0.2 0 geo.prj
textset font.txt
textsymbol 1
textsize 8 pt
textstyle typeset
textoffset -0.30 0.15
neatlinelabels 0.125 top all geo.prj dms
'%1%!pat1857; %2%!pat1727; %3%!pat1728'
textoffset -0.65 -0.042

```

```
neatlinelabels 0.125 left all geo.prj dms  
'%1%!pat1857; %2%!pat1727; %3%!pat1728'  
textoffset 0.15 -0.042  
neatlinelabels 0.125 right all geo.prj dms  
'%1%!pat1857; %2%!pat1727; %3%!pat1728'
```

```
&label done  
quit  
display 9999 3  
draw cda100k
```

```
&return
```



## Appendix C - Metadata file (cda100k.met) for the Coeur d'Alene GIS

### Identification\_Information:

#### Citation:

##### Citation\_Information:

Originator: Steven R. Munts

Publication\_Date: 2000

Title: Digital geologic map of the Coeur d'Alene 1:100,000 quadrangle, Idaho and Montana

Edition: Version 1.0

Geospatial\_Data\_Presentation\_Form: map

##### Series\_Information:

Series\_Name: Open-File Report

Issue\_Identification: OF00-135

##### Publication\_Information:

Publication\_Place: Menlo Park, CA

Publisher: U. S. Geological Survey

Online\_Linkage: URL = <http://geopubs.wr.usgs.gov/open-file/of00-135/>

### Description:

#### Abstract:

The digital geologic map of the Coeur d'Alene 1:100,000 quadrangle was compiled from preliminary digital datasets [Athol, Coeur d'Alene, Kellogg, Kingston, Lakeview, Lane, and Spirit Lake 15-minute quadrangles] prepared by the Idaho Geological Survey from A. B. Griggs (unpublished field maps), supplemented by Griggs (1973) and by digital data from Bookstrom and others (1999) and Derkey and others (1996). The digital geologic map database can be queried in many ways to produce a variety of derivative geologic maps.

#### Purpose:

This dataset was developed to provide geologic map GIS of the Coeur d'Alene 1:100,000 quadrangle for use in future spatial analysis by a variety of users. These data can be printed in a variety of ways to display various geologic features or used for digital analysis and modeling. This database is not meant to be used or displayed at any scale larger than 1:100,000 (e.g. 1:62,500 or 1:24,000).

#### Supplemental\_Information:

This GIS consists of two major Arc/Info datasets: one line and polygon file (cda100k) containing geologic contacts and structures (lines) and geologic map rock units (polygons), and one point file (cda100kp) containing structural data.

### Time\_Period\_of\_Content:

#### Time\_Period\_Information:

##### Single\_Date/Time:

Calendar\_Date: 2000

Currentness\_Reference: Publication date

## Status:

Progress: complete

Maintenance\_and\_Update\_Frequency:

No USGS updates planned; however, the Idaho Geological Survey plans to update the geologic map content within the next few years.

## Spatial\_Domain:

Bounding\_Coordinates:

West\_Bounding\_Coordinate: -117.00

East\_Bounding\_Coordinate: -116.00

North\_Bounding\_Coordinate: 48.00

South\_Bounding\_Coordinate: 47.50

## Keywords:

Theme:

Theme\_Keyword\_Thesaurus: none

Theme\_Keyword: geology

Place:

Place\_Keyword\_Thesaurus: none

Place\_Keyword: Idaho

Place\_Keyword: Athol

Place\_Keyword: Coeur d'Alene

Place\_Keyword: Kellogg

Place\_Keyword: Kingston

Place\_Keyword: Lakeview

Place\_Keyword: Lane

Place\_Keyword: Spirit Lake

Place\_Keyword: Spokane

Place\_Keyword: Bonner County

Place\_Keyword: Kootenai County

Place\_Keyword: Shoshone County

Place\_Keyword: Pacific Northwest

Place\_Keyword: USA

Access\_Constraints: none

## Use\_Constraints:

This digital database is not meant to be used or displayed at any scale larger than 1:100,000 (e.g. 1:62,500).

Any hardcopies utilizing these data sets shall clearly indicate their source. If the user has modified the data in any way they are obligated to describe the types of modifications they have performed on the hardcopy map. User specifically agrees not to misrepresent these data sets, nor to imply that changes they made were approved by the US Geological Survey.

## Point\_of\_Contact:

Contact\_Information:

Contact\_Person\_Primary:

Contact\_Person: Pamela D. Derkey

Contact\_Organization: U.S. Geological Survey

Contact\_Position: geologist

Contact\_Address:

Address\_Type: mailing and physical address

Address: 904 W. Riverside Ave., Rm. 202

City: Spokane

State\_or\_Province: WA

Postal\_Code: 99201

Country: USA

Contact\_Voice\_Telephone: 1-509-368-3114

Contact\_Facsimile\_Telephone: 1-509-368-3199

Contact\_Electronic\_Mail\_Address: pderkey@usgs.gov

Data\_Set\_Credit:

Between 1961 and 1969, Alan Griggs and others conducted field work to prepare a geologic map of the Spokane 1:250,000 map (Griggs, 1973). Their field observations were posted on paper copies of 15-minute quadrangle maps. In 1999, the USGS contracted with the Idaho Geological Survey to prepare a digital version of the Coeur d'Alene 1:100,000 quadrangle. To facilitate this work, the USGS obtained the field maps prepared by Griggs and others from the USGS Field Records Library in Denver, Colorado. The Idaho Geological Survey digitized these maps and used them in their mapping program. The mapping focused on field checks to resolve problems in poorly known areas and in areas of disagreement between adjoining maps. The IGS is currently in the process of preparing a final digital spatial database for the Coeur d'Alene 1:100,000 quadrangle. However, there was an immediate need for a digital version of the geologic map of the Coeur d'Alene 1:100,000 quadrangle and the data from the field sheets along with several other sources was assembled to produce this interim product. Other data sources include Bookstrom and others (1999) and Derkey and others (1996).

Pamela D. Derkey and Robert J. Miller (both of the USGS) provided technical assistance with the geologic systems data model, metadata, digital documentation, and map projections; Michael L. Zientek (USGS) provided map unit descriptions, Steven R. Munts (contractor) digitized new linework, edited digital files, combined existing data sets, built look-up tables, and prepared the composite data set.

Native\_Data\_Set\_Environment:

SunOS, 5.7, sun4u UNIX

ARC/INFO version 7.2.1

Data\_Quality\_Information:Attribute\_Accuracy:Attribute\_Accuracy\_Report:

Attribute accuracy was verified by manual comparison of the source with hard copy printouts, plots, and on-screen evaluation.

Logical\_Consistency\_Report:

Polygon and chain-node topology present.

Segments making up the outer and inner boundaries of a polygon tie end-to-end to completely enclose the area. Line segments are a set of sequentially numbered coordinate pairs. No duplicate features exist nor duplicate points in a data string. Intersecting lines are separated into individual line segments at the point of intersection. Point data are represented by two sets of coordinate

pairs, each with the same coordinate values. All nodes are represented by a single coordinate pair which indicates the beginning or end of a line segment. The neatline was generated by mathematically generating the four sides of the quadrangle, densifying the lines of latitude and projecting the file to UTM zone 11 (with a y-shift).

Completeness\_Report:

All geologic units were compiled from previously existing maps ranging in scale from 1:24,000 to 1:250,000.

Positional\_Accuracy:

Horizontal\_Positional\_Accuracy:

Horizontal\_Positional\_Accuracy\_Report:

The horizontal position accuracy for the digital data is no better than 13 meters based on the digitizing RMS error.

Lineage:

Source\_Information:

Source\_Citation:

Citation\_Information:

Originator: Griggs, A.B.

Publication\_Date: 1973

Title: Geologic map of the Spokane quadrangle, Washington, Idaho, and Montana

Geospatial\_Data\_Presentation\_Form: map

Series\_Information:

Series\_Name: Miscellaneous Geologic Investigations

Issue\_Identification: Map I-768

Publication\_Information:

Publication\_Place: Denver, CO

Publisher: U.S. Geological Survey

Source\_Scale\_Denominator: 250000

Type\_of\_Source\_Media: paper map

Source\_Time\_Period\_of\_Content:

Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date: 1973

Source\_Currentness\_Reference: publication date

Source\_Citation\_Abbreviation: Griggs (1973)

Source\_Contribution:

Geology was digitized from the northeast part of this map source.

Map units used in OF00-135 were described in Griggs (1973).

Source\_Information:

Source\_Citation:

Citation\_Information:

Originator: Griggs, A. B.

Publication\_Date: not published

Title:

Unpublished geologic maps of the Athol, Coeur d'Alene, Kellogg, Kingston, Lakeview, Lane, and Spirit Lake 15-minute quadrangles, Idaho.

Geospatial\_Data\_Presentation\_Form: map

Publication\_Information:

Publication\_Place: Denver, CO  
 Publisher: U.S. Geological Survey Field Records Library  
 Source\_Scale\_Denominator: 62500  
 Type\_of\_Source\_Media: paper maps  
 Source\_Time\_Period\_of\_Content:  
 Time\_Period\_Information:  
 Single\_Date/Time:  
 Calendar\_Date: 1961-1969  
 Source\_Currentness\_Reference: date of field mapping  
 Source\_Citation\_Abbreviation: Griggs, unpublished field notes  
 Source\_Contribution:  
 These seven field maps were digitized by the Idaho Geological Survey and used in the map compilation.

## Source\_Information:

Source\_Citation:  
 Citation\_Information:  
 Originator: Bookstrom, A. A.  
 Originator: Box, S. E.  
 Originator: Jackson, B. L.  
 Originator: Brandt, T. R.  
 Originator: Derkey, P. D.  
 Originator: Munts, S. R.  
 Publication\_Date: 1999  
 Title:  
 Digital map of surficial geology, wetlands, deepwater habitats, Coeur d'Alene River valley, Idaho  
 Geospatial\_Data\_Presentation\_Form: map  
 Series\_Information:  
 Series\_Name: Open-File Report  
 Issue\_Identification: OFR 99-548  
 Publication\_Information:  
 Publication\_Place: Denver, CO  
 Publisher: U.S. Geological Survey  
 Source\_Scale\_Denominator: 24000  
 Type\_of\_Source\_Media: CD-ROM  
 Source\_Time\_Period\_of\_Content:  
 Time\_Period\_Information:  
 Single\_Date/Time:  
 Calendar\_Date: 1999  
 Source\_Currentness\_Reference: publication date  
 Source\_Citation\_Abbreviation: Bookstrom and others, 1999  
 Source\_Contribution:  
 This source provided contacts between the surficial units with the bedrock units in the lower Coeur d'Alene River area.

## Source\_Information:

Source\_Citation:  
 Citation\_Information:  
 Originator: Derkey, P.D., Johnson, B.R., and Carver, Michael  
 Publication\_Date: 1996  
 Title: Digital geologic map of the Coeur d'Alene district, Idaho and Montana  
 Geospatial\_Data\_Presentation\_Form: map

## Series\_Information:

Series\_Name: Open-File Report  
 Issue\_Identification: OFR 96-299

## Publication\_Information:

Publication\_Place: Menlo Park, CA  
 Publisher: U.S. Geological Survey

Source\_Scale\_Denominator: 24000

Type\_of\_Source\_Media: digital files

Source\_Time\_Period\_of\_Content:

Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date: 1996

Source\_Currentness\_Reference: publication date

Source\_Citation\_Abbreviation: Derkey and others, 1996

Source\_Contribution:

This source provided digital geology for the southeast part of the Coeur d'Alene 1:100,000 quadrangle.

## Process\_Step:

Process\_Description:

Preliminary digital geologic map information for seven 15 minute quadrangles obtained from the Idaho Geological Survey were compiled electronically into a single topologically correct coverage by R. J. Miller (USGS) using ARC/INFO ver. 7.2.1 on a Sun Unix system.

S. R. Munts digitized the northeast corner part of Griggs's (1973) map plate on an Altek digitizing tablet (RMS input error = 0.002 [13 meters]) and incorporated the data into the Coeur d'Alene GIS.

S. R. Munts projected the Coeur d'Alene GIS to UTM zone 11 (meters) and attributed it with an interim geologic data model.

Digital data from Bookstrom and others (1999) was generalized and inserted into the Coeur d'Alene GIS to replace Griggs' unpublished field map data.

Digital data from Derkey and others (1996) was inserted into the southeast part of the Coeur d'Alene 1:100,000 quadrangle.

Process\_Date: 1999 - 2000

## Spatial\_Data\_Organization\_Information:

Direct\_Spatial\_Reference\_Method: Vector

Point\_and\_Vector\_Object\_Information:

SDTS\_Terms\_Description:

SDTS\_Point\_and\_Vector\_Object\_Type: Point

Point\_and\_Vector\_Object\_Count: 1689

SDTS\_Point\_and\_Vector\_Object\_Type: String

Point\_and\_Vector\_Object\_Count: 5637

SDTS\_Point\_and\_Vector\_Object\_Type: GT-polygon composed of chains

Point\_and\_Vector\_Object\_Count: 1690

## Spatial\_Reference\_Information:

## Horizontal\_Coordinate\_System\_Definition:

## Planar:

## Grid\_Coordinate\_System:

Grid\_Coordinate\_System\_Name: Universal Transverse Mercator

## Universal\_Transverse\_Mercator:

UTM\_Zone\_Number: 11

## Transverse\_Mercator:

Scale\_Factor\_at\_Central\_Meridian: implied

Longitude\_of\_Central\_Meridian: implied

Latitude\_of\_Projection\_Origin: implied

False\_Easting: 0.000

False\_Northing: -5,000,000 meters

## Planar\_Coordinate\_Information:

Planar\_Coordinate\_Encoding\_Method: coordinate pair

## Coordinate\_Representation:

Abscissa\_Resolution: 0.000000028834

Ordinate\_Resolution: 0.000000028834

Planar\_Distance\_Units: Meters

## Geodetic\_Model:

Horizontal\_Datum\_Name: North American Datum of 1927

Ellipsoid\_Name: Clarke 1866

Semi-major\_Axis: 6378206.4

Denominator\_of\_Flattening\_Ratio: 294.98

## Entity\_and\_Attribute\_Information:

## Overview\_Description:

## Entity\_and\_Attribute\_Overview:

The 'Digital geologic map of the Coeur d'Alene 1:100,000 quadrangle, Idaho and Montana' Open-File Report 00-135 contains a detailed description of each attribute code and a reference to the associated map symbols on the map source materials. The GIS includes a geologic linework arc attribute table, cda100k.aat, that relates to the cda100k.con (contact look-up table), cda100k.st2 (structure look-up table), and the cda100k.ref (source reference look-up table) files; a rock unit polygon attribute table, cda100k.pat, that relates to the cda100k.ru (rock unit look-up table) and cda100k.ref (source reference look-up table) files; and a geologic map symbol point attribute table, cda100kp.pat, that relates to the cda100kp.sym (structural point data look-up tables) and cda100kp.ref (source reference look-up table) files.

## Entity\_and\_Attribute\_Detail\_Citation:

A detailed description of the items in the Coeur d'Alene 100k GIS are given in the text of the Open-File Report 00-135 available in Adobe Acrobat PDF format on the World Wide Web at <http://geopubs.wr.usgs.gov/open-file/of00-135/>

## Distribution\_Information:

## Distributor:

## Contact\_Information:

## Contact\_Organization\_Primary:

Contact\_Organization: U.S. Geological Survey Information Services

## Contact\_Address:

Address\_Type: mailing and physical address

Address: Open-File Reports, Box 25286  
 City: Denver  
 State\_or\_Province: CO.  
 Postal\_Code: 80225  
 Country: USA  
 Contact\_Voice\_Telephone: 1-303-202-4200

Distribution\_Liability:

The U.S. Geological Survey (USGS) provides these geographic data "as is". The USGS makes no guarantee or warranty concerning the accuracy of information contained in the geographic data. The USGS further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on computers at the USGS, no warranty, expressed or implied, is made by the USGS regarding the use of these data on any other system, nor does the fact of distribution constitute or imply any such warranty.

In no event shall the USGS have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits arising out of use of or reliance on the geographic data or arising out of the delivery, installation, operation, or support by USGS.

This digital geologic map GIS of the Coeur d'Alene 1:100,000 quadrangle, Idaho, is not meant to be used or displayed at any scale larger than 1:100,000 (e.g. 1:62,500 or 1:24,000).

Metadata\_Reference\_Information:

Metadata\_Date: 20001130

Metadata\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization: U.S. Geological Survey

Contact\_Person: Pamela D. Derkey

Contact\_Position: geologist

Contact\_Address:

Address\_Type: mailing and physical address

Address: 904 West Riverside Avenue, Rm 202

City: Spokane

State\_or\_Province: WA

Postal\_Code: 99201

Country: USA

Contact\_Voice\_Telephone: 1-509-368-3114

Contact\_Facsimile\_Telephone: 1-509-368-3199

Contact\_Electronic\_Mail\_Address: pderkey@usgs.gov

Metadata\_Standard\_Name: FGDC Content Standards for Digital Geospatial Metadata

Metadata\_Standard\_Version: EGDC-STD-001-1998

Metadata\_Access\_Constraints: none

Metadata\_Use\_Constraints: none