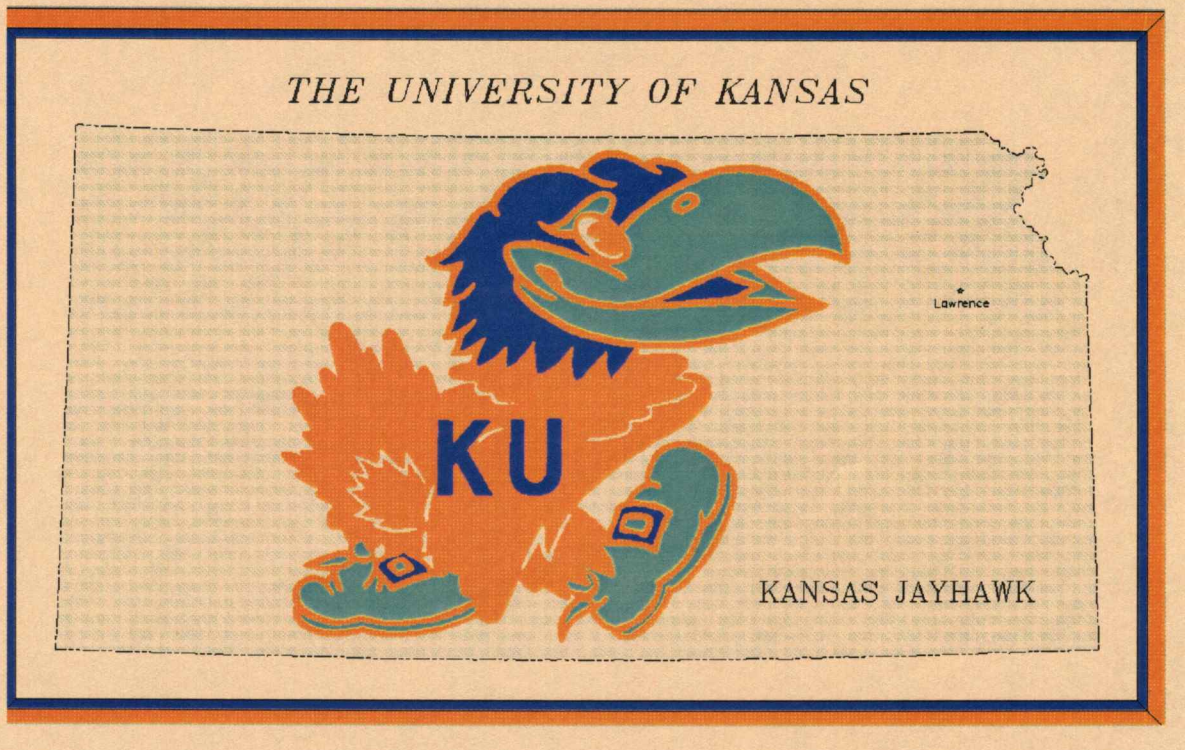
Automated Cartography
MANUAL



Name: _____

AUTOMATED CARTOGRAPHY SECTION MANUAL

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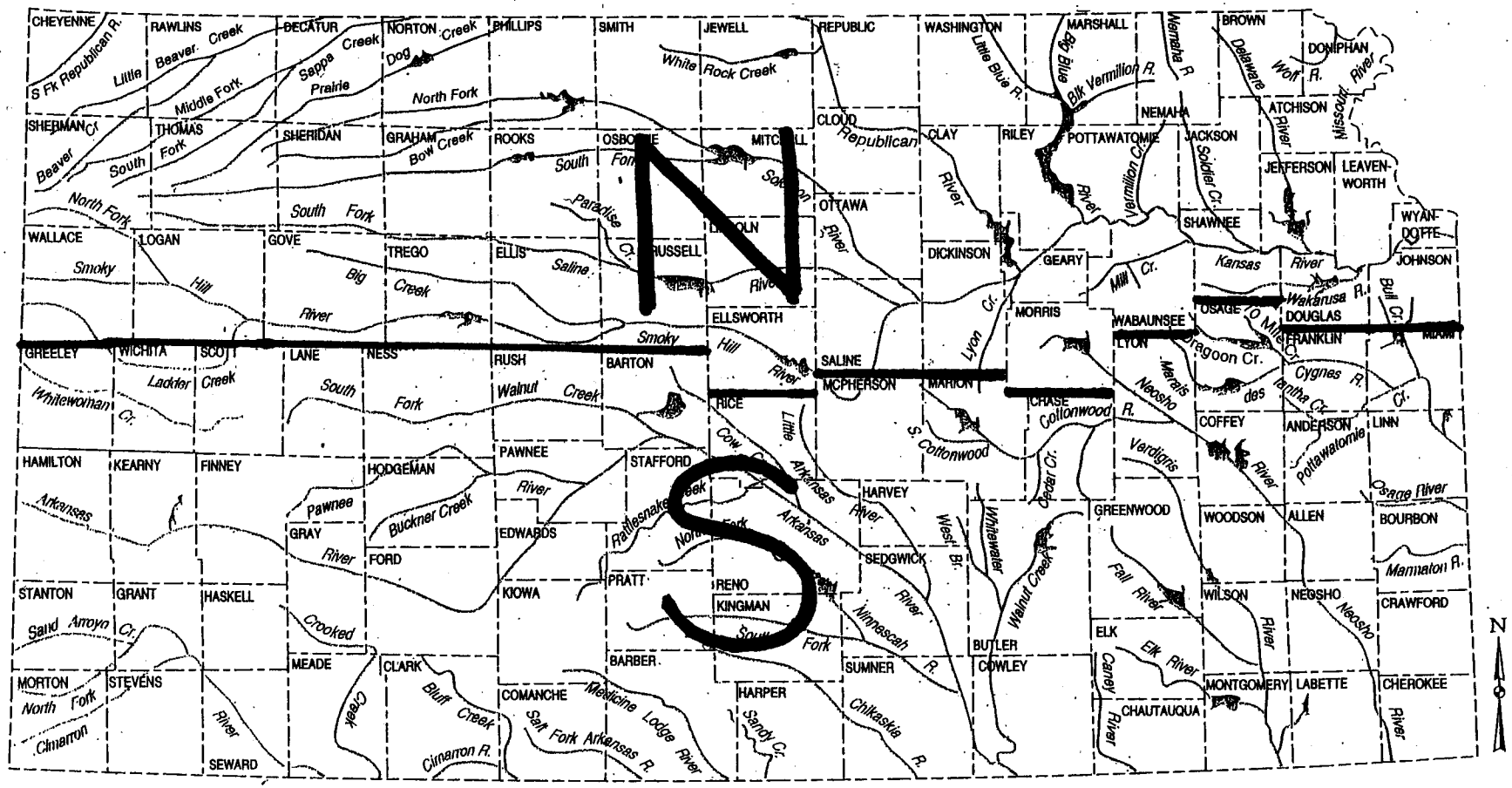
STATE OF KANSAS COUNTY CODES

CODE	COUNTY	CODE	COUNTY	CODE	COUNTY
AL	ALLEN	GL	GREELEY	OB	OSBORNE
AN	ANDERSON	GW	GREENWOOD	OT	OTTAWA
AT	ATCHISON	HM	HAMILTON	PN	PAWNEE
BA	BARBER	HP	HARPER	PL	PHILLIPS
BT	BARTON	HV	HARVEY	PT	POTTAWATOMIE
BB	BOURBON	HS	HASKELL	PR	PRATT
BR	BROWN	HG	HODGEMAN	RA	RAWLINS
BU	BUTLER	JA	JACKSON	RN	RENO
CS	CHASE	JF	JEFFERSON	RP	REPUBLIC
CQ	CHAUTAUQUA	JW	JEWELL	RC	RICE
CK	CHEROKEE	JO	JOHNSON	RL	RILEY
CN	CHEYENNE	KE	KEARNY	RO	ROOKS
CA	CLARK	KM	KINGMAN	RH	RUSH
CY	CLAY	KW	KIOWA	RS	RUSSELL
CD	CLOUD	LA	LABETTE	SA	SALINE
CF	COFFEY	LE	LANE	SC	SCOTT
CM	COMANCHE	LV	LEAVENWORTH	SG	SEDGWICK
CL	COWLEY	LC	LINCOLN	SW	SEWARD
CR	CRAWFORD	LN	LINN	SN	SHAWNEE
DC	DECATUR	LG	LOGAN	SD	SHERIDAN
DK	DICKINSON	LY	LYON	SH	SHERMAN
DP	DONIPHAN	MN	MARION	SM	SMITH
DG	DOUGLAS	MS	MARSHALL	SF	STAFFORD
ED	EDWARDS	MP	McPHERSON	ST	STANTON
EK	ELK	ME	MEADE	SV	STEVENS
EL	ELLIS	MI	MIAMI	SU	SUMNER
EW	ELLSWORTH	MC	MITCHELL	TH	THOMAS
FI	FINNEY	MG	MONTGOMERY	TR	TREGO
FO	FORD	MR	MORRIS	WB	WABAUNSEE
FR	FRANKLIN	MT	MORTON	WA	WALLACE
GE	GEARY	NM	NEMAHA	WS	WASHINGTON
GO	GOVE	NO	NEOSHO	WH	WICHITA
GH	GRAHAM	NS	NESS	WL	WILSON
GT	GRANT	NT	NORTON	WO	WOODSON
GY	GRAY	OS	OSAGE	WY	WYANDOTTE

LC Northern Standard Parallels

S = 38.716 N = 39.783



S = 37.266 N = 38.566

Last updated on 30/Oct/02

How to make a GEOLOGIC MAP (from scratch)

!! STRATIGRAPHIC COLUMN

*You'll need a strat. Column (finished, if possible) to follow the sequence of the formations and markerbeds.

---

1. TRACING* AND DIGITIZING GEOLOGY : G-BASES

---

* Depending on the condition of the original (geology) input source, you may need to trace the geology from the originals onto a mylar base map.

1) To Create A Base Map;
Print base information (from Kansas Cartographic Database, a.k.a. KCD) on mylar for your county. It should include:
all hydrology
township/range lines
highways and railroads
(all the above are found in the B and H bases)

For this step, map projection files need to be created in cd home/kcd/webster/mappro. Rafp print the B base to get the parameters for each bases(see the instructions in this manual).

---

2) Trace geology from the original source from the geologist.
Draw only SOLID lines, use color pencils to differentiate codes.
Look up the feature codes for markerbeds in cd home/kcd/webster, under an existing county's **.fcodeltype.beds file.

Have all maps checked for accuracy and to make sure all arcs are traced.

NOTE: Enter ALL feature codes for geologic contacts in the readme.txt file in cd /home/kcd/projects/whole county name. Be specific as you can when listing FCs and their descriptions.

Example:	4210	solid - observed geologic contact
	4220	dashed - approximate contact
	4221	dotted - concealed contact
	4222	dotted - non-zone
	4297	dotted white line inside (X)formation
	4298	dashed white line inside (X)formation
	4299	solid white line inside (X)formation
	2610	solid - actual fault
	2620	dashed - approximate fault
	4230	interformational fault-solid
	4240	interformational fault-dashed
	4281-2	tailings(solid-dashed)

---

3) Edgematch by hand all the traced maps to make sure no arcs are missing across the quad edges

4) Consult geologist on missing arcs which are not drawn on the original source, questionable arcs, formations, etc.

5) Digitize geology from mylar(the year of the map is the year you digitize it.)
-Do not digitize the bodies of water unless instructed, but **DO digitize any hydrology information drawn by the geologist in G-bases. After they were digitized, run MAPGEN to bring those arcs in B and/or H base. You can remove the hydrology lines from G-bases after they are successfully moved to the appropriate base.**

6) Set up scripts to print digitized bases in cd home/kcd/scripts/first letter of the county
(i.e. cd /home/kcd/scripts/j for Johnson County)

[NOTE: See samples of different scripts and how to create them in this manual]

7) Print digitized base and check it yourself before having someone else look at it.

8) Repeat steps (5)-(7) until all bases in the county are digitized

9) Create script to print the entire county geology. Use the same directory used in step (6).
The name of the script will be county abbreviation + cntyg
(i.e. jocntyg, ckcntyg, etc.)
Look at a print to find missing arcs across base edges and any irregularities or uncertainties.

[NOTE: do this BEFORE you actually create a 50,000 base in TILE for edgematching.]

10) Digitize any missing arcs/Fix any errors found in step (9)

11) **NOTE: See the instructions in this manual for running EACH TILE option.**

After all are digitized and checked OK, create a *EDGE-MATCHing base (*join nodes across quad edges & check for the missing and/or miscoded arcs) on the computer using **TILE-option: "3-CONVERT QUADS TO TILE IN LONG/LAT"

****TILE is the program we run to compile ALL bases (quads) in a county so that all arcs from each individual quad show up to form a county base.**

***DO NOT use quad edges.**

A) Print lat/long base, and make note of all missing arcs across quads edges on printed lat/long base from step 11, and follow step (4).

B) If you find any arcs that you need to digitize then **finish all the edge-matching first** and use TILE-option: "4-tile in long/lat to quads" to put the updated(edge-matched) G-bases back to 1:24,000

(cont.)

--- ***DO NOT create quad edges.*** ---

NOTE: Every time you tile to create a lat/long base, it overwrites itself. Therefore, don't tile from a lat/long base back to 24,000 unless it's needed. You can keep tiling to a lat/long base without messing anything up, but don't tile down to 24,000 quads more than necessary.

C) Digitize all missing arcs and/or make all corrections in G-bases.

D) Run TILE-option 3 again AFTER all the corrections are made, and edge-match the base. Repeat steps A)~D) until you have no more digitizing corrections to make. Ideally steps A)~D) should only be done ONCE. ***GO TO STEP 12) IF YOU ARE TILING FOR THE LAST TIME.***

12) !! Read the **TILE_3g** and **TILE_4g** instructions before proceeding with step 12.

A) Run **TILE-option 3** for the last time if there are no more digitizing corrections to be made and when all arcs are edgematched(this is STEP 3 in TILE_3g instruction).

B) Run TILE option 9-SPLIT COUNTY ARCS AT GEOLOGY ZONE INTERSECTIONS to join geology arcs to county line. Then tile back to 24,000 scale bases using TILE-option: "4-TILE IN LAT/LONG TO QUADS" to update your g-bases with the edgematched changes.

This time, **DO CREATE QUAD EDGES**, since you will not be tiling back again.(Creating quad edges before the final time you tile will create extra points along the quad edge that interrupt and cause problems when you try to run the ZONG, the program that creates zones.)

13) Print the map at 1:50,000 showing different feature codes with different line types and showing quad edges. See a sample script in this manual, or ask Gina or other students to set up a script for this.

A) Check for feature codes continuing across quad edges, and any possible edge-matching errors that were missed with TILE. Digitize if necessary.

!! STRATIGRAPHIC COLUMN

-) Strat. column can be done at any time. However, **you should never** start coloring & labeling the m-bases without a finished(digitized, colored, labeled AND OKed by the geologist) strat. column.

-) See the instruction in this manual for creating the strat. column.

---

2. M-BASES (EDITING)

M-bases are for symbols and colors at the scale of 1:50,000. These bases are used to form the published geologic maps. **EACH M-BASE HAS THE PROJECTION OF THE COUNTY, NOT OF ITSELF, AS IN 1:24,000. G-bases will keep their original form, at 1:24,000.**

14) Check to make sure a color dictionary exists for county being worked on:

-cd /home/kcd/webster/cal -- this is the directory where all the color dictionaries exist
-xx.ps -- this is file name county abbreviation.ps

*If color dictionary does not exist, see a sample color dictionary and create one for your county, or ask Gina or another student to create one.

15) Create M-bases by using TILE-option: "5-CONVERT G BASE TO M BASE" to convert G-bases @ 1:24,000 to M-bases @ 1:50,000. M-bases will be used from this point on.

16) Run **ZONG**(**see the instruction in this manual for actual running of the program) on each M-base. Gina and some students are familiar with the program and can help find any errors reported.

Feature codes to use are:
4000-4003 - quad edges
4210-42XX - geologic contacts, including the interformational faults
4310-4320 - county and state boundaries

You may just use an all-encompassing range of 4000-9000(or 9999), but listing the specific FC ranges is strongly recommended.

Also recommended is to create a list of feature codes to be included when running ZONG in your county's readme.txt file(see the note under step (2)).

NOTE: Check for points sitting on nodes on quad edges. Delete all points on top of nodes*.

* You may have to move some arcs in order to remove the points that are sitting on top of nodes. **Those arcs MUST be brought back to the original locations**(you can see the original locations by clicking on 'INTERIOR POINTS' command before you start moving the arcs. DO NOT CLICK on REFRESH until the arcs were moved back to where they were.

When all else fails and there's still a NODE error when you're running ZONG, run NODGEN with a .001 threshold.

WARNING: use .001 for the threshold, anything else will mess things up!

M-bases should be exactly the same as the G-bases.

> If the arcs mentioned above were not returned to the original locations, it means that there will be some gaps between M and G-base arcs.

> Don't alter what's in M-bases except for removing the extra points on nodes. It's very tempting to alter the arcs by making them smooth, but if you must, do it in G-bases first, then bring then to M by running MAPGEN.

(cont.)

> At this point, you should not have any more errors or missing arcs. If you need to change and/or add new arcs(or if the geologist makes changes to the original version), do so in G-bases, then run MAPGEN to bring the new data to M-bases.

---

3. M-BASES (COLORING)

17) When ZONG is completed satisfactorily, you need to record the number of total zones, simple islands, and complex islands(again, see the instruction in this manual for actual running of the program).

18) Edit zones(**see the instruction in this manual for actual editing of zones). Some students are familiar with the GE zone editor and should demonstrate the program for you(what the menu does how to link islands, etc).

19) After a quad is colored, create a m-base script in cd home/kcd/scripts/first letter of county to print that base.
The name of the scripts will be county abbreviation + 24-m.s.ps

(i.e. jo24-m.s.ps, ck24-m.s.ps)

A) Have printed bases checked for errors. Do this for all bases. When the errors are found, correct them, make a new plot, and have it checked. Repeat this until no more errors are found.

20) When all M-bases are colored, create script for the entire county in cd home/kcd/plot/whole county name to print a 1:50,000 map(at this time, use only M-bases).

The name of the scripts will be county abbreviation.s.ps
(i.e. jo.s.ps, ck.s.ps)

A) Verify that the zones are colored correctly, especially looking at quad edges and the order of colors.

B) If there are any corrections, make them in the M-bases.

C) **Make corrections that require digitizing in the G-bases with a unique feature code(usually 9999 is used) then use MAPGEN* to add those new arcs to the M-base. Ask other students who are familiar with this method or see the instruction.**

(*see the instruction in this manual for actual running of this program.)

!! Beginners MUST seek assistance when running a program. Messing up a program like MAPGEN will cause a SERIOUS problem that can effect everybody in AC.

---

4. PRINTING ROADS, LAKES, STREAMS, ELEVATIONS WITH GEOLOGY

When m-bases are colored and checked, add roads, hydrology, elevations, and other possible data bases to the script created in step (20). Typically, these bases are:

[county abbreviation]roads_aw	for roads
[county abbreviation]hydro_aw	for streams
[county abbreviation]lakes_aw	for lakes
[county abbreviation]qdlns_aw	for quad edges
[county abbreviation]citys_aw	for city boundaries*
[county abbreviation]eleva_aw	for elevation contours*
[county abbreviation]hiway_aw	for highway data from KDOT*
[county abbreviation]rails_aw	for new railroad data*
[first 4 letters of county name]box_aw	for box around 1:50K map

*Students can create most bases listed above except **eleva, **citys, **hiway, and **rails. Ask Gina to create those bases for you. In almost all cases, the bases **hiway and **rails will not be included in the actual map because we just use those bases to compare to and update(if necessary) the existing B and N bases.

21) See the instructions for how to create and/or edit **roads, **hydro, **lakes, **qdlns, **citys and ****box in this manual.

22) Revise the script from step (20) to print the bases listed above(except for the box base) and geology(m-bases) together. This will be the 1:50,000 map with all the arcs and zones that will be on the final map. The map should look almost finished except for the symbols.

A) **Place symbols by hand on the printed map, starting with geologic symbols.** Try to make them the same size as they will be on the final map, making sure they don't interfere with any roads, streams, cities, or contour elevation lines.

NOTE: You will need to get the your county's 1:100,000 map from the drawer in the rm102 in order to get the names of the streams, lakes, cities, township#, range line #, etc.

Also, use the maps from KDOT's website[see the special instruction manual] or Road Atlas(in Gina's office or in rm102)to get the most updated road information because some of the quads used in digitizing roads are nearly 50years old! This is true especially with the highways because B-bases were digitized long time ago using those old maps.

B) Move to step 23 when step 22-A is done.

---

5. ADDING SYMBOLS

[M-BASES]

23) Add symbols in m-bases by using the map from step 22-A as a reference.

A) 'ge' m-base name 'w'
Click on "EDIT SYMBOLS" then "TEXT." See the attached sheet for the list of symbols, their size, feature codes, etc.

B) Have the map checked by another student, just like with the other base type maps.
{Note: the symbol sizes are for 1:50K map, so the sizes and locations of the symbols you placed may appear too big or off when you make a plot at 1:24k(M-bases)).

* Any students who have edited the symbols before should be able to show you how to use the menu the first few times you edit the symbols. Also read the instructions in the ZONG section of this manual.

[ROADS, LAKES, AND STREAMS]

Unlike labeling the geology, you DO NOT label the individual quads when it comes to labeling roads, hydrology, and elevation contours **unless** used for the individual maps(see the 'kcd.base_types' in the BASES section of this manual).

Each county has a 1:100,000 scale map from USGS. You'll use this map as a reference when labeling the features mentioned above.

- Check with the publication office to see if your county has a new 1:100K map.
- Again, 1:100K maps should only be used as a reference. Use all resources that are available to you for your project.

24) Use TILE option 2-CONVERT QUADS TO PROJECTED TILE to add symbols for roads, elevations, hydrology and quad lines
EXAMPLE: wlroads_aw, wlhydro_aw, wleleva_aw, wlqdlns_aw

A) 'ge' [**roads/**hydro] 'w'
*DO NOT ATTEMPT TO EXACTLY DUPLICATE THE SIZE AND LOCATION OF THE SYMBOLS IN 1:100,000 MAP. IT'S NOT GOING TO WORK(remember it should only be used as a reference)! You should also refer to other completed 1:50,000 maps for guidance, and use your best judgment.

25) Print the map with ALL arcs from step 21 and symbols from steps 23-24 using the script used in step 22. However, you'll need to add the additional lines in the script for printings symbols (see the samples).

A) Check the map for the positions of the symbols and edit. Since you placed the symbols by hand first, there should be a minimal number of symbols that need to be repositioned.
***Geology symbols are most important. Make sure those are the most legible ones.**

(cont.)

B) Have the map checked by another student. EDIT AGAIN AND AGAIN. Labeling part is one of the most time-consuming and frustrating part of map making. Be patient.

[ELEVATION CONTOURS, QUADLINES]

26) Once the symbols are moved to the possible final locations, add symbols in elevation contour and quadlines bases(see instructions), and print them with other arcs and symbols from step 25.

27) Have the map checked by Gina and other students. You will need to check and edit symbol bases over and over again.
-- At some point after the geology symbols are placed on the map, it can be given to the geologist for any geologic corrections. However, it is usually done after the next step(layout) is completed.

---

7. LAYOUT

-> There are detailed instructions in the manual for how to create each base that is mentioned in this section.

28) Create the background box-layout base(****box) if it's not done already.

A) Use TILE to create a base with just the county line from the m-bases

B) Use **TILEC** to copy symbols from one base to another base.
Use this option for copying symbols for box bases as the information in them are *fairly* similar among box bases

NOTE: In 2002, AC has switched the font type from 1 to 2. If you copy from the older project, you'll have to change the font type for ALL texts. A highway disclaimer was also created in 2002. To avoid all the extra works, it is recommended to copy box base symbols from a recent project.

If you are updating a previously published county map, please add the highway disclaimer. You can find it by opening another county's box base, or go to cd /home/kcd/doc, then textedit or print hwy.disclaimer. Consult Gina about whether or not to change the font type to 2 for that county.

29) Create legend information:

[NOTE 1: Since the font type for all the legends was changed from 1 to 2, it's likely that you will need to create a new set of legends for your county. The representation of medium-duty primary and secondary roads were also changed. The new legends that reflect those changes were then created. Please do not use the original legends, in this case the ones with '+' sign at the end, for the current projects.]

a) **twshp_aw (diagram of township and range numbers for county)
b) **quads_aw (diagram with names of quads which make up county)
c) **index_aw (location diagram of county in map)
d) leggeol_aw+ \
e) leghydr_aw+ \

f) legpits_aw+ \
g) legfold_aw+ > read note 1 in the previous page.
h) legroad_aw+ /
i) legcnty_aw+ /
j) legindx_aw+

[NOTE 2: See the 'kcd.legends' file in cd home/kcd/doc to find the legends that are appropriate for your county, but you may need to create a customized derivation of these files for your county because of the special features. Kcd.legends file is constantly being updated*, so always check with other students to see if they've created new legends that can be used in your county.
* Everytime you create new legends, always make an entry in the kcd.legends file, so other students can use thoese legends in their projects.]

30) Include the legends in the script that you created in step (22). Place the legends, stratigraphic column, box base, etc. in the appropriate locations by adjusting the x, y offsets in the script.

31) Print the map with everything. Print the map as you make corrections and changes and have other students check it over for completeness and accuracy.

32) **Check and check again(the map needs to be checked by everybody in AC and Gina) for errors before sending the map to the reviewers.**

Last updated on 01/07/02

How to make a STRATIGRAPHIC COLUMN(from scratch)*

* This instruction can be used for creating the cross sections.

1) Trace stratigraphic column on mylar.
   A) Use 0.3mm pencil
   B) Use T-SQUARE, TRIANGLE, and CLEAR RULER
   **Any students who are familiar with tracing the strat column can show you how to use the T-square, and how to draw control points.
   C) Make sure that your strat column is not tilted.

2) Have someone, like Gina, check strat column once you are done tracing it. Go to the next step if you get OK.

3) Digitize stratigraphic column
   NOTE: digitize boundary of strat column as a single arc. f.c.3010
   this is to make things easier for coloring in **zong**
   all other arcs within boundary of strat is in f.c. 3000,

   >> DO NOT connect them to the boundary. <<
   (Bring them close to the edge but DO NOT join them to the boundary arc.)

```
zeppo% mapdig
Enter basename (7 character) lnstrat (county abbreviation + strat)
Enter Session Number : 1
Your initials?
sly
Projection (MP, LC, or None)?
none
Map scale if not 24000?
1
Enter M if Mylar?
m
Map year?
2001 (the year you digitize it)

  ***kcd Digitizing Control Program***
 digitizer output will be to:
 /home/kcd/dig/l/lnstrat_d1
 CURSOR BUTTON PROGRAMMING:
 2 = NODES     1 = DISCONTINUITY FLAG
 3 = POINTS    0 = FEATURE CODE HEADER FLAG
  NO BUTTON ASSIGNED THE 'DELETE' FUNCTION

 Enter 'Y' if this is a USGS 7.5' quadrangle map?
n

      CONTROL POINTS MUST FORM A RECTANGLE IN LAT/LONG

 STANDARD CONTROL POINTS:
     The 4 corners of the map projection area.

      NON-STANDARD CONTROL POINTS:
```

Any 4 control points that are not standard.

```
Type 'Y' if Control Points are non-standard:
  n  <--- Yes, they are non-standard, but always enter N.
Digitize the SouthWest Control Point:
Digitize the SouthEast Control Point:
Digitize the NorthEast Control Point:
Digitize the NorthWest Control Point:
```

-
--

4) Run ZONG on strat column and add symbols
(See the instruction in the manual for actual running of this program.)

Color strat column 1012 (grey)
Color coal strips 1024 (black)

-> Use the list of symbols and/or other county's strat. column
as reference to adding labels & symbols

SYM OLS

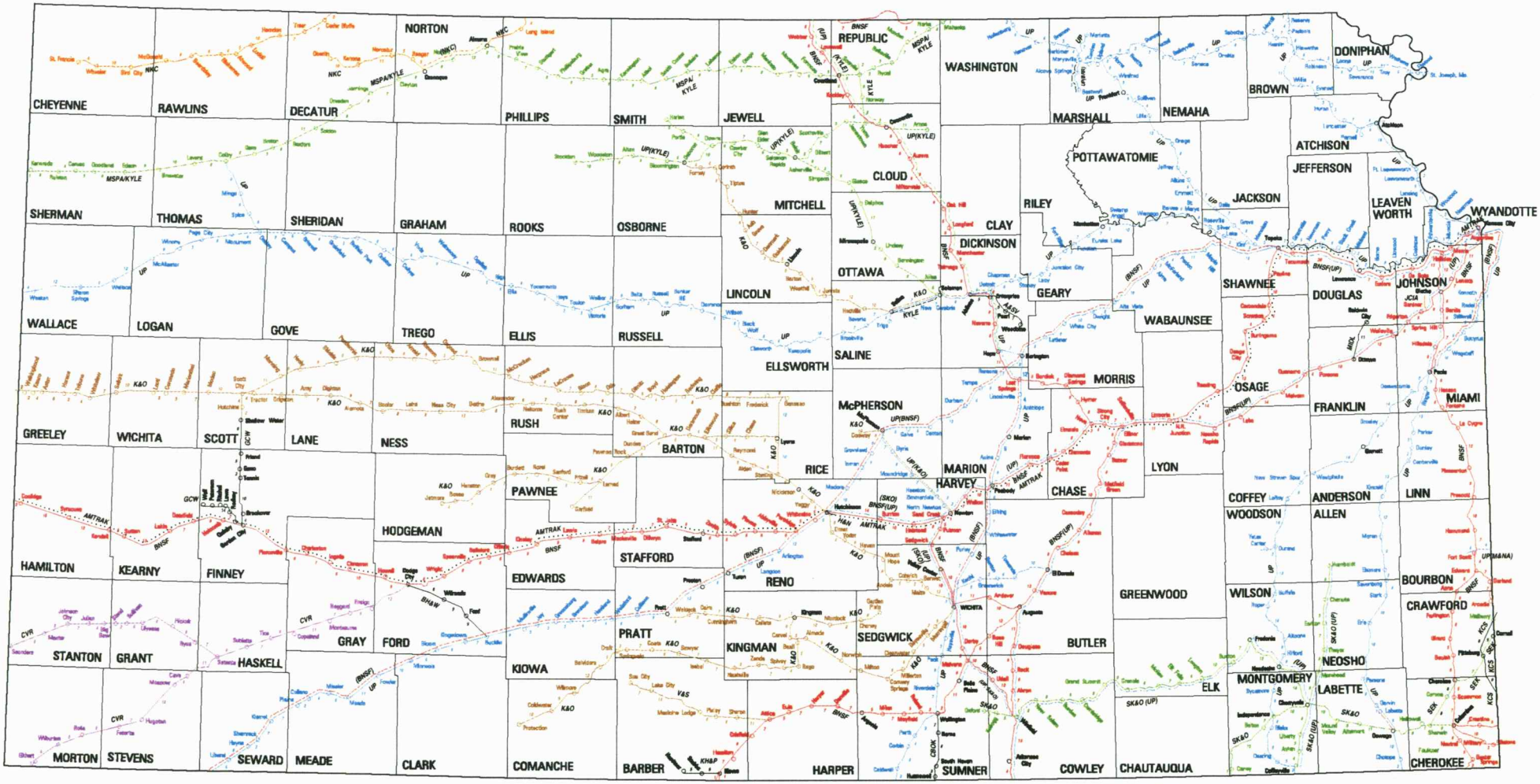
This is the list of commonly used symbols and labels. Last updated:

FEATURES	SYMBOL TYPE	FEATURE CODE 1:50k/1:100k	FONT* OR SYMBOL CODE	SIZE 50,000map	SIZE 100,000map	MISC INSTRUCTION	BASE	EXAMPLE
Geology	Text	4210/8210	**2***	0.06	0.04	FONT 1 used .065	xx1234m	$Pkw
Pits *	Symbol	1410/8410	442/724	.15,.03	.08,.02	o=180/310,50/1	xx1234m	
Mines*	Symbol	1420/8420	442	0.15	.1-.125		xx1234m	
	Box	1420/8420	Box	.1/.1	.07/.07		xx1234m	
Quarries*	Symbol	1430/8430	442	0.2	0.125		xx1234m	
*labels	Text	4210/8210	**2***	0.06	0.04		xx1234m	Strip Mines
Faults	Text	2610-2620	1	0.065	0.04		xx1234m	**U\D**
Anticline/Syncline	Text	2640-2646	1	0.065	0.04		xx1234m	ANTICLINE
Section #	Text	1111	1	0.06	Only at T&R intersections		xxroads	36
Township label	Text	2111	1	0.045			xxroads	T. 33 S.
Range label	Text	2112	1	0.045			xxroads	R. 14 E.
Highway #	Symbol	2200	13***	0.08		*** =three digit	xxroads	State hwy
			12***			highway numbe	xxroads	US Hwy
			11***				xxroads	Interstate
	Text	2200	1	0.06			xxroads	KS TURNPIKE
Cities	Text	1200	6	.06-.1			xxroads	Topeka
Railroad names	Text	2310	1	0.06			xxroads	SANTE FE
Bordering County Name	Text	4320	3	0.08			xxroads	Butler Co.
Latitude labels	Text	2161	**2***	0.05			xxroads	37$g28'26'
Longitude labels	Text	2162	**2***	0.05			xxroads	95$g11'13'
Airport/landing strip*	Symbol	2360-61	181	.075(varies)			xxroads	
*labels for 2360-70	Text	2360-70	1 or 2* (ask)	.055-.065			xxroads	Landing Strip
Indian boundaries	Text	2145-46	1	0.055			xxroads	OLD INDIAN .....
Streams	Text	2410-2420	8	0.06-.1			xxhydro	*Brush Creek*
	Text	4110	8	0.06-.3			xxhydro	*KANSAS RIVER*
Lakes	Text	4120	8	.07-.09		also in xxlakes	xxhydro	***Lake Perry***
Elevation labels	Text	3000	1	0.06			xxeleva	350
Quad edge label	Text	4002	**2***	0.05			xxqdlns	95$g30'
TRIANGLES	Symbol	1120	426	0.05			i.e.strat.col	
DOTS	Symbol	1100	317	0.05			i.e.strat.col	
CIRCLES	Symbol	1110	320	.05-.1			i.e.strat.col	
X	Symbol	1130	430	0.05			i.e.strat.col	
LINES	Symbol	4010/8010	Line				i.e.xx1234m	

*** Previously, font 1 was used for these features. Use font 2 for the current project or when updating* the previous ones(*make the size .005 smaller because font 2 takes more space). This is the same for the icons and the texts in the box base and the legends of the map. Change the font type to 2 only when the pen thickness for the particular label is 1. (Ex.There is no need for changing the font type for faults because the pen used is thicker than 1.)**

2001

Kansas Railroad Map



	RAILROAD	MILEAGE
A&SV	ABILENE & SMOKY VALLEY RAILROAD	18
BNSF	BURLINGTON NORTHERN SANTA FE RAILWAY	1,253
CBOK	CITY OF BLACKWELL OKLAHOMA	18
CVR	CIMARRON VALLEY RAILROAD	179
BH&W	BOOT HILL & WESTERN	26
GCW	GARDEN CITY WESTERN	45
H&N	HUTCHINSON & NORTHERN	3
JCIA	JOHNSON COUNTY INDUSTRIAL AIRPORT RAILWAY	4
K&O	KANSAS & OKLAHOMA RAILWAY	725
K&O (UP)	KANSAS & OKLAHOMA RAILWAY (LEASED FROM UP)	264

	RAILROAD	MILEAGE
KCS	KANSAS CITY SOUTHERN	18
KCTR	KANSAS CITY TERMINAL RAILWAY	5
KH&P	KIOWA, HARDTNER & PACIFIC	10
KYLE (MSPA)	KYLE RAILROAD SYSTEM	
KYLE	KYLE (OWNED)	16
	LEASED FROM MSPA	273
KYLE (UP)	LEASED FROM UP	310
MIDL	MIDLAND RAILWAY	11
M&NA	MISSOURI & NORTHERN ARKANSAS	8
NKC	NEBRASKA, KS & CO RAILNET	122

	RAILROAD	MILEAGE
NS	NORFOLK SOUTHERN RAILWAY (TRACKAGE RIGHTS ONLY)	
SK&O	SOUTH KANSAS & OKLAHOMA	269
UP	UNION PACIFIC SYSTEM (MKT, MP, OKT, UP)	1503
UP (BRR)	LEASED FROM BLUE RAPIDS RR	10
V&S	VICTORIA & SOUTHERN RAILWAY	43
WUT	WICHITA UNION TERMINAL	2

KANSAS DEPARTMENT OF TRANSPORTATION
BUREAU OF RAIL AFFAIRS
AND
BUREAU OF TRANSPORTATION PLANNING
RRMAP72001.DGN REVISED 7/20/01

---------- DASHED LINES INDICATE TRACKAGE RIGHTS ONLY

..... AMTRAK

→ use this as a reference when labeling xx roads / print this every year.

Last updated Jan/15/02

[LIST OF DIFFERENT BASES AND THEIR "MAJOR" CONTENTS]

B-BASE usually includes;

Section Corners
Township Corners
City center for county seat
Township/range lines
Highways/ramps
Railroads
Airports and their boundaries, if there are any
major hydrology

N-BASE usually includes;

City centers
Section lines
Landing strips, Landing Fields
all roads that are not highways

H-BASE usually includes;

all 2nd level hydrology
Inundation area
Dam with road
Dike or Levee with Road

G-BASE usually includes;

all geologic contacts
Pits, quarries, mines
sometimes the lakes(field interpretation. Not shown on 7.5 topographic)

M-BASE usually includes;

what's in g-base but with zones and symbols

I-BASE usually includes;

Quad edge
Box frames and symbols, such as disclaimer, Scale, title, KGS logo, etc. just like in 1:50K and 1:100K maps.

>>>>>>>>

LIST OF THE BASES SPECIFICALLY CREATED FOR " i (individual)" MAP

! B-base for "i" maps includes; the labels(for streams, neighboring quads' names, city, rr, hwys, twnshp & range #s, etc.)

! N-base for "i" maps includes; the symbols(township numbers(1, 6, 31, and 36)).

! G-base for "i" maps includes; the labels for the geology

S-base usually includes; only the Areal hydrology

T-base usually includes; Elevation contours for labeling
---> watch out for cf1350t, sn1852t, sn1949t(not for "i" maps)***

C-base usually includes; City boundaries(zone)
---> watch out for mg0251c, mg0351c(not for "i" maps)***

SPECIAL NOTES

The following bases are not part of regular base types;

A-base(ex. sn1949a, pt1945a)

C-base(ex. see *** above)

E-base(ex. cs1246e, mg0452e, mg0453e, wl0552e, wl0553e)

F-base(ex. sn1852f)

P-base(ex. cs1346p, gw0848p)

T-base(ex. see *** above)

U-base(ex. cf1350u)

V-base(ex. cf1350v)

Z-base(ex. os1652z, bu0644z, jo1660z, mg0452z, jo1858z, pt1945

========== END ==========

Last updated on Sept/20/02

\\\ LIST OF FEATURES TO BE INCLUDED IN "B" BASE ///

(This is not a complete list)

DESCRIPTION	FEATURE CODE* *Not often used.
[LAND GRID]	**[1110]**
+Section Corners	1111
+Township Corners	1112
+Other section boundary points	1113
+Fractional Section Boundary Corners. Termination of Section line at excluded areas(e.g. Meander corners)	1114*
+Protracted section corners simulated for analytical purposes. These section corners are inside Kansas Section Quarter-Corners	1115*
+Section Quarter-Corners	1116*
+Surveyed section corners shown on topo maps and they are outside Kansas	1118*
+Hypothetical section corner simulated for analytical purposes. These sections corners are outside Kansas.	1119*
+Intersection of treaty line and quad edge.	1142
+Intersection of treaty line and PLSS section township line.	1143
[CONTROL STATIONS]	**[1120]**
+Horizontal	1121*
+Vertical	1122*
+Type Localities	1123*
[PUBLIC LAND SURVEY POINTS OF ORIGIN]	**[1130]**
+Starting point for base line of the Kansas survey. Established on the 40th parallel on the bluff overlooking the west bank river	1131
+Initial point for surveys from the 6th Principal Meridian	1132
[ ]	[1140]
+Treaty Line Corner or angle point	1141

+Intersection of treaty line and quad edge	1142
+Intersection of treaty line an PLSS section on line	1143
+Termination of Treaty Boundary at excluded area (river or military reserve)	1144

[TOWNS, CITY CENTERS] **[1200]**

Population < 500	1210
500 < Population < 1000	1220
1000 < Population < 3000	1230
3000 < Population < 10000	1240
10000 < Population < 25000	1250
25000 < Population < 50000	1260
50000 < Population < 100000	1270
100000 < Population	1280

Minor Code	Meaning
1	Unincorporated
2	Incorporated
3	County Seat
4	State Capital

[LINEAR BORDERS AND BOUNDARIES] **[2100]**
--U.S. LAND SURVERY LINES-- **[2110]**

+Township Line	2111
+Range Line	2112
--	--
+Cemetery Boundary	2120*
+Fence or Field Line	2130*
+Military or Reservation Boundary	2140*
+Old Military Boundary	2141*
+New Military Boundary	2142*
+Reservation / Company Land Boundary	2143*
+Unused	2144*
+(Old) Indian Reservation Boundary	2145
+Other Indian Boundaries	2146

[PARKS] **[2150]**

+National	2151*

+State	2152*
+County	2153*
+City	2154*

[HIGHWAYS, ROADS]	**[2200]**
Primary Highway, Hard Surface	2210
Secondary Highway, Hard Surface	2220
Light-Duty Road	2230
Unimproved Road	2240
Road Under Construction or Proposed	2250
Highway Ramp	2260
Dual Highway, Dividing Strip < 25 feet	2270
Dual Highway, Dividing Strip > 25 feet	2280
Highway Spur (dead end)	2290

Minor Code	Meaning
1	Interstate
2	U.S. (Federal)
3	State
4	County, City
5	Private
6	Interstate and U.S.
7	Interstate, U.S., and State
8	Interstate and State
9	U.S. and State

[RAILROADS, AIRPORTS]	**[2300]**
+Single Track Railroad	2310
+Multiple Track Railroad	2320
+Railroad Bridge	2330*
+Railroad Boundary	2340*
+Airport Boundary	2350
+Airport Runway, tarmac, Air Field, Glider Filed - solid	2360
+Airport Runway, tarmac, Air Field, Glider Filed - dashed	2361

[LINEAL HYDROLOGY]	**[2400]**
+Perennial Stream	2410
+Intermittent Stream	2420
+Aqueduct	2430
+Aqueduct Tunnel	2440

+Dam	2450
+Dike or Levee	2460
+Coast Line	2470
[AREAL HYDROLOGY]	**[4100]**
+Perennial Stream	4110
+Permanent Lake	4120
+Intermittent Stream	4130
+Intermittent Lake	4140
+Reservoir	4150
+Aquifer	4160*
+Swamp	4170*
[AREA BOUNDARIES]	**[4300]**
+State Boundary	4310
+County Boundary	4320
+Quadrangle Map Edge	4330
+City Boundary	4340
Population < 500	4341
500 < Population < 1000	4342
1000 < Population < 3000	4343
3000 < Population < 10000	4344
10000 < Population < 25000	4345
25000 < Population < 50000	4346
50000 < Population < 100000	4347
100000 < Population	4348
[COUNTY SEAT - CITY BOUNDARY]	**[4360]**
+Population < 500	4361
+500 < Population < 1000	4362
+1000 < Population < 3000	4363
+3000 < Population < 10000	4364
+10000 < Population < 25000	4365
+25000 < Population < 50000	4366
+50000 < Population < 100000	4367
+100000 < Population	4368

Last updated on Sept/20/02

\\\ LIST OF FEATURES TO BE INCLUDED IN "N" BASE* ///

(This is not a complete list)

[*Also read "Rules for digitizing roads" in 'MAPDIG' section of this manual.]

DESCRIPTION	FEATURE CODE* *Not often used.
[TOWN, CITY CENTERS]	
+City Centers(non-county seat)	1200
[U.S. LAND SURVERY LINES]	
+Section Lines	2113
+Section line that falls on military boundary, Indian boundary, and other excluded areas	2115
+Various Indian Boundaries	2145~46
[ROADS THAT ARE NOT INTERSTATE, FEDERAL, OR STATE HIGHWAYS]	
+Primary Road	2116
+Secondary Road	2117
+Light Duty Road	2118
+Unimproved Road	2119
[Airports]	
+Landing Strip, Landing Fields	2370

Last updated on Jan/24/02

\\\ LIST OF FEATURES TO BE INCLUDED IN "H" BASE ///

DESCRIPTION	FEATURE CODE
[LINEAL HYDROLOGY]	**[2400]**
+Perennial Stream - 2nd level hydrology	2411
+Intermittent Stream - 2nd level hydrology	2421
+Canal or ditch	2431
+Canal or ditch - abandoned	2432
+Siphon	2433
+Underground siphon	2434
+Intermittent Canal	2435
+Dam with road	2451
+Dike or Levee with Road	2461
[AREAL HYDROLOGY]	**[4100]**
+Perennial Stream - 2nd level hydrology	4111
+Permanent Lake - 2nd level hydrology	4121
+Intermittent Lake - 2nd level hydrology	4141
+Land subject to controlled inundation	4145
+Reservoir - 2nd level hydrology	4151

\\\ LIST OF FEATURES TO BE INCLUDED IN "I" BASE ///

DESCRIPTION	FEATURE CODE
[AREA BOUNDARIES]	**[4300]**
+Quadrangle Map Edge	4330

[SYMBOLS]

KGS Logo,
Title of the map and the year,
Name of the author(s)
Name if the person who made the "i" map
KGS information and the map number
Disclaimers
Scales(just like the one on the 24k topo)
Inner and exterior frames*
*the colors need to reflect the 50k map

Date: 04/October/02

FEATURE CODES USED AT THE KANSAS GEOLOGICAL SURVEY

ISOLATED POINT ARCS

1100 Control Points

1110 Land Grid
- 1111 Section Corners
- 1112 Township Corners
- 1113 Other section boundary points
- 1114 Fractional Section Boundary Corners. Termination of Section line at excluded areas (e.g. Meander corners)
- 1115 Protracted section corners simulated for analytical purposes. These section corners are inside Kansas
- 1116 Section Quarter-Corners
- 1117
- 1118 Surveyed section corners shown on topo maps and they are outside Kansas
- 1119 Hypothetical section corner simulated for analytical purposes. These sections corners are outside Kansas

1120 Control Stations
- 1121 Horizontal
- 1122 Vertical
- 1123 Type Localities

1130 Public Land Survey Points of Origin
- 1131 Starting point for base line of the Kansas survey. Established on the 40th parallel on the bluff overlooking the west bank river
- 1132 Initial point for surveys from the 6th Principal Meridian

1140
- 1141 Treaty Line Corner or angle point
- 1142 Intersection of treatty line and quad edge
- 1143 Intersection of treaty line an PLSS section on township line
- 1144 Termination of Treary Boundary at excluded area (river or military reserve)

1200 Towns, City Centers

- 1210 Population < 500
- 1220 500 < Population < 1000
- 1230 1000 < Population < 3000
- 1240 3000 < Population < 10000
- 1250 10000 < Population < 25000
- 1260 25000 < Population < 50000
- 1270 50000 < Population < 100000
- 1280 100000 < Population

Minor Code	Meaning
1	Unincorporated
2	Incorporated
3	County Seat
4	State Capital

1300 Wells, Springs

1310 Water Well

1311 Auger Well
1312 Geoprobe Well
1313 Test Well
1320 Spring
1330 Oil Well
1340 Gas Well
1350 Oil and Gas Well
1360 Dry Hole
1390 Miscellaneous

Minor Code	Meaning
1	Producing
2	Abandoned Dry
3	Abandoned Producing
4	Under Development

1400 Pits, Quarries, Mines

1410 Open Pit
1420 Mine
1430 Quarry
1440 Prospect
1450 Shaft or Tunnel Entrance
1460 Land Slide Centers

Minor Code	Meaning
0	Producing
1	Abandoned
2	Under Development

1500 Buildings

1510 Dwelling of Employment
1520 Church
1530 Cemetery (as a point location)
1540 Towers
1541 Radio
1542 Television
1543 Microwave Relay
1544 Transmission Line
1545 Water
1546 Observation
1550 Power Substation
1560 School (point location only)
1570 Compressor Station (pipeline)

1600 Geology-Control Points

1610 Geo-control points

LINEAR ARCS

2100 Linear Borders and Boundaries

2110 U.S. Land Survey Lines
2111 Township Line
2011 Township Line Offset
2112 Range Line
2012 Range Line Offset
2113 Section Line

2114
2115 Section line that falls on military bnd., indian bnd., and or other excluded areas

Roads that are not Interstate, Federal, or State highways
2116 Primary Road
2117 Secondary Road
2118 Light Duty Road
2119 Unimproved Road

2120 Cemetery Boundary
2130 Fence or Field Line
2140 Military or Reservation Boundary
2141 Old Military Boundary
2142 New Military Boundary
2143 Reservation / Company Land Boundary
2144 Unused
2145 Indian Reservation Boundary
2146 Other Indian Boundaries
2150 Parks
2151 National
2152 State
2153 County
2154 City
2160 Geo-Reference Lines
2161 Latitude
2162 Longitude
2170 Wildlife Refuge
2180 Miscellaneous Boundaries
2181 Civil (Political) Township

2200 Highways, Roads

2210 Primary Highway, Hard Surface
2220 Secondary Highway, Hard Surface
2230 Light-Duty Road
2240 Unimproved Road
2250 Road Under Construction or Proposed
2260 Highway Ramp
2270 Dual Highway, Dividing Strip < 25 feet
2280 Dual Highway, Dividing Strip > 25 feet
2290 Highway Spur (dead end)

Minor Code	Meaning
1	Interstate
2	U.S. (Federal)
3	State
4	County, City
5	Private
6	Interstate and U.S.
7	Interstate, U.S., and State
8	Interstate and State
9	U.S. and State

2300 Railroads, Airports

2310 Single Track Railroad
2320 Multiple Track Railroad
2330 Railroad Bridge
2340 Railroad Boundary

2350 Airport Boundary
2360 Airport Runway, tarmac, Air Fields, Glider Port - solid
2361 dashed - digitize in B-base
2370 Landing Strip, Landing Fields - N-base

00 Lineal Hydrology

2410 Perennial Stream
2411 2nd level hydrology
2420 Intermittent Stream
2421 2nd level hydrology
2430 Aqueduct

Minor Code	Meaning
1	Canal or Ditch
2	Abandoned Canal
3	Siphon
4	Underground Siphon
5	Intermittent Canal

2440 Aqueduct Tunnel
2450 Dam
2451 Dam with Road Primary level
2452 Dam - secondary level (very small dams)
2460 Dike or Levee
2461 Dike or Levee with Road

Minor Code	Meaning
0	Primary Hydrologic Feature
1	Secondary Hydrologic Feature

2470 Coast line

00 Transmission Lines

2510 Electrical Power
2511 Power Line
2512 Substation
2520 Pipeline
2521 Gas
2522 Oil
2523 Water
2530 Telephone Line

2600 Intra-Formation Geology Within same formation

2610 Actual Fault
2611 Transverse
2612 Thrust
2613 Normal
2620 Approximate Fault
2621 Transverse
2622 Thrust
2623 Normal
2630 Intrusives
2640 Folds
2640 Anticline (solid line)
2641 Anticline (dash line)
2645 Syncline (solid line)
2646 Syncline (dash line)
2650 Intermittent Contact
2660 Escarpments

2661 Bedrock
2662 Other

2670 Marker Bed

2680 Inferred Fault
2681 Transverse
2682 Thrust
2683 Normal

2700 - 2999 These codes are not currently assigned.

3000 Elevation Contours

Elevation contours in Kansas are coded as:

3ABC

where ABC is the elevation in feet divided by 10. Thus, for an elevation of 7340, ABC = 734, and the feature code = 3734. With this procedure, elevations in ten-foot intervals from 0 to 9990 (all of Kansas) can be represented in feature codes from 3000 to 3999.

ZONE BOUNDARY ARCS

4100 Areal Hydrology

4110 Perennial Stream
4111 2nd level hydrology
4120 Permanent Lake
4121 2nd level hydrology
4125 field interpretation. Not shown on 7.5 topographic
4130 Intermittent Stream
4140 Intermittent Lake
4141 2nd level hydrology
4145 Land subject to controlled inundation
4150 Reservoir
4160 Aquifer
4170 Swamp

Minor Code	Meaning
0	Primary Hydrologic Feature
1	Secondary Hydrologic Feature

4200 Inter-Formation Geology .Between two different formations .

4210 Observed contact (Actual contact)
4211 Change of Facies
4212 Non-distinguishing Contact (Undecided)
4213 Line of Cross Section
4215 Geologic Provinces
4220 Approximate contact
4221 Inferred contact (Change of Facies)
4222 Concealed contact
4230 Actual Faults
4231 Transverse
4232 Thrust
4233 Normal
4240 Approximate Faults

4241 Transverse
4242 Thrust
4243 Normal

4250 Folds
4251 Anticline (solid line)
4252 Anticline (dash line)
4253 Syncline (solid line)
4254 Syncline (dash line)

4260 Glaciation
4261
4262 Boulder Dump

4270 Inferred Faults
4271 Transverse
4272 Thrust
4273 Normal

4280 Mine boundaries
4281 Quarry, Strip mine, and Pits.
4282 Tailings

4300 Area Boundaries

4310 State Boundary
4320 County Boundary
4330 Quadrangle Map Edge
4340 City Boundary
4341 Population < 500
4342 500 < Population < 1000
4343 1000 < Population < 3000
4344 3000 < Population < 10000
4345 10000 < Population < 25000
4346 25000 < Population < 50000
4347 50000 < Population < 100000
4348 100000 < Population

4350 Groundwater Management District Boundary

Minor Code	Meaning
1-5	District Number

4360 County Seat - City Boundary
4361 Population < 500
4362 500 < Population < 1000
4363 1000 < Population < 3000
4364 3000 < Population < 10000
4365 10000 < Population < 25000
4366 25000 < Population < 50000
4367 50000 < Population < 100000
4368 100000 < Population

4370 Hydrologic Basins (USGS Only)
4373 Cataloging
4374 Accounting
4375 Sub-regional
4375 Regional

4380 Hydrologic Basins (USGS and Kansas Plan)
4383 Cataloging
4384 Accounting
4385 Sub-regional
4385 Regional

4400 Mineral Resource Area Boundaries

4440 Mineral Resource Boundaries
- 4441 Oil Field
- 4442 Gas Field
- 4443 Oil and Gas Field
- 4444 Shallow Gas Field
- 4445 Storage Area
- 4446 Panoma Field
- 4447 Panoma and Hugoton Field

4450 Boundaries Between Two Resources
- 4451 Oil Field - Oil Field
- 4452 Oil Field - Gas Field
- 4453 Oil Field - Oil and Gas Field
- 4454 Oil Field - Shallow Gas Field
- 4455 Oil Field - Storage Area
- 4456 Gas Field - Gas Field
- 4457 Gas Field - Oil and Gas Field
- 4458 Gas Field - Shallow Gas Field
- 4459 Gas Field - Storage Area
- 4461 Oil and Gas Field - Oil and Gas Field
- 4462 Oil and Gas Field - Shallow Gas Field
- 4463 Oil and Gas Field - Storage Area
- 4464 Shallow Gas Field - Shallow Gas Field
- 4465 Shallow Gas Field - Storage Area

4480 User-defined Boundaries for Areal Resources

4500 Soils Boundaries

4510 Actual Boundary Between Soil Types

)00 Reserved for various trails such as Oregon Trails, (Rail to)Trails

8000 Often reserved for 1:100,000 maps

9000 Reserved for special features. Most commonly used when transfering arc(s) from one base to the other using MAPGEN, and to hide old version of arcs.

Last updated 15/Oct/02

DIGITIZING

---

1) Determine your county and its location and *row and column extent.

*this list can be found at
chico% cd /home/kcd/base/first letter of county
chico% ls county code*b_aw

Example: chico% ls xx*b_aw
xx1350b_aw xx1353b_aw xx1452b_aw xx1551b_aw xx1650b_aw

Locate your county on the index map, and determine if it is north or south of the LC parallels line.

***if the county has Northern parallels = you will need special instructions**, go ask Gina!(or see the special instruction in the BUILD section of this manual).

2) Use the index map to find the names of the basemaps you'll need for your county.

You can get those maps from the publications.
Highlight **projection***, scale, base name, year, and **CONTROL POINTS****.
Highlight what is in the B-base & what you will be digitizing for N-bases.

*Control points are usually the corners of the topos UNLESS NAD 27 is designated by tick marks to the WEST of the corners.

*read the following section on NAD 27 vs. NAD 83.
!! ASK if you are unsure of tick marks !!

*IF THE FOLLOWING APPEARS ON THE TOPO,	ENTER;
Modified polyconic,	MP
Polyconic projection,	MP
Lambert conformal conic,	LC
transverse Mercator,	LC
Universal Transverse Mercator(UTM),	LC

3) Before you digitize...

Do not tape the map too low on the digitizing table. Here's one way to determine if the map is taped too low: move the cursor around in the lower part of the digitizing table. If the red light lights up, you should move the map above that area.

4) Digitize and edit the base.

(see the instruction for actual running of 'MAPDIG.' Some tips for editing in 'ge' are also in the manual)

When digitizing, always start from right to left, bottom to top to maintain the direction of the arcs and to be consistent in order to facilitate the arc attribution in ARCINFO.

>MP projected maps need to be initialized in BUILD for the first session.
>LC maps w/southern parallels need to be initialized in BUILD for the first session.

LC maps w/northern parallels SHOULD NOT BE INITIALIZED, and need to be created differently. Follow the LC special instructions.

-Do not digitize the bodies of water unless instructed, but **DO digitize the lakes drawn by the geologist in G-bases(after they were digitized, run MAPGEN to bring those arcs in B and/or H base. Change the feature codes to the regular lake feature codes.**

-Each base should have a map header symbol(feature code to use is 4000).
-Each base should be checked for errors or missing features by someone other than yourself. Put the checked plot with your county in the map drawers assigned to you.

5) Update a status file.

```
chico% /home/kcd/projects
chico% ls
bourbon   coffey    graham    johnson   osage     shawnee   sheridan
```

If your county is not listed, then ask Gina to create one, or type: mkdir < enter the entire countyname >

```
chico% cd  entire countyname
chico% ls  (optional)
readme.txt    status.txt
chico% textedit status.txt &
```

If status.txt is not listed, create one by typing: textedit status.txt & , then confirm the creation of it.

>>Your status file should look something like this:

STATUS FILE FOR < COUNTYNAME > COUNTY

DAY/DATE	QUADNAMES	STATUS	COMPLETED BY
May 26, 2000	xx1553n	finished digitizing	Joe
	xx1552n	edited in GE	Joe
May 31, 2000	xx1452n	finished & checked	Joe

6) Maintain the status of your county every day you work on it.
Make notes for the county in 'readme.txt' file, and it looks like this:

README FILE FOR < COUNTYNAME > COUNTY

Feature Codes for G-bases: Geologic contacts --- solid = 4210
short dashed = 4220

7) Most importantly, do this when you are done digitizing the assigned county to you, and all plots have been checked "ok" by someone:

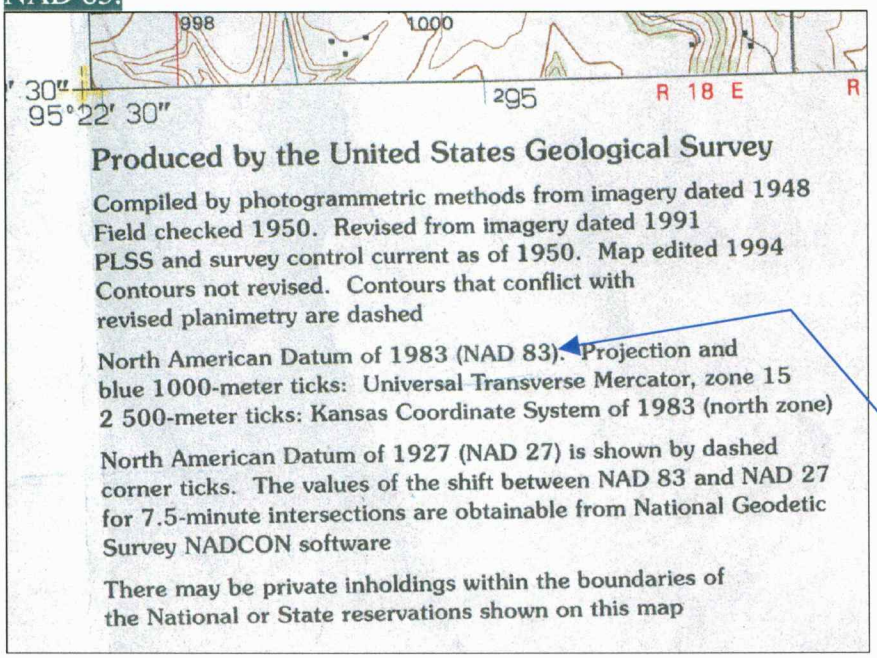
```
chico% cd /home/kcd/kcdstatus
chico% textedit counties.status
```

find your county, tab over from what you digitized, and type the year it was completed.

North American Datum 27 vs. North American Datum 83

USGS 7 1/2' quadrangles come in two distinct "Datum's". NAD 27 is the original datum and is what most quadrangles in Kansas are. NAD 83 is the new version of the North American Datum and includes the following quads in Kansas: Edwardsville, Fort Riley NE, Keats, Lawrence West, Manhattan, and Milford, among others.

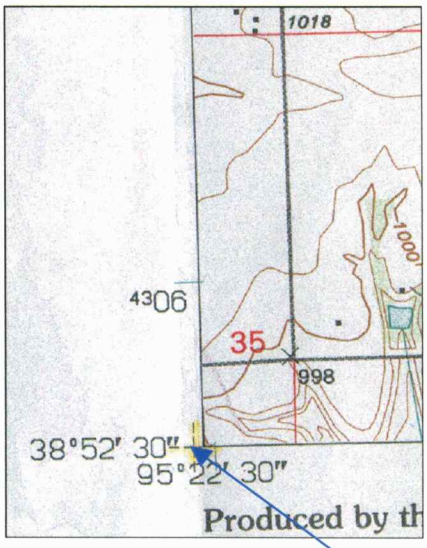
NAD 83:

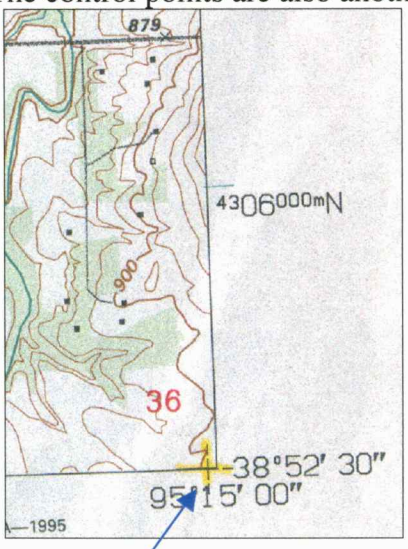


Located at the bottom left-hand side of each map is some text where you will find information about projection, datum, and other items specific to that particular quadrangle.

Look for this sentence, "North American Datum of 1983 (NAD83)." to tell you explicitly that this is a NAD 83 map.

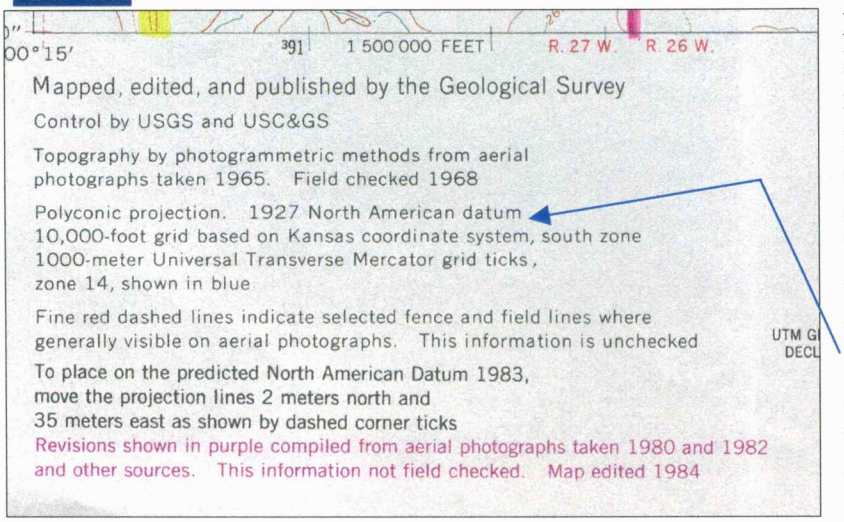
The control points are also another indicator:



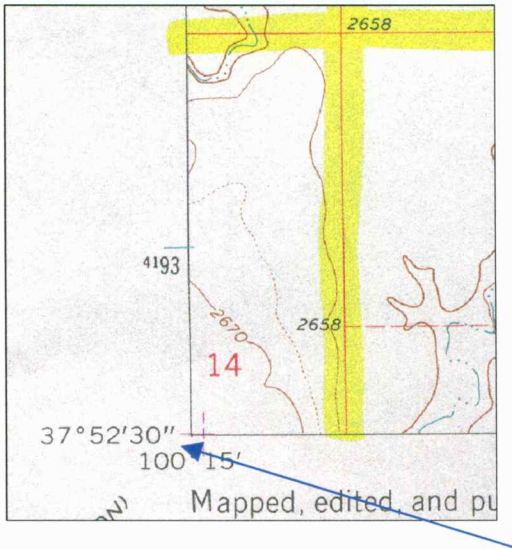


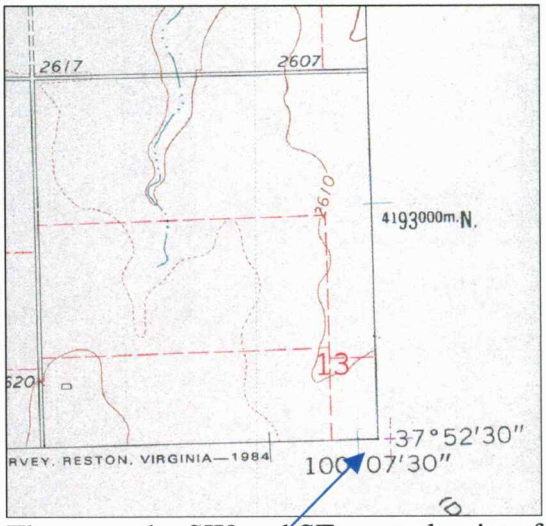
These are the SW and SE control points for Lawrence West. The new corner points are to the west of the map clean line (Quadrangle edges). *Digitize these new tick mark corner points as your control points if and only if they are to the west of the map clean lines. If the new tick marks are not to the west of the map clean lines, then they are wrong; use the normal control points at the intersection of the map clean lines.* If there is any doubt or confusion, consult Gina Ross, or Dr. Collins.

NAD 27:



Located at the bottom left-hand side of each map is some text where you will find information about projection, datum, and other items specific to that particular quadrangle.
Look for this sentence, "1927 North American Datum" to tell you explicitly that this is a NAD 27 map.
Here are the control points for a NAD 27 map with the NAD 83 new corner tick marks:





These are the SW and SE control points for Dodge City NW. The new corner points are to the east of the map clean line (Quadrangle edges). *If you have a newer map with NAD 27, digitize the original corner points at the intersection of the map clean lines as your control points*. If there is any doubt or confusion, consult Gina Ross, or Dr. Collins.

Summary: All previous databases created by Automated Cartography were done using the control points from NAD 1927. So we want to continue to use the control points for NAD 27 at all times. The only exception to this rule is if the tick marks on a NAD 83 map are placed incorrectly (i.e. are not to the west of the map clean lines).

Last updated on 10/Jan/02

MAPDIG

```
chico% mapdig

Enter basename (7 character) < enter basename >

Enter Session Number : < enter number >

Your initials?
< enter initials >

Projection (MP, LC, or None)?
< enter projection >

Map scale if not 24000?
< hit 'Return' or enter 24000 if the scale is 24000 >

Enter M if Mylar?
< hit 'Return' or enter 'P' if digitizing from paper >

Map year?
< enter year >

  ***kcd Digitizing Control Program***

   digitizer output will be to:
 /home/kcd/dig/x/xx1234h_d1

  CURSOR BUTTON PROGRAMMING:
  2 = NODES     1 = DISCONTINUITY FLAG
  3 = POINTS    0 = FEATURE CODE HEADER FLAG
    NO BUTTON ASSIGNED THE 'DELETE' FUNCTION

Enter 'Y' if this is a USGS 7.5' quadrangle map?
Y
     ------------------------------------------------------------------------
      Digitize your highlighted control points in the order you're prompted.
      You may be asked to type '2' to continue.
      Enter the feature code you intend to digitize.
     ------------------------------------------------------------------------
            2= a node,  every arc must begin with a node.
                        every intersection must have a node.
                        the end of every arc must have a node.
            3= a point, these are taken to draft the arc.
            1= discontinuity flag, flag the end of an arc.

            0= keyboard entry, type this once or twice to change the
                        feature code or to end a session by typing "bye".
```

NOTE: if button '0' was pressed multiple times, you will be asked to make entries from the keyboard for each '0' button pressed.

Last updated on Jan/16/02

RULES FOR DIGITIZING ROADS (N-BASES)

N-BASES CONTAIN ALL ROADS THAT ARE NOT INTERSTATE, FEDERAL OR STATE HIGHWAYS(THEY ARE IN B-BASES). N-BASES ALSO CONTAIN SECTION LINES AND CITY CENTERS.

THE EXCEPTIONS ARE LIGHT-DUTY AND UNIMPROVED ROADS INSIDE THE CITY BOUNDARIES: THEY ARE NOT DIGITIZED(see [Within the city boundaries] section below).

Feature codes in N-bases:

1200	City centers (except for the county seat: it's in B-base)
2113	Section line (thin solid red line)
2115	Section line that falls on military boundary, indian boundary, or other excluded area.
2116	Primary road - Heavy duty (a thick solid red line)
2117	Secondary road - Medium duty (a thick red-white dashed line)
2118	Secondary road - Light duty (a double solid black or thick gray linetype)
2119	Secondary road - Unimproved (a double dashed black or thin gray linetype)
2370	Landing Strips - Digitize these no matter where they are located and label them in XXroads base.

--- Highlight the maps before digitizing(see the attached sheet for tips). ---

-Digitize all primary and secondary roads not digitized in B-base.
- Digitize everything that is not within a city boundary or already on the B-base(sometimes, it's a good idea to plot the b-base, so you can see what's been already digitized).

-Digitize down the center of the roadway.

-Digitize roads that fall on the section line using their own feature codes, even if they fall within the city boundaries.

-Digitize roads that fall on the county and/or state lines.

-Digitize section lines.

-Digitize town centers at a single isolated point in the center of town.

-Digitize all roads for towns that don't have a city outline.

-Digitize driveways(if they are outside of the city boundaries) and roads that dead-end.

-DO NOT digitize any Indian boundaries: they should be in B-bases.

-DO NOT digitize roads that fall within the cemetery boundaries.

-DO NOT digitize any jeep trails(single dashed lines) at all.

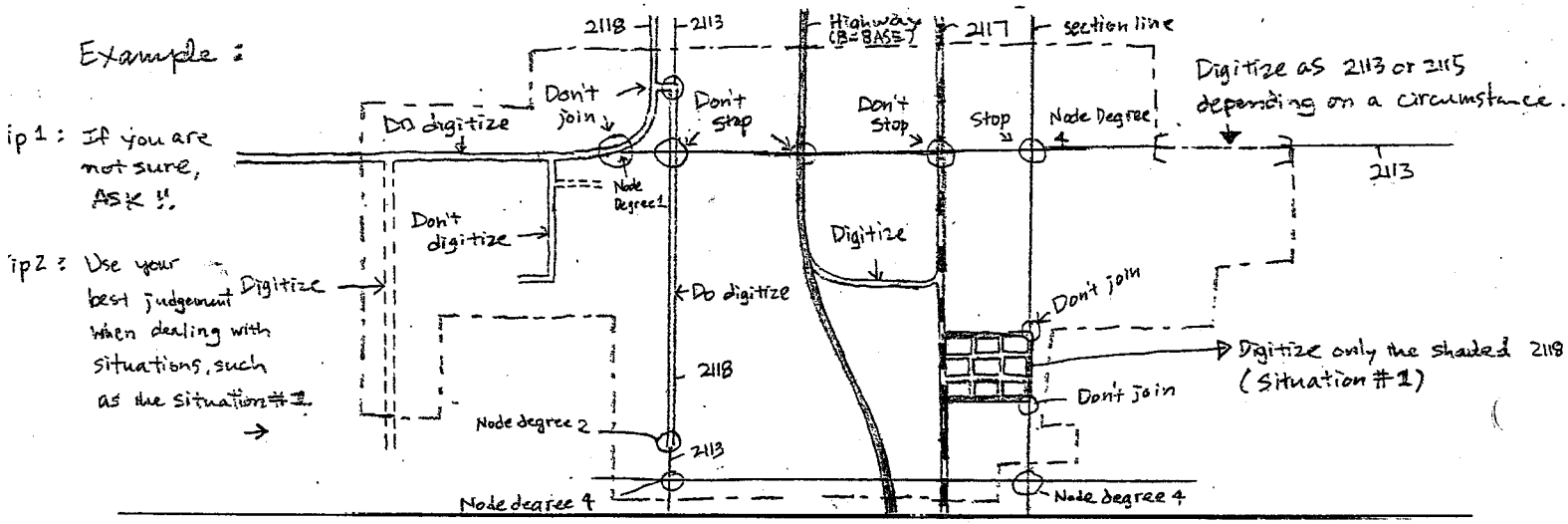
[Within the city and cemetery boundaries]

-DO NOT digitize roads inside the city boundary unless they are 2116 or 2117, or roads that fall on section lines.

-DO digitize section lines in the city boundary.

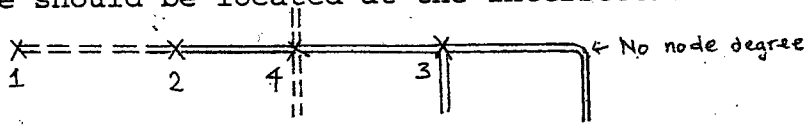
-DO digitize 2118 and 2119 if they are connecting major roadways(which includes the highways and 2116/2117 roads), and/or if they are connected to other 2118/2119 outside the city boudaries.

[Within the airport, and military or reservation boundaries]
- Treat these boudaries just like the city/cemetery boundaries. However, it is recommended to consult Gina and/or other students when deciding what to digitize.

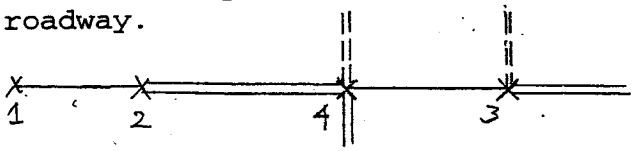


Node placement:

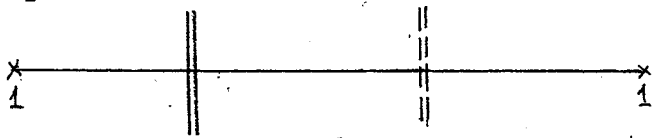
-A node should be located at the intersection of all roadways.



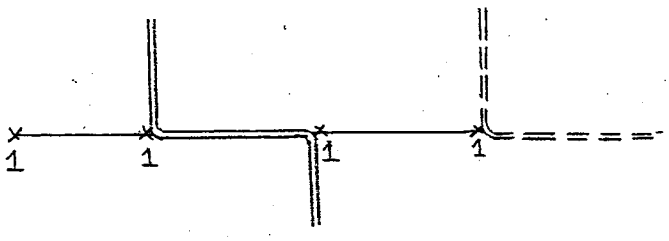
-A node should be placed where a section line joins with the center line of a roadway.



-DO NOT place a node where a section line goes over a roadway.



-DO NOT split a road so that you may create a node or join it to a section line.



Last updated on June/12/02

Highlighting ROADS on Topos Before You Begin...

--- This is a very helpful, but not required system. ---

Pull out your quad, and begin highlighting with highlighters.
Never use dark markers.
Never use this highlighting method on geology!

The followings are the commonly used colors:

2113 Section lines

2116 Primary roads(red solid non-highway roads)

2117 Secondary roads(red/white non-highway roads)

2118 Light-duty roads(double-solid or thick gray roads)

2119 Unimproved roads(double-dashed or thin gray roads)

Control Points

Projection

Map Year

City Boundaries*
* These are already in the B-bases, but it's very helpful to have them highlighted so you can avoid digitizing the roads within the city boundaries.

Also, it is helpful to 'MASK' the digitized arcs when editing*. The following is an example of masking roads in 'ge.'

1) 2117
2) 2119
3) 2113
4) 2118
5) 0
6) 2116

* See instructions in this manual for editing process and tips.

Last updated Jan/07/02

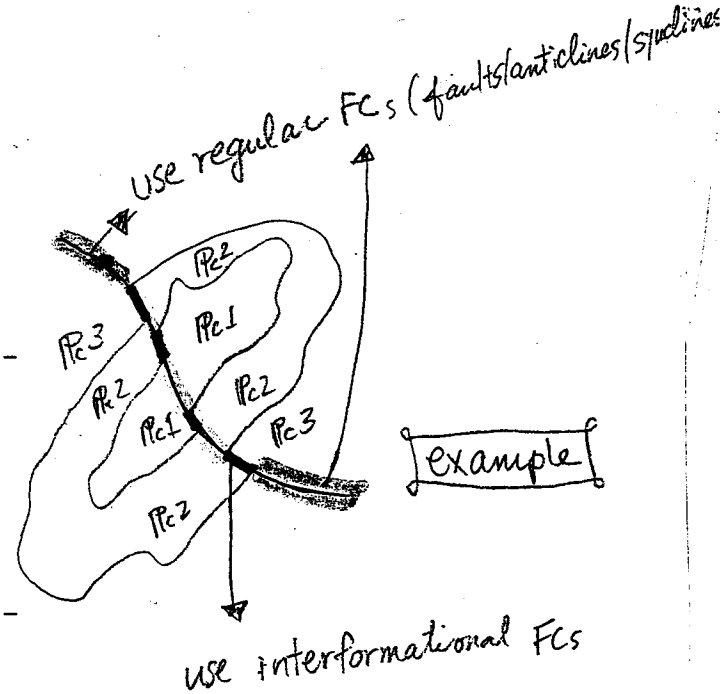
THE LIST OF FEATURE CODES AND TIPS FOR DIGITIZING GEOLOGY

610	2610	faults
620	2620	approx. faults
4230	4230	interformational faults
4240	4240	interformational approx. faults

2640	2640	anticline
2641	2641	approx.anticline
2645	2645	syncline
2646	2646	approx.syncline
4251	4251	interformation anticline
4252	4252	interformation approx. anticline
4253	4253	interformation syncline
4254	4254	interformation approx. syncline

4210	4210	geologic contacts
4220	4220	approx. contacts*
4221	4221	concealed contacts*
222	4222	non-zone arcs*

4281	4281	quarry/mine/pit boundaries
4281	4282	tailing boundaries



NOTE:

Feature codes* listed here are taken from Cherokee County. Though we try to be consistent, feature codes for approx., concealed, and non-zone contacts may differ from county to county. Please see the 'reademe.txt' file in the /home/kcd/projects directory because information like this should be in the every county's readme.txt file.

If there is no entry in the readme.txt file, discuss with Gina and other students(if there are any) who are working with you on the same project(county).

BUILD

```
chico% build xx1521h w
. . . LOADING ARC DATABASE    -  8
. . . LOADING POINT DATABASE  -  3
. . . LOADING NODE DATABASE   -  6

************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY

ENTER BUILD OPTION (-1 - 11) :
3

Enter Digitizer Session Number:
< enter number >

Map Header from input file:
 xx1521h_d2 joe LC 24000 PAPER 1980 mercator Fri Jul 21 12:21:44

Options are:

     1 = Continue
     0 = Change the Header
    -1 = Stop

Enter your option?
1

 xx1521h_d2 joe LC 24000 PAPER 1980 mercator Fri Jul 21 12:2...C

Node Recognition Threshold = 0.002500
Enter 1 to accept, 0 to reject?
1

X offset = 0.000000,  Y offset = 0.000000
Enter 1 to accept, 0 to reject?
1

Input Control Points:
```

```
    1.000    1.000
   18.871    1.000
   18.847   23.717
    1.007   23.721
    1.000    1.000

2 24000.000000

                    38.750000
          -99.625000            -99.500000
                    38.625000

    1.01571,   23.76243            18.84137,   23.76243
    1.00000,    1.00000            18.85708,    1.00000
                           0.99692


ANGC(1-4)= 0.000000 1.571853 -0.000224 1.570488

ANGP(1-4)=  0.000000 1.571487 0.000000 1.570106

A= -0.000131

**  **  Translation  X,Y  = 0.000000 0.000000
**  **  Scale Factor  X,Y = 0.999208 1.001912
**  **  Rotation Angle  SIN,COS = -0.000131 1.000000

*** Erroneous duplicate third point
*** Erroneous duplicate third point

** Number of Arcs  = 53   ** Number of Isolated Points = 0
** Number of Nodes = 102   ** Number of Interior Points = 2033
** Number of digitizer records skipped = 2

Enter 1 to delete digitizer session file, 0 to keep?
0  <--- BE CAREFUL!!

************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY

ENTER BUILD OPTION (-1 - 11) :
9

The Suggested Node Threshold is 0.020000
```

```
Enter the Node Threshold value?
< enter suggested threshold - .001 is recommended for all bases >

Threshhold = 0.020000

     ...   Phase I   ...
*** delete arc 49 -- zero length
*** delete arc 52 -- zero length
*** delete arc 54 -- zero length
     ....    Phase II    ....
     .....     Phase III     .....
     ......      Phase IV      ......

Number of Nodes = 52
Maximum Node Degree = 3
Maximum Number of Interior Nodes = 201


************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY

ENTER BUILD OPTION (-1 - 11) :
5
fixing folded arc = 7

************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY

ENTER BUILD OPTION (-1 - 11) :
9
```

```
The Suggested Node Threshold is 0.020000
Enter the Node Threshold value?
< enter suggested threshold - .001 is recommended for all bases >


Threshhold = 0.020000

     ...   Phase I   ...
*** delete arc 7 -- zero length
     ....    Phase II    ....
     .....     Phase III     .....
     ......      Phase IV      ......

Number of Nodes = 52
Maximum Node Degree = 3
Maximum Number of Interior Nodes = 201


************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY

ENTER BUILD OPTION (-1 - 11) :
0  <-- If you think you've made a mistake, enter -1 and start over.
. . . UPDATING ARC DATABASE     -  55 ** RECORDS (410) (50)
. . . UPDATING POINT DATABASE   -  276 ** RECORDS (410) (273)
. . . UPDATING NODE DATABASE    -  53 ** RECORDS (104) (52)
chico%
```

BUILD / INITIALIZING

```
chico% build xx1234h w
. . . LOADING ARC DATABASE    -  8
. . . LOADING POINT DATABASE  -  3
. . . LOADING NODE DATABASE   -  6
************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY

ENTER BUILD OPTION (-1 - 11) :
1

Projection possibilities are :

      -2 = LAMBERT CONFORMAL CONIC -NOT A STANDARD QUAD
      -1 = MODIFIED POLYCONIC - NOT A STANDARD QUAD
       0 = NO PROJECTION
       1 = MODIFIED POLYCONIC
       2 = LAMBERT CONFORMAL CONIC

Enter Projection type?
< enter number >

**** Base initialized

************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY
```

```
ENTER BUILD OPTION (-1 - 11) :
3


Enter Digitizer Session Number:
< enter number >

Map Header from input file:
 xx1521h_d2 joe LC 24000 PAPER 1980 mercator Fri Jul 21 12:21:44

Options are:

     1 = Continue
     0 = Change the Header
    -1 = Stop

Enter your option?
1

 xx1521h_d2 joe LC 24000 PAPER 1980 mercator Fri Jul 21 12:2...C

Node Recognition Threshold = 0.002500
Enter 1 to accept, 0 to reject?
1

X offset = 0.000000,  Y offset = 0.000000
Enter 1 to accept, 0 to reject?
1

Input Control Points:

    1.000    1.000
   18.871    1.000
   18.847   23.717
    1.007   23.721
    1.000    1.000

2 24000.000000

                    38.750000
          -99.625000             -99.500000
                    38.625000

    1.01571,   23.76243            18.84137,   23.76243
    1.00000,    1.00000            18.85708,    1.00000
                         0.99692


ANGC(1-4)= 0.000000 1.571853 -0.000224 1.570488

ANGP(1-4)=  0.000000 1.571487 0.000000 1.570106

A= -0.000131

**  **  Translation  X,Y  = 0.000000 0.000000
**  **  Scale Factor  X,Y = 0.999208 1.001912
```

```
**  **  Rotation Angle  SIN,COS = -0.000131 1.000000

*** Erroneous duplicate third point
*** Erroneous duplicate third point

** Number of Arcs  = 53    ** Number of Isolated Points = 0
** Number of Nodes = 102   ** Number of Interior Points = 2033
** Number of digitizer records skipped = 2
Enter 1 to delete digitizer session file, 0 to keep?
0

************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY

ENTER BUILD OPTION (-1 - 11) :
9

The Suggested Node Threshold is 0.020000
Enter the Node Threshold value?
< enter suggested threshold >

Threshhold = 0.020000

     ...   Phase I   ...
*** delete arc 49 -- zero length
*** delete arc 52 -- zero length
*** delete arc 54 -- zero length
     ....    Phase II    ....
     .....     Phase III     .....
     ......      Phase IV      ......

Number of Nodes = 52
Maximum Node Degree = 3
Maximum Number of Interior Nodes = 201


************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
```

```
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY

ENTER BUILD OPTION (-1 - 11) :
5
************ GIMMAP II - BUILD VERSION 1.21 ************

  -1 = EXIT BUILD - DO NOT SAVE CHANGES
   0 = EXIT BUILD AND SAVE CHANGES
   1 = INITIALIZE BASE
   2 = SHOW BASE PROJECTION PARAMETERS
   3 = ADD DIGITIZING SESSION TO BASE
   4 = ADD ARC/INFO GENERATE LINE FILE
   5 = REMOVE ZERO LENGTH AND DUPLICATE ARCS
   6 = JOIN ARCS WITH SAME FEATURE CODE
   7 = RECLASSIFY ARC FEATURE CODES
   8 = DELETES ARCS BY SELECTED FEATURE CODES
   9 = CREATE NODES FOR THIS BASE
  10 = CREATE ZONES FOR THIS BASE
  11 = ANALYSE ZONE TOPOLOGY

ENTER BUILD OPTION (-1 - 11) :
0
. . . UPDATING ARC DATABASE    -  55 ** RECORDS (410) (50)
. . . UPDATING POINT DATABASE  -  276 ** RECORDS (410) (273)
. . . UPDATING NODE DATABASE   -  53 ** RECORDS (104) (52)
chico%
```

****

SPECIAL INSTRUCTIONS FOR
LAMBERT CONFORMAL CONIC(LC) TOPOS with NORTHERN STANDARD PARALLELS

****

- **LC Northern Standard Parallels(see index map to find out if the quad you are working on needs to use the numbers listed below):**

NORTHERN PARALLELS : South = 38.716
North = 39.783

SOUTHERN PARALLELS : South = 37.266
North = 38.566

(*Note : Old index maps and/or instruction sheets may have North S=37.266, N=38.566, and South S= 37.716, N=39.783, but these numbers are not accurate.)

- When creating new databases in the counties that fall in the Northern parallel zone, use the Northern standard parallels listed above.

****

To create Lambert Conformal database in the Northern Standard Parallels

****

```
chico% cd /home/kcd/base/x
chico% ls xx1234b*w
 xx1234b_aw  xx1234b_nw  xx1234b_pw
```

a) Create a copy of the existing b base. Follow the example below. Use the letter g when digitizing geology, the letter n when digitizing roads.

```
chico% cp xx1234b_aw xx1234g(n)_aw
chico% cp xx1234b_nw xx1234g(n)_nw
chico% cp xx1234b_pw xx1234g(n)_pw
```

b) Edit the new database.

```
chico% ge xx1234g w
```

Cleared of ALL BUT ONE arc or arc point(= delete everything but leave one arc point). Choose a township line, section corner, or create your own but make sure there is one arc or arc point before exiting and saving.

- Digitize the g(n)_base arcs using xx1234g(n), and name the sessions in numerical order.
- **Run build, but DO NOT INITIALIZE.** Add all digitized sessions.

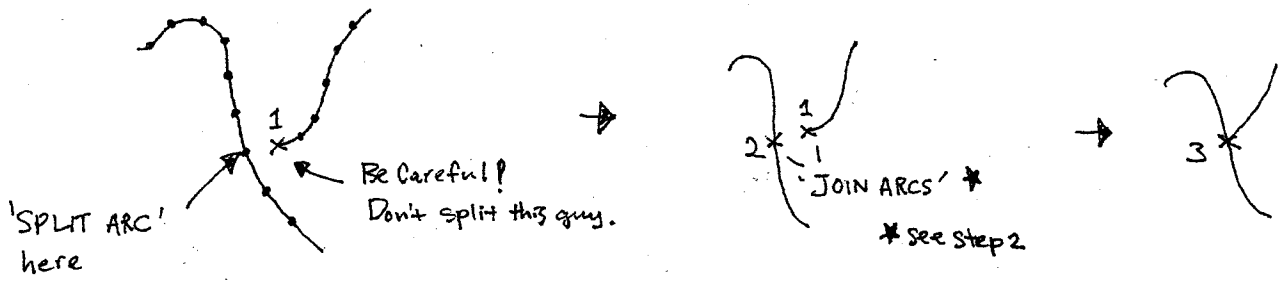
```
chico% ge xx1234g w
```

-while editing the g(n)_base, make sure to delete the arc or arc point that was there, or that you created earlier.

---- SPLITTING ARCS AND BRIDGING NODE DEGREES ----

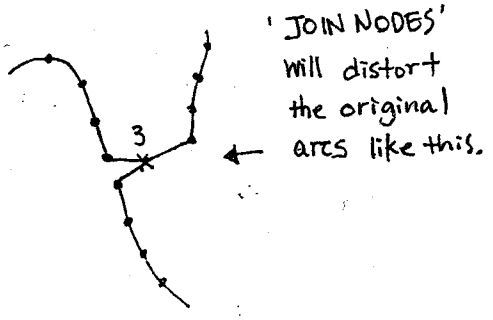
1. If you forgot to stop at the intersection of arcs when digitizing, and/or joined arcs before you joined nodes during the editing, you'll need to use the 'SPLIT ARC' option then join the node degrees(see the next 2 steps).

   Example:



2. You can join node degrees by using the 'JOIN NODES' option [click on a node degree then click on another one that you want the first one to be connected. You CANNOT join more than 2 node degrees at once.

   Example:

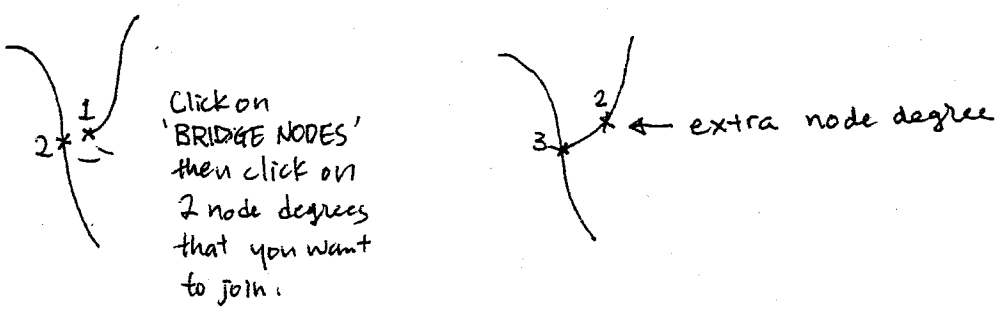


Solution 1 : use 'MOVE NODE' option to bring back the node to a right location

Solution 2 : use 'BRIDGE NODES' (See Step 3)

3. 'BRIDGE NODES' is another way to join node degrees. Sometimes the distance between the node degrees is great, so this is the safer way to join node degrees without distorting the original arcs.
   - This process will create extra node degree(s) that need to be joined by hand ('JOIN ARCS' option) or by running 'build - option 6.'

   Example:

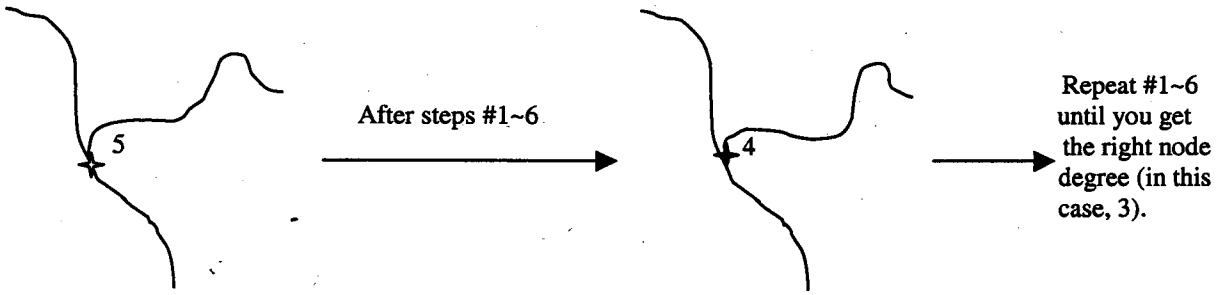


30/Oct/02

---- HOW TO FIX THE NODE DEGREES ----

1. If you notice the possible node degree problem, go to 'QUERY NODE.'
2. That will list node number(s), arc number(s), feature code(s) of arc(s), and if that node degree is in the view or not.
3. If you have more node degrees than you need. To get rid of the extra node degree(s), write down the arc number to which that extra node degree belongs.
4. Go to QUERY ARC, and click on the mouse middle button. Enter the desired arc number obtained in step #3 to make sure you go the right one.
5. Go to DELETE ARC, and click on the mouse middle button. Enter the arc you chose to delete from step #4.
6. Go to REFRESH, then go to QUERY NODE. If you still have the problem with the node degrees, repeat #1 - #6.

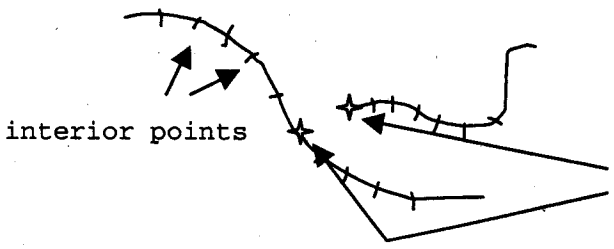
EXAMPLE



If you messed-up the node degree and get an error message on the screen, exit GE and at prompt type:

nodgen your base name w
(example*: nodgen xx1234n w)

*NOTE: Recommended threshold is .001.
(You don't need to be in a particular directory to run this program.)



Common node degree problem:

Node degree numbers don't appear on the screen.

Last updated 23/Sept/02

DIRECTORIES

****

PLEASE READ THE FOLLOWING IMPORTANT REMINDER ABOUT SCRIPTS.

If you are going to modify the script for the current projects, *it is highly recommended to make a copy of the original script* unless you created the original.

If updating the older project, make a copy of the original script and rename the original script to **.old.ps (or another distinctive name which won't be used mistakenly). **It is also important to note that by running MAPGEN2 on the script, you'll be modifying the map even if you don't change the content of the script** because the legends and possibly the dictionary files are constantly being updated. This brings us to the next reminder.

If you are going to create a script or dictionary file by copying, please pay extra attention because it's possible to accidentally enter and/or delete a letter or a space from the original. **NEVER CHANGE THE CONTENTS OF DICTIONARY OR SCRIPT OF THE COMPLETED PROJECTS**(unless you are updating them). One county's dictionary files could be used in other counties, so you could end up modifying other counties if you make a change in one file(this is the possible problem mentioned in the previous paragraph).

Please let other students, who are working on the same project with you, know before making changes to the script or files. Believe it or not, two people trying to modify the same script/file at the same time happens more often than you think, and causes some problems.

If you think you've messed up a script (or anything), contact Gina or an experienced student or Jim Deputy (if the restoration is required) immediately! Don't try to act natural.

The following is a list of commonly used directories that you should know;

>IF YOU WANT TO...

PRINT A DIGITIZED QUAD, etc.,
|
`--- GO TO : cd /home/kcd/scripts/<first letter of the county>

GET NAME(S) OF THE BASE(S) IN YOUR COUNTY/PROJECT,
|
`--- GO TO : cd /home/kcd/base/<first letter of the county>

GET NAME(S) OF THE DIGITIZED BASE(S) IN YOUR COUNTY/PROJECT,
|
`--- GO TO : cd /home/kcd/dig/<first letter of the county>

(continue -→)

(continued from the previous page)

GET ALL THE DICTIONARY FILES EVER CREATED FOR YOUR COUNTY/PROJECT,
|
`--- GO TO : cd /home/kcd/webster

KNOW MAP PROJECTION, SCALE, LAT/LONG, AND PAPER SIZE,
|
`--- GO TO : cd /home/kcd/webster/mappro

PRINT A 1:50(100),000 SCALE MAP,
|
`--- GO TO : cd/home/kcd/plot/<entire county name>

GET A COLOR DICTIONARY FILE FOR YOUR COUNTY/PROJECT,
|
`--- GO TO : cd /home/kcd/webster/cal

PRINT AN INDIVIDUALLY COLORED 1:24000 MAP('i' maps),
|
`--- GO TO : cd /home/kcd/geo24k/<entire county name>

Last updated Oct/10/02

***** INSTRUCTION FOR PRINTING MAPS *****

1) How to create a script.

type : textedit name of the script &
example: textedit fo24g.s.ps &

NOTE: use 'SCRIPTS' in the 'scripts' section of this manual as a guide.

2) To go to the directory where a plot will be made:

type : cd /home/kcd/scripts/the first letter of the county
example: cd /home/kcd/scripts/c

3) To find a script to be used to print a map(optional):

type : ls county abbreviation*
example: ls ca*

a) It'll list all the scripts available in the county that's been indicated.
example: ca24g.s.ps ca24g.s.ps%

b) If script created in step 1) doesn't appear, go back to the instruction for creating a script(or seek assistance). Go to step 4 otherwise.

4) To modify the script:

type : textedit script name &
example: ca24bn.s.ps &
!! DO NOT REPEAT THIS IF THE SCRIPT IS ALREADY OPEN !!
(Opening the same script multiple times will cause a problem)

a) The script created in step 1 will appear.

b) If the information remains the same, go to step 6. If the information needs to be changed, go to the next step.

c) To change the base information:
1. Click on 'Find' on top of the window (text editor).
2. Then click on 'Find and Replace' and find and replace window will pop up.
3. After 'Find' : Enter the base name(i.e.ca0217) that is currently appearing in the script.
4. After 'Replace' : Enter the new name(i.e. ca0218) that will replace the previous one(i.e.ca0217)
5. Click 'Replace All'
   - Now the script contains the new basename. The next step is to change the projection parameters.

d) To change projection parameters:
-Projection parameters can be obtained by typing:

option 1 : rafp base name w
example: rafp ck0358b w

----------→

(cont.)

```
chico% rafp ck0358b w
 FIRST=    468   LASTP=    467   MAXP=    467   USED=    464
 XMIN=  0.50000 YMIN=  0.50000 XMAX= 19.70789 YMAX= 24.25682
 LENGTH OF RECORDS IN BYTES= 72    View =     0
 MAP HEADER =  CK0358b_D1 MAPGEN LC 24000 7/24/92 GK
 PROJECTION PARAMETERS
 SOUTH= 37.125000 NORTH= 37.25000 EAST= -94.87500 WEST= -95.00000
 SOUTH STANDARD=  37.26666 NORTH STANDARD=  38.56667
 Projection =   2, Scale =     24000.0
 Row, Column =    3   58
```

e) Replace each projection parameters by hand.
DO NOT USE 'Find and Replace' for this.

f) Save and go to step 6.

6) To print: RUN 'MAPGEN2' ON YOUR SCRIPT

type : `mapgen2 script name > out`

---> Read the instruction for actual running of the mapgen2 which includes notes for printing(step(7)) in the 'MAPGEN' section of this manual.

!! DON'T FORGET TO TYPE '2' AFTER 'MAPGEN' !!
('MAPGEN' is a completely different program that you don't want to mess with!)

type : `tail out` (to see if mapgen2 reports any errors)

type : `xarcpress` (to preview the plotfile before sending it to the plotter)

7) To send a plotfile to the plotter:

type : `lpr -Pachp (output file name such as xx1234n.hp) and hit return`

8) Overlay plotfile (printed map) onto the original input source map and check for errors. If the errors are found, correct them, and print the map again.

9) Have the map check by the other student(s). Repeat steps 8-9 until the map (a base) is completely done. Then make a final plot.

SCRIPTS

****

1) How To Create a Whole New Script by Copying and Pasting

Format of the scripts for the same-type base are generally the same as you can see in the examples below, so the easiest way of creating a new script is to copy one from another project. [NOTE: **llgrid** command is always in one line, but it's in two lines in the examples due to the spacing.]

A) If you know that there is no script for your project:
type; textedit name of script & (i.e. textedit fo24g.s.ps &)
and click on the confirm button.

B) Open another script that was created for the same base-type in another commandtool window. Copy the entire script by pressing and holding the left button of the mouse to highlight the contents, and press COPY button on the keyboard.

C) Move the flashing prompt to the script that you created in A), and press PASTE button.

D) Modify the script to fit your project. Follow the step 4) in the Instruction For Printing Maps in this section of the manual.

Clark Co. 1:24000 roads
ca24bn.s.ps

```
ps      ca24bn.map.ps ck.pendef ck.ps 8
mappro ca0217
arcs    *ca0217b_aw bb.fcodeltype.roads .001
arcs    *ca0217b_aw bb.fcodeltype.cnty .001
arcs    *ca0217n_aw bb.fcodeltype.roads .001
arcs    *ca0217b_aw * .0
1100 1199 1 101
.2
-1 0 0 0
llgrid -1 0 37.0 37.125 -100.125 -100.0
.04166667 .04166667 2
symb    *ca0217n_aw *
4000 4000 1
-1 0 0
quit
```

Neosho Co. 1:24000 roads
no24bn.s.ps

```
ps      no24bn.map.ps no.pendef no.ps 8
mappro no0756
arcs    *no0756b_aw no.fcodeltype.roads 0.01
arcs    *no0756n_aw no.fcodeltype.roads 0.01
arcs    *no0756b_aw no.fcodeltype.cnty 0.01
arcs    *no0756b_aw * .0
1100 1199 1 101
.2
-1 0 0 0
llgrid -1 0 37.625 37.75 -95.125 -95.25
.04166667 .04166667 2
symb    *no0756n_aw *
4000 4000 1
-1 0 0
quit
```

2) How To Create a Whole New Script by Using COPY Command

Go to step 2 of KCD.COPY instruction in the Appendix section of this manual.

NOTE: As already emphasized in the Directories in this section, please be careful when copying and pasting from another script. Read that page if haven't already.

Last updated Oct/10/02

RAFP

****

rafp(a.k.a. 'rafprint'): this program outputs specific projection parameters, scale, projection, and header information about a specific base. You don't need to be in a certain directory to run this program.

EXAMPLE:

```
chico% rafp gh2016b w
 FIRST=    289   LASTP=    288   MAXP=    288   USED=    285
 XMIN=  1.00000 YMIN=  0.99703 XMAX= 18.70439 YMAX= 23.77010
 LENGTH OF RECORDS IN BYTES= 72    View =     0
 MAP HEADER =  GH2016B_D2 WW 15-SEP-87 LC 24000. 1979                    ...C
 PROJECTION PARAMETERS
 SOUTH= 39.25000 NORTH= 39.37500 EAST= -100.12500 WEST= -100.25000
 SOUTH STANDARD=  37.26666 NORTH STANDARD=  38.56667
 Projection =   2, Scale =     24000.0
 Row, Column =   20  16
```

NOTE: It is the best to use B-bases for rafp print. **DO NOT use M-bases if you are trying to get the projection parameters, projection, and scale for 1:24K maps.**

Last updated on 10/Oct/02

kcd.maplist

****

Location: cd /home/kcd/base/maplist

- This is the file you enter whenever the program asks:

```
"...Precede Names file name with '*' if file is direct "
          *basename_aw      (if a direct file is used)
          bb.b              (if a list file is used)
```

-Maplist is the list of the selected bases, such as a list of all H-bases and symbol bases in the county or project. When you need to use more than one basename, create a maplist file. When only one basename is needed, enter the basename directly as shown in the example above.

Example:
```
tulum% cd /home/kcd/base/maplist
tulum% ls bb*
bb.b          bb.bh          bb.cymballist  bb.h          bb.n
bb.bg         bb.bn          bb.g           bb.m
```

- Inside bb.b is the list of ALL b-bases in this county;

```
BB0757b_AW
BB0758b_AW
BB0759b_AW
BB0760b_AW
BB0761b_AW
BB0857b_AW
BB0858b_AW
BB0859b_AW
BB0860b_AW
BB0861b_AW
BB0957b_AW
BB0958b_AW
BB0959b_AW
BB0960b_AW
BB0961b_AW
BB1057b_AW
BB1058b_AW
BB1059b_AW
BB1060b_AW
BB1061b_AW
```

HOW TO CREATE A NEW MAPLIST FILE.

1. Go to cd /home/kcd/base/maplist
2. Type: textedit < name of the file > &
3. Enter the names of bases.

Last updated 10/Oct/02

kcd.mappro_24k

****

[HOW TO MAKE A MAPPRO FILE FOR 24000 MAPS]

1) 'rafp' print your base(normally we rafp print B-base)

EXAMPLE:

```
chico% rafp gh2016b w
FIRST=    209   LASTP=    208   MAXP=    208   USED=    205
XMIN= 12.30165 YMIN= -0.00251 XMAX= 19.70438 YMAX= 24.77010
LENGTH OF RECORDS IN BYTES= 72    View =     0
MAP HEADER =  GH2016B_D2 WW 15-SEP-87 LC 24000. 1979                    ...C
PROJECTION PARAMETERS
SOUTH= 39.25000 NORTH= 39.37500 EAST= -100.12500 WEST= -100.25000
SOUTH STANDARD=  37.26666 NORTH STANDARD=  38.56667
Projection =   2, Scale =     24000.0
Row, Column =   20  16
```

2) Go to cd /home/kcd/webster/mappro

a) 'list' your county by typing in **ls county abbreviation***

b) make sure that the file you are trying to create doesn't exist. Then type **textedit xx1234(county abbreviation + map number)&**

c) confirm the creation of the new file. This will give you a new window for you to enter the following information:

```
        ------------------
[1] --- 2
[2] --- 24000
[3] --- 39.25 39.75
[4] --- -100.25 -100.125
[5] --- 33 45 ---------------> Used ONLY for a county or state-
[6] --- 0 0                    wide map; see special instructions
    --- 24 24                  in BUILD section of this manual for
        ------------------     1:24k scale individual bases.
```

EXPLANATION:

[1] --- 2 : projection*
- a)'1' for Modified Polyconic Projection(MP)
- b)'2' for Lambert Conformal(LC) and UTM

[2] --- 24000 : scale

[3] --- 39.25 : South latitude 39.75 : North latitude

[4] --- -100.125 : West longitude* -100.125 : East longitude*

***Note - this order is different from the one shown in rafp print**

[5] --- South and North standard parallels ONLY when the map is LC.
(i.e. 38.71666 39.78334 ---- at the 1:24k scale individual bases
or 33 45 ------------ at the county or state-wide bases)

[6] --- 0 0
} Canvas size
24 24

Last updated Dec/19/01

kcd.fcodeltype

****

/home/kcd/webster/(i.e. county abbreviation.fcodeltype, mg.fcodeltype)

```
1200 1200   3 105 .06 0 0     city circle
2111 2112 225 200 0 0 0       township and range
2410 2411 289 200 0 0 0       hyd
2420 2421 289 201 .05 .05 0   hyd intermittent
2451 2451  11 200 0 0 0       dam
2460 2460  10 200 0 0 0       levee
2610 2610   6 200 0 0 0       faults
2620 2620   6 201 .05 .05 0   approx. faults
2640 2640 386 200 0 0 0       folds anticline
2641 2641 386 201 .05 .05 0   approx. folds anticline
2645 2645 386 200 0 0 0       folds syncline
2646 2646 386 201 .05 .05 0   approx. folds syncline
3000 3000 300 200 0 0 0       elevation contours
3250 3300 301 200 0 0 0       elevation contours at 50 meters
4050 4050   3 200 0 0 0       bottom line of cross-section bases
4110 4111 289 200 0 0 0       hyd
4120 4150 289 200 0 0 0       hyd intermittent
4210 4210   1 200 0 0 0       geologic contacts
4213 4213   9 200 0 0 0       line of cross section
4214 4214   9 201 .04 .04 0   line of cross section discontinuity
4220 4220   1 201 .05 .05 0   approx. contacts
4230 4230   6 200 0 0 0       inter-formational faults
4240 4240   6 201 .05 .05 0   approx. inter-formational faults
4340 4340   1 200 0 0 0       city bnd
```

```
 \    /    /   /  |  \  \       |
  #1    #2  #3  #4  #5 #6      #7
```

EXPLANATIONS

#1 : feature code range

#2 : pen number

#3 : line/symbol type code

#4 : dash length

#5 : gap length

#6 : double-line separation distance

#7 : feature description

kcd.pendef

****

/home/kcd/webster/(i.e. county abbreviation.pendef, bhbase.pendef)

1	1	0	0	0	city shading, cityttl
2	2	0	0	0	
3	3	0	0	0	
4	4	0	0	0	author, scale bars boxed, groups
5	5	0	0	0	
6	6	0	0	0	county line
7	7	0	0	0	
8	8	0	0	0	
9	9	60	60	60	lt grey for (i.e. quad edges)
10	2	30	30	30	grey
11	2	40	20	0	brown
12	2	60	40	20	lt. brown
13	2	100	80	0	yellow
14	2	85	45	0	dk. yellow
15	2	100	0	0	red
16	2	50	0	100	purple
17	2	30	20	90	violet
18	2	100	0	100	magenta
19	2	0	0	100	blue
20	2	10	20	40	med blue
21	2	30	50	70	lt. blue
22	2	0	40	40	teal
23	2	0	100	0	green
24	2	20	30	0	dk green
25	2	0	60	0	med green
26	2	0	90	90	lt. teal

#1	#2	#3 R	#4 G	#5 B	#6

EXPLANATIONS

#1 : Arbitrary number

#2 : Pen thickness

#3 : Red %

#4 : Green %

#5 : Blue %

#6 : Description(Normally it doesn't describe the color alone)

NOTE: RGB - color definition

kcd.cymplt 28/Oct/02

****

/home/kcd/webster/(i.e. county abbreviation.cymplt, mg.pendef)

```
50   50   1    scale 1:50000
1100 1100 1    dots in strat column
1110 1110 1    circles
1111 1111 225 section corner labels
1200 1200 1   city labels
2111 2112 225 township and range labels
2113 2113 121 section line
2161 2162 1   lat/long labels
2200 2200 338 highway labels
2210 2210 659 highways in legend
2252 2252 52  white highway labels
2310 2310 282 railroad labels
2410 2411 289 lineal perennial stream labels
2420 2421 289 intermittent stream labels
2460 2460 1   levee and dam labels
2610 2620 2   fault
2640 2641 226 anticline labels
2645 2646 226 syncline labels
3000 3999 301 contour elevations
4002 4002 20 quad parameters
4010 4010 1   strat lines
4110 4111 289 areal perennial stream labels
4120 4121 1   permanent lake labels
4145 4145 290 inundation area (dashed)
4210 4210 1   geology labels
4214 4214 3   lines of cross-section labels
4231 4231 6   fault labels
4310 4310 1   state labels
4320 4320 1   county labels
4330 4332 1   quadnames & numbers for index
5001 5001 1   logo
5002 5002 2   KGS
5003 5003 5   main title
5004 5004 2   authors
5005 5005 1   other authors
5006 5006 1   systems
5007 5007 1   series
5008 5008 1   groups
5009 5009 1   formations. in/out box legend
5010 5010 1   box-legend twnshp-box, conversion-tbl
5011 5011 1   small title,twnshp-boxttlconversion-tblttl,northarrow,scale,etc
5012 5012 1   scale bars
5013 5013 1   authors legend
  \   /   |     |
    #1    #2    #3
```

Pen numbers for some features may vary from county to county, but white highway label's FC and Pen# should always be the same.

EXPLANATIONS

#1 : feature code range

#2 : Pen number

#3 : description

kcd.polycolors

****

/home/kcd/webster/cal/xx.ps

			R	G	B		
1	**17**	**-1**	**0**	**0**	**0**	**8**	**Qal Alluvium Recent & Wisconsian St, Quaternary**
2	45	-1	90	90	90	8	Qti Terrace Deposits, Illinoian St, Quaternary
3	21	-1	90	90	40	8	Qtu Terrace Deposits,Quaternary
4	62	-1	90	60	40	8	Qtk Terrace Deposits, Kansan St, Quaternary
5	74	2	100	40	20	8	TQ Terrace Deposits, Nebraskan St, Tertiary
6	117	2	100	30	0	8	T Terrace Deposits, Tertiary
7	493	-1	40	50	80	8	Pa, Admire Gp, Wolfcampian Ser, Permian
8	99	-1	0	0	0	8	Pw5 Wabaunsee, Gp, Virgilian Ser, Pennsylvanian
9	82	-1	0	0	0	8	Pw4 Wabaunsee Gp, Virgilian Ser, Pennsylvanian
10	87	-1	0	0	0	8	Pw3 Wabaunsee Gp, Virgilian Ser, Pennsylvanian
11	100	-1	0	0	0	8	Pw2 Wabaunsee Gp, Virgilian Ser, Pennsylvanian
12	107	-1	0	0	0	8	Pw1 Wabaunsee Gp, Virgilian Ser, Penn, inner border
18	690	-1	0	0	0	8	lakes

NOTE: RGB - color definition

EXPLANATION

1 : Arbitrary number

17 : Palette color number*

*See the printed color palette(not included in this manual) for the complete list of color numbers

-1 : a) use -1 for the palette color
b) use 2 for a custom made color

0 : Red*

0 : Green*

0 : Blue*

*When using the custom made color, 'kcd.pendef' in this manual will be useful as a reference.

8 : Paper size

Qal : Feature description

Important Reminder:

Always include the colors 1013~1024 (see right) even when those colors are not being used. MAPGEN2 will keep reporting errors until the complete set of color ranges on the right is entered.

```
1013 1013 -1 0 0 0 8
1014 1014 -1 0 0 0 8
1015 1015 -1 0 0 0 8
1016 1016 -1 0 0 0 8
1017 1017 -1 0 0 0 8
1018 1018 -1 0 0 0 8
1019 1019 -1 0 0 0 8
1020 1020 -1 0 0 0 8
1021 1021 -1 0 0 0 8
1022 1022 -1 0 0 0 8
1023 1023 -1 0 0 0 8
1024 1024 -1 0 0 0 8
```

LINE/POINT CODE LIST

Point Codes:

CODE	SYMBOL	CODE	SYMBOL	CODE	SYMBOL
101	+ Plus (dflt.)	107	Fiducial	115	Misc. Well
102	Letter X	108	Hexagon	121	Inv. Triangle
103	Asterisk*	111	Oil Well	131	Solid Circle
104	Square	112	Gas Well	132	Solid Triangle
105	Circle	113	Oil & Gas well	133	Solid Square
106	Triangle	114	Dry Hole		

Line Codes:

CODE	LINE TYPE	CODE	LINE TYPE	CODE	LINE TYPE
200	Solid (dflt.)	203	Hashed	206	Long/Short/Short
201	Dashed	204	Double-dashed		
202	Double	205	Long/Short Dashed		

Examples:

```
arcs   *mgroads_aw * .005
1200 1200 2 105-------------> [Low FC] [High FC] [Pen] [Line/Symbol Code]
.06           -------------> [Symbol Size]
-1 0 0 0      -------------> [Enter new set of FCs or -1 0 0 0 to stop]


arcs *mgroads_aw * 0.0
4213 4213   9 200  -------------> [Low FC] [High FC] [Pen] [Line/Symbol Code]
4214 4214   9 201  -------------> [Low FC] [High FC] [Pen] [Line/Symbol Code]
.04 .04 0          -------------> [Dash Length] [Gap Length]
-1 0 0 0           -------------> [Enter new set of FCs or -1 0 0 0 to stop]


arcs   *legroad_aw * .005
2200 2299 1 202    -------------> [Low FC] [High FC] [Pen] [Line/Symbol Code]
.025               -------------> [SEPARATION distance for Double lines]
-1 0 0 0           -------------> [Enter new set of FCs or -1 0 0 0 to stop]
```

Last updated 10/Oct/02

Shading Polygons With Lines

****

(kcd.boundary)

There are two ways to create boundary(shades):
1. interactively,
2. by creating a dictionary in /home/kcd/webster

1. To enter interactively in the scripts, follow the format:

```
boun *<name of the file or maplist>*
<zone#> <boundary pen#> <fillpen#>
<angle>
<separation distance>
<linetype>
<dash length> <gap length>
<enter a new zone/bound/fillpen# OR -1 -1 -1 to stop>
```

EXAMPLE:

```
boun   *mgcitys_aw *
55 1 1
45
.05
1
-1 -1 -1
```

2. To enter by creating a dictionary(it MUST be created in /home/kcd/webster):

(a) create & name it <county abbreviation>.bound,
(b) and it should be in the following format exactly;
<zone> <boundary> <fillpen> <angle> <separation> <linetype> <dash> <gap>

EXAMPLES:

```
55 1 1 45 .05 1 0 0
```

and it should look like this in the scripts:

```
boun *mgcitys_aw mg.bound
```

Last updated Dec/19/01

kcd.scripts.50k
****

[This scripts named 'mg.s.ps' and is located in the directory
/home/kcd/plot/montgomery]

output file name created in /home/kcd/webster
\ /
ps mg.map.ps mg.pendef mg.ps 12 <- paper size
\
created in /home/kcd/webster/cal

```
mappro mg
trans  0 7 1 1 0 .5 .5
symbol *montbox_aw *
4000 4000 9
4002 4002 20
-1 0 0
zones  mg.m *all 1
zones  *mgroads_aw *all 1
zones  *mgnewlk_aw *all 1
boun   *mgnewlk_aw *
50 290 290
0
.06
2
.05 .05
-1 -1 -1
arcs   *mgeleva_aw mg.fcodeltype .005
arcs   *mgroads_aw mg.fcodeltype.roads .01
arcs   *mgroads_aw 50.fcodeltype.hwy .01
arcs   mg.m mg.fcodeltype .005
zones  *mglakes_aw *all 1
arcs   mg.bh mg.fcodeltype .005
arcs   *mgcitys_aw mg.fcodeltype .005
arcs   *mgroads_aw * .005
1200 1200 2 105
.06
-1 0 0 0
arcs   *mgroads_aw mg.fcodeltype.city .005
arcs   *mgqdlns_aw mg.fcodeltype.cnty 0.0
symb   *mgqdlns_aw mg.cymplt
symb   mg.cymballist mg.cymplt
arcs   *montbox_aw mg.fcodeltype.cnty .005
symb   *montbox_aw mg.cymplt
arcs   *montbox_aw mg.fcodeltype .005
boun   *mgcitys_aw *
55 1 1
45
.05
1
-1 -1 -1
arcs *mgroads_aw * 0.0
4213 4213   9 200
4214 4214   9 201
```

```
.04 .04 0
-1 0 0 0
tran   3.545 4.2168  1 1  0  6.75 4.5
zones  *mgcrowe_aw *all 1
arcs   *mgcrowe_aw mg.fcodeltype .005
symb   *mgcrowe_aw mg.cymplt
tran   3.545 4.2168  1 1  0  2.725 8.5
zones  *mgcrons_aw *all 1
arcs   *mgcrons_aw mg.fcodeltype .005
symb   *mgcrons_aw mg.cymplt
trans  3.545 4.2168 .95 .95 0 41.15 23.25
zones  *mgstrat_aw *all 1
arcs   *mgstrat_aw * .005
3000 3000 1 200
3005 3005 4 200
3006 3006 2 200
-1 0 0 0
symb   *mgstrat_aw mg.cymplt
trans  3.545 4.2168 1 1 0 14.1 6.35
arcs   *mgtwshp_aw mg.fcodeltype.box 0.0
symb   *mgtwshp_aw mg.cymplt
trans  3.545 4.2168 1 1  0 29.5 6.225
arcs   *mgquads_aw mg.fcodeltype.st .005
symb   *mgquads_aw mg.cymplt
trans  3.545 4.2168 1 1  0 34.5 7.5
zones  *mgindex_aw *all 1
arcs   *mgindex_aw mg.fcodeltype.st .005
symb   *mgindex_aw mg.cymplt
trans  3.545 4.2168 1 1 0 22.8 5.90
arcs   *cmgeola_aw cm.fcodeltype.box 0.0
symb   *cmgeola_aw cm.cymplt
trans  3.545 4.2168 1 1 0 25.6 5.9
arcs   *legfold_aw mg.fcodeltype.box 0.0
symb   *legfold_aw mg.cymplt
trans  3.545 4.2168 1 1 0 44.25 20.25
zones  *cfhydra_aw *all 1
arcs   *cfhydra_aw mg.fcodeltype.box 0.0
symb   *cfhydra_aw mg.cymplt
trans  3.545 4.2168 1 1 0 39.25 20.25
arcs   *legroad_aw mg.fcodeltype.box 0.0
arcs   *legroad_aw 50.fcodeltype.hwy 0.0
symb   *legroad_aw mg.cymplt
trans  3.545 4.2168 1 1 0 41.75 20.25
arcs   *legcnty_aw mg.fcodeltype.box 0.0
symb   *legcnty_aw mg.cymplt
trans  3.545 4.2168 1 1 0 20.0 5.9
arcs   *legindx_aw mg.fcodeltype.box 0.0
symb   *legindx_aw mg.cymplt
trans  0 0 1 1 0 36.1 20.0
symb   *sangrav_aw rl.cymplt.exp - - - - - - -
trans  0 0 1 1 0 36.1 19.5                    \
symb   *sandbox_aw rl.cymplt.exp               \
trans  0 0 1 1 0 36.1 19.0                      \
symb   *shclays_aw rl.cymplt.exp                 \
trans  0 0 1 1 0 38.6 20                          \
symb   *blacksh_aw rl.cymplt.exp
trans  0 0 1 1 0 38.6 19.5                *Make sure that these
```

```
symb   *soilbox_aw rl.cymplt.exp                  are in the same order
arcs   *soilbox_aw rl.fcodeltype.exp 0            as the Rockchart.
trans  0 0 1 1 0 38.6 19
symb   *calcash_aw rl.cymplt.exp              /
arcs   *calcash_aw rl.fcodeltype.exp 0         /
trans  0 0 1 1 0 41.1 20                      /
symb   *coallig_aw rl.cymplt.exp             /
zones  *coallig_aw *all 1                   /
trans  0 0 1 1 0 41.1 19.5                 /
symb   *limesto_aw rl.cymplt.exp           /
arcs   *limesto_aw rl.fcodeltype.exp 0 - - -
quit
```

Last updated July/10/02

HOW TO RUN ZONG

ZONG IS A PROGRAM CREATED TO GENERATE ZONES IN WHICH TO ADD COLORS. IT IS USED ON M-BASES, XXLAKES BASES, STRATIGRAPHIC COLUMNS, CROSS SECTIONS, AND XXCITYS BASES. YOU DO NOT NEED TO BE IN A PARTICULAR DIRECTORY TO RUN THIS PROGRAM.

1) Determine feature code ranges needed from m-bases.
   These normally include 4000-4003
   4200-4299
2) Determine color numbers.
   These can be found:
   chico% cd /home/kcd/webster/cal
   chico% ls xx*
   chico% textedit xx.ps &
   The first column contains color numbers.
   Pick an unused number as a default color for zong.
   This will help you see which zones have not been
   correctly colored when you are editing in GE/Zones.

EXAMPLE:

```
chico% zong xx1234m w

Enter 1 to initialize, 0 to re-enter?
1

Enter number of code ranges (1-5)?
< enter number >

Enter low, high codes for range 1?
< entering the specific range is preferred OR enter 4000, 9000>

Enter verbosity level (0=low,1=med,2=high)?
0
Enter default mark size for all new zones?
.05
Color options are:

      0 = Colors of new zones set to zone numbers
      1 = Set a default color for all new zones

Enter option?
1
Enter Default color for new zones?
< unused color number(99 is recommended*) >
      (*this number 99 is an arbitrary number which is not actually assigned a
       color. In some counties, 99 could be assigned a color, so check color
       dictionary for the nearest unassigned number)

Enter approximate percentage of simple islands?
10
Enter approximate percentage of code-qualified arcs?
10
```

```
     ***   ZONE FILE INITIALIZATION   ***


     ***   BORDER FILE INITIALIZATION   ***
     * * * ->   PHASE I.....                    --------------------.
               --***--                                              |
     MAX NEW BORDER RECORD USED =   2          [If you get an error message
            --***--                            after any of these phases, the
                                               program will abort and you'll
                                               need to make the corrections
 * * * ->   PHASE II.....                       as listed. Then run ZONG
                                               again.]
                                                                    ^
 * * * ->   PHASE III.....                                         |
                                                                   |
RRRRRRRRRRRRR----> ARC   2 (BORDER   2) REVERSED                   |
*III* END OF SIMPLE ISLAND   2 WITH   1 LINKS *III*               |
COLOR   XCM      YCM     SIZE  IPFBR ISLWI  ISLOF  NEXTI IPFLR    |
    5  2.4516   8.7152 0.05     2     0       2      0    0       |
PERIMETER     AREA     XMIN     YMIN     XMAX     YMAX            |
 31.2279     12.5757   1.9640   1.9680   3.1560  15.4490          |
      ------------------------------------------------            |
                                                                   |
                                                                   |
 * * * ->   PHASE IV.....          --------------------------------`


*-*-*-*-*-*-*-*-* ZONGEN REPORT *-*-*-*-*-*-*-*-*
**  TOTAL NUMBER OF ZONES =   11 <---------[Record this # for reference]
**  TOTAL NUMBER OF BORDER RECORDS =   31
**  TOTAL NUMBER OF SIMPLE ISLANDS =   1 <------[Record this #. Simple Islands
**  NUMBER OF 1 LINK SIMPLE ISLANDS =   1        need to be linked with zones.]
**  NUMBER WITH MORE THAN 1 LINK =   0
**  NUMBER OF COMPLEX ISLANDS =   1 <----- [This # is usually 1.]
**  NUMBER OF ARCS REVERSED =   1
**  NUMBER OF ZONES WITH 0 AREA =   0
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*
. . . UPDATING ARC DATABASE    -  429 ** RECORDS (1) (385)
. . . UPDATING POINT DATABASE  -  690 ** RECORDS (254) (687)
. . . UPDATING BORDER DATABASE -  2 ** RECORDS (1) (1)
. . . UPDATING ZONE DATABASE   -  2 ** RECORDS (1) (1)
```

---

3) After zong has been completed successfully, do the following in GE/Zones:
(see the instruction for how to edit zones(m-bases))

> NOTE: the program will not run(it'll abort itself) if there are more than 10,000 arcs in the base. If this happens, divide that base into two or more bases.
>
> For example, there are 2 lake bases in Cherokee County
>
> 1)cklakeb - Bbase areal hydrology(4110-20)
>
> 2)cklakeh - Hbase areal hydrology(4121-41)
>
> because the base originally created(cklakes) contained more than 10,000 arcs.

Last updated Oct/10/02

HOW TO EDIT ZONES AFTER RUNNING ZONG

(refer to the previous page for actual running of ZONG)

'ge' your base

1) click on EDIT ZONES (in command column)
2) click on COLOR ZONES (in command column)
A) Click OK*
(*You've already attributed the default number of 99 when running zong, so you do not need to enter default number again. Just click OK.)

- move zone marks(tick marks) within the individual zones by using the left button. Put the zone marks in the center or in an open area so it's easier to locate them later, if necessary.

- when you come across a zone with simple island(s), click on the middle button to find out its zone number, and click on CANCEL after writing down zone number to resume COLOR ZONES. If you click on the right button, it'll cancel the COLOR ZONE option, and you'll need to start all over.

3) Click on ISLAND LINKS (in command column) after step 2) is completed
-middle button on mouse brings up the QUERY ZONE box. Type in zone number with islands from your list when you were moving zone marks with COLOR ZONES.

-left button links the islands, middle button UN-links them

-make sure you count the number of islands linked. Match and confirm number of islands created by zong.

4) Click on LINK ISLANDS (in command column)
-make sure all islands are linked to their respective zones(the ploygons that enclose them).

5) QUIT and SAVE CHANGES (in command column)
this is necessary because you don't want to repeat all the steps above if the program quits unexpectedly.

6) EDIT ZONES and EDIT SYMBOLS
A) Click on QUERY ZONE or EDIT SYMBOLS
<Refer to paper/mylar for geology>
- change the color number 99 to the zone color that is assigned to that particular formation in the color dictionary
- place labels and/or symbols according to the original map

-Exterior polygons* should be colored 99.
*These are the polygons that lie in between the county edge and the quad edge.

B) Quit and save changes OFTEN!!

7) FINAL CHECK before turning it in
-in xarcpress window, look for any mis-colored/labeled or non-colored zones and correct them.

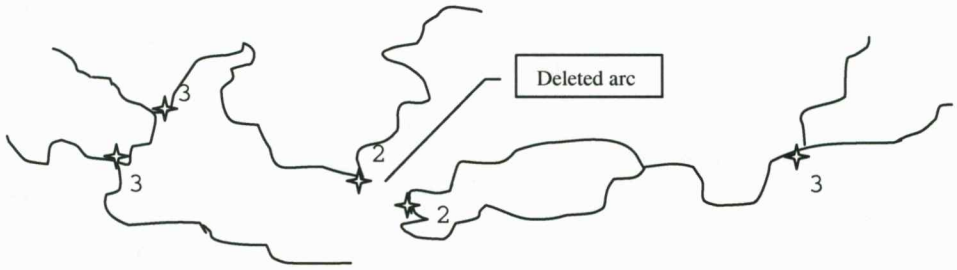
10/Oct/02

ZONG : note

****

-> also see TILE.note <-

When running zong, it will not recognize arcs that have no interior points. The program will then delete any arc which contains no interior points. In zong, there may or may not be nodes remaining where the arc used to be.



(the deleted arc needs to be drawn back in using the same feature code)

When digitizing, make sure to have at least 2 interior point in each arc. This may not apply to roads because the length of arcs is generally great.

If you realize that the arc(s)is missing and/or when you need to modify the arc(s) after the M-bases were created, make changes to both G and M bases. Digitize the new(or revised) line(s) in G-base, edit, then run MAPGEN to bring that data to the M-base. Rerun ZONG and recolor. This will not affect the symbol base.

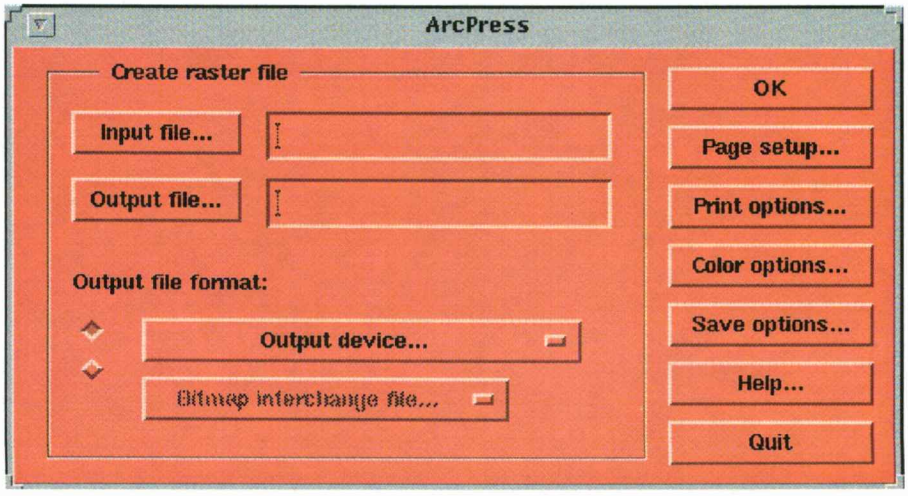
MAPGEN2

---

1)To start the program:
(see the detailed instruction for printing maps in the 'scripts' section of this manual. **DO NOT CLOSE THE WINDOW WHEN YOU THINK YOU'VE MADE A MISTAKE (this is the same for MAPGEN/ZONG/TILE). Ask Gina or the experienced student for assistance or see "How to kill a process" under APPENDIX section of this manual.)**

```
type:  mapgen2 <your script's name(i.e. xx24.s.ps) > out
type:  tail out
       --> if there is a problem with the scripts you've created, this will
           list it. You'll need to fix the script(s) and run mapgen2 again.

... A TOTAL OF Cymbols Plotted =      1
... A TOTAL OF Cymbols Filled  =      0

quit

Minimum X-Y plot coords = 0.315737 0.996920
Maximum X-Y plot coords = 24.809437 31.349916
Number of points outside window = 100
Base level = 5
xy_temp size = 20000
```

2) To view the plotfile created in mapgen2:
type: xarcpress
---> arcpress window will pop up.



(a) Click on **input file** button and select the plotfile name from the script.
(b) Click OK button.

Example of the first line of the script for creating plot files:

ps **xx24bn.map.ps** bb.pendef ck.ps 8

-> this will let you see the digitized arcs in the screen
-> check for any missing arcs, arcs with wrong feature codes, or anything else that need to be changed/corrected(like today's date)
-> hit enter or return in the commandtool window where you are running the mapgen2 program, to get rid of the arcpress window

3) To rasterize the plotfile:

type: xarcpress
(a) choose input file
(b) choose **output file** button
---> it should be *your basename + .hp* to be consistent
example: xx1234n.hp
(c) choose output device button: ALWAYS use RGB

(d) choose page setup
---> rotation: right (if plot height is more than width)
---> close page setup
(e) click OK

4) To plot the plotfile:
[Always check to see if the plotter has the right kind of paper(or ink for atlas.]

type: lpr -Pachp output file name(i.e. xx1234n.hp) and hit return

Note: The achp plotter sometimes asks you to press a button to continue after you send a job, so pay attention to the messages on the plotter screen.

MAPGEN

Mapgen has two primary functions:

1) **It retrieves data from existing database to create a Digital Data File (DDF).** A DDF is an ASCII (text) file. The coordinates produced by mapgen could be in latitude and longitude values or in projected XY values.

   To create a DDF, it is necessary to know the parameters of the databases to be used. To find out the parameters of a database use **RAFP** program. See Appendix for RAFP usage.

   Why is it necessary to create DDF?
   a) To move data from one database to another.
   b) To retrieve data from one or more databases and create a brand new database.

2) It creates plotfiles from existing databases('**MAPGEN2**').

[NOTE: Quads are at a 24,000 scale, and m-bases are at a 50,000 scale, so it is not possible to add the digitized arc by running <build> directly into the m-base). **You'll need to digitize arc(s) in g-base, then run MAPGEN to retrieve the new data(use the projection of the entire county when prompted by MAPGEN.]**

Example for function (1[see the instruction for 'Mapgen2' for function(2)]):
Your response is highlighted in yellow as usual.

```
chico% mapgen

 When maps whose Row/Column designations are outside
 the selected area the options are:
            0 = Do not use the maps
            1 = Ignore the location and use the map
 Please enter your option?
0
  ...Precede Names file name with '*' if file is direct.

 Please enter Names File name?          -------> [THE BASE THAT DATA COMES FROM]
*<quad name_aw>                         -------> (i.e. *xx1234b_aw) OR
<maplist from /home/kcd/base/maplist>   -------> (i.e. ca.n)

 The options for output form are:

      0 = Plot with NO clipping.
      1 = DDF with NO clipping.
     10 = Plot with projected X/Y clipping.
     11 = DDF with projected X/Y clipping.
     20 = Plot with Lat/Long clipping.
     21 = DDF with Lat/Long clipping.

 Please enter the output FORM?
1
```

```
 The DDF output may be in three forms:

    0 = Projected X,Y coordinates
   -1 = (Negative) Longitude, Latitude in degrees
    1 = (Positive) Longitude, Latitude in degrees

 Please select your DDF output form?
0

 The options for output projection are:

     0 = No Projection
     1 = Modified Polyconic
     2 = Lambert Conformal Conic
     3 = STANDARD STATE OF KANSAS

 Please select your Output Projection?
< enter output projection >

 Please enter Scale Factor?
< enter ouput scale >
         -----------> This takes you to the latitude/longitudes question.
                      If it doesn't, the next thing the program asks you is;
<To specify the output projection area...

      0 = Program calculates from the Name file
      1 = Specified by You

 <enter your choice here>

 Please enter SOUTH, NORTH latitudes in degrees?
< enter output lattitudes >

 Please enter WEST, EAST longitudes in degrees?
< enter output longitudes >

 Please enter South, North standard parallels?
< enter output parallels >

 Selected coverage includes the following Quad maps:
    Rows   20 through   20
 Columns   16 through   16

      *** Output projection parameters ***
--

 Please enter 1 if offsets are non-zero, 0 otherwise?
0
 Enter Weeding Threshold for excess point removal (0.0026)?
.001(or use the default)

 With regard to any existing Z-values..

    1 = Place all Z-values in DDF files
    0 = Ignore Z-values, do not put in DDF files

 Please select your Z-value option?
```

```
0
 Please enter name of output file  1, NEWLINE to stop? =
< output filename >_d< new session number > ------->THE BASE THAT DATA GOES TO
------->(i.e. xx1234h_d5)

 Please enter the Header for this file? =
< basename_session# projection scale name date >
 ---> (i.e. xx1234h_d5 24,000 LC 21/Dec/01 KU)

 Please enter LOW code, HIGH code (-1,0 to stop)? =
< feature code range >
----->(enter only the feature codes that you wish to get from the database)

Please enter LOW code, HIGH code (-1,0 to stop)? =
< feature code range >
----->(enter only the feature codes that you wish to get from the database)

  Please enter LOW code, HIGH code (-1,0 to stop)? =
-1,0

 Please check your selections:

 File  1 Filename = /home/kcd/dig/x/xx1234h_d5

 Feature code ranges selected:

    Low Code - High Code
    --------   ---------
      2411         2411       -------> you need to be very specific like
      2421         2421       -------> these

 Please enter 1 to accept, 0 to retry? =
1

 Please enter name of output file  2, NEWLINE to stop? =
<hit enter or return to stop or enter the name of the base that data goes to>

 You have selected  1 output files.

         Input Database Profiles:

. . . LOADING ARC DATABASE    -  90
. . . LOADING POINT DATABASE  -  288
    1.  Base: xx2016b - w  Input Pro. =  2  Scale:    24000  Output Pro. = -2
          Area =  39.2500, 39.3750,  -100.2500,  -100.1250      88 Arcs
Standard Parallels =  37.266663 38.566666
             * Row 20 Column 16 Used    14 Arcs          ***

              * Output File Arc Counts *

   1.     14 Arcs To File: /home/kcd/dig/x/xx1234h_d5 ---> Build this session!!

 * *  The number of Reject Points is at least   0   * *
```

MAPGEN - **quads

TO CREATE THE **quads BASE THAT WILL BE IN THE LEGEND OF THE MAP.
-STEP 1. RUN MAPGEN

```
zeppo% mapgen

 When maps whose Row/Column designations are outside
 the selected area the options are:
            0 = Do not use the maps
            1 = Ignore the location and use the map
 Please enter your option?
0

 ...Precede Names file name with '*' if file is direct.

 Please enter Names File name?
ob.m*     -------> use b-base list for **twshp !!
          -------> This file is in /home/kcd/base/maplist

          * Do not use b-bases using FC 4330 (instead of using m-bases with FCs
            4002~3) because that will create a number of duplicate arcs.


 The options for output form are:

      0 = Plot with NO clipping.
      1 = DDF with NO clipping.
     10 = Plot with projected X/Y clipping.
     11 = DDF with projected X/Y clipping.
     20 = Plot with Lat/Long clipping.
     21 = DDF with Lat/Long clipping.

 Please enter the output FORM?

1

 The DDF output may be in three forms:

    0 = Projected X,Y coordinates
   -1 = (Negative) Longitude, Latitude in degrees
    1 = (Positive) Longitude, Latitude in degrees

 Please select your DDF output form?
0

 The options for output projection are:

     0 = No Projection
     1 = Modified Polyconic
     2 = Lambert Conformal Conic
     3 = STANDARD STATE OF KANSAS

 Please select your Output Projection?
```

```
2
 Please enter Scale Factor?
1500000   -------> NO EXCEPTION

 To specifiy the output projection area...

      0 = Program calculates from the Names file
      1 = Specified by You

0
 ..Projection Boundaries Calculated From Filenames...

 SOUTH, NORTH, WEST, EAST =     39.125000000000    39.625000000000
    -99.125000000000   -98.375000000000


 Please enter South, North standard parallels?
33 45
 Selected coverage includes the following Quad maps:
    Rows   19 through   22
 Columns   25 through   30

      *** Output projection parameters ***
 -
 -
 Please enter 1 if offsets are non-zero, 0 otherwise?
0
 Enter Weeding Threshold for excess point removal (0.0026)?
.001

 With regard to any existing Z-values..

    1 = Place all Z-values in DDF files
    0 = Ignore Z-values, do not put in DDF files

 Please select your Z-value option?
0
 Please enter name of output file  1, NEWLINE to stop? =
obquads_d1     ------> *see note at the end of this instruction

 Please enter the Header for this file? =
obquads_d1 NP 1,500,000 12.21.01 mpb mapgen
Please enter LOW code, HIGH code (-1,0 to stop)? =
4310 4320
 Please enter LOW code, HIGH code (-1,0 to stop)? =
-1 0
 Please check your selections:

 File  1 Filename = /home/kcd/dig/o/obquads_d1

 Feature code ranges selected:

    Low Code - High Code
    --------   ---------
      4310          4320

 Please enter 1 to accept, 0 to retry? =
```

```
1
 Please enter name of output file  2, NEWLINE to stop? =
obquads_d2      ------> *see note at the end of this instruction

 Please enter the Header for this file? =
obquads_d2 NP 1,500,000 12.21.01 mpb mapgen
 Please enter LOW code, HIGH code (-1,0 to stop)? =
4002 4003*    * see the note on first page
 Please enter LOW code, HIGH code (-1,0 to stop)? =
-1 0
 Please check your selections:

 File  2 Filename = /home/kcd/dig/o/obquads_d2

 Feature code ranges selected:

    Low Code - High Code
    --------   ---------
      4002         4003

 Please enter 1 to accept, 0 to retry? =
1
 Please enter name of output file  3, NEWLINE to stop? =
(hit enter or return to stop)
 You have selected  2 output files.

         Input Database Profiles:

. . . LOADING POINT DATABASE  -  111
   ........

          * Output File Arc Counts *

1.    113 Arcs To File: /home/kcd/dig/o/obquads_d1
2.    185 Arcs To File: /home/kcd/dig/o/obquads_d2
* *  The number of Reject Points is at least   13    * *
```

-STEP 2. RUN BUILD

1) Run build, initialize the base **using { No Projection and scale = 1,500,000*},**
   ***** No, you are not crazy. You **DID** enter 2(Lambert Conformal) when creating a session, but please use NP when building.

   --**add the 1st session(i.e. obquadsp_d1) only**-- using default threshholds.

2) Edit the base(it should contain only state and county lines) so that there is only a node degree of 1, or fewest possible nodes.

3) Change 4310 to 4311 and 4320 to 4321. Exit & save changes.

4) Run build to add the 2nd session(i.e. obquads_d2) which will bring the quad edges. Some will be missing, so draw them in.

5) Change INTERIOR quad edges from 4002 or 4003 to 4330.
   Change EXTERIOR quad edges from 4002 or 4003 to 4331.

DO NOT JOIN QUAD EDGES TO COUNTY OR STATE LINES. IF THERE IS A NODE DEGREE, JUST PLACE THEM ON TOP OF THE COUNTY OR STATE LINE.

6) Add symbols to the base using the same FC, size & fonts as other counties, like ekquads for an example.

Turn a page for more instruction ----------→

[NOTES: - Do not use "INDEX TO 1:24,000 SCALE - MAPS" that appears on USGS' 1:100K county map* as a reference when labeling because the name and year of quads may differ from the actual quads.

- Check quads individually to get the accurate quad name and year.

*Please check with the publication office to see if the county that you are working on has a new 1:100K map.

MAPGEN - **twshp

TO CREATE THE **twshp BASE THAT WILL BE IN THE LEGEND OF THE MAP.
-STEP 1. RUN MAPGEN

```
zeppo% mapgen

 When maps whose Row/Column designations are outside
 the selected area the options are:
            0 = Do not use the maps
            1 = Ignore the location and use the map
 Please enter your option?
0

 ...Precede Names file name with '*' if file is direct.

 Please enter Names File name?
ob.b     -------> m-bases for **quads !!
         -------> This file is in /home/kcd/base/maplist

 The options for output form are:

      0 = Plot with NO clipping.
      1 = DDF with NO clipping.
     10 = Plot with projected X/Y clipping.
     11 = DDF with projected X/Y clipping.
     20 = Plot with Lat/Long clipping.
     21 = DDF with Lat/Long clipping.

 Please enter the output FORM?

1

 The DDF output may be in three forms:

    0 = Projected X,Y coordinates
   -1 = (Negative) Longitude, Latitude in degrees
    1 = (Positive) Longitude, Latitude in degrees

 Please select your DDF output form?
0

 The options for output projection are:

     0 = No Projection
     1 = Modified Polyconic
     2 = Lambert Conformal Conic
     3 = STANDARD STATE OF KANSAS

 Please select your Output Projection?
2
 Please enter Scale Factor?
1500000   -------> NO EXCEPTION
```

```
 To specifiy the output projection area...

      0 = Program calculates from the Names file
      1 = Specified by You

0
 ..Projection Boundaries Calculated From Filenames...

 SOUTH, NORTH, WEST, EAST =     39.125000000000    39.625000000000
    -99.125000000000   -98.375000000000


 Please enter South, North standard parallels?
33 45
 Selected coverage includes the following Quad maps:
    Rows   19 through   22
 Columns   25 through   30

      *** Output projection parameters ***

-
-

 Please enter 1 if offsets are non-zero, 0 otherwise?
0
 Enter Weeding Threshold for excess point removal (0.0026)?
.001

 With regard to any existing Z-values..

    1 = Place all Z-values in DDF files
    0 = Ignore Z-values, do not put in DDF files

 Please select your Z-value option?
0
 Please enter name of output file  1, NEWLINE to stop? =
obtwshp_d1     ------> *see note at the end of this instruction

 Please enter the Header for this file? =
obtwshp_d1 NP 1,500,000 12.21.01 mpb mapgen
Please enter LOW code, HIGH code (-1,0 to stop)? =
4310 4320
 Please enter LOW code, HIGH code (-1,0 to stop)? =
-1 0
 Please check your selections:

 File  1 Filename = /home/kcd/dig/o/obtwshp_d1

 Feature code ranges selected:

    Low Code - High Code
    --------   ---------
      4310          4320

 Please enter 1 to accept, 0 to retry? =
1
 Please enter name of output file  2, NEWLINE to stop? =
```

```
obtwshp_d2     ------> *see note at the end of this instruction

 Please enter the Header for this file? =
obtwshp_d2 NP 1,500,000 12.21.01 mpb mapgen
 Please enter LOW code, HIGH code (-1,0 to stop)? =
2111 2112
 Please enter LOW code, HIGH code (-1,0 to stop)? =
-1 0
 Please check your selections:

 File  2 Filename = /home/kcd/dig/o/obtwshp_d2

 Feature code ranges selected:

    Low Code - High Code
    --------   ---------
      2111          2112

 Please enter 1 to accept, 0 to retry? =
1
 Please enter name of output file  3, NEWLINE to stop? =
(hit enter or return to stop)

 You have selected  2 output files.


          Input Database Profiles:


. . . LOADING ARC DATABASE     -  58
. . . LOADING POINT DATABASE   -  111
   ........

           * Output File Arc Counts *


1.     113 Arcs To File: /home/kcd/dig/o/obtwshp_d1
2.     185 Arcs To File: /home/kcd/dig/o/obtwshp_d2
* *  The number of Reject Points is at least   13    * *
```

-STEP 2. RUN BUILD

1) Run build, initialize the base **using { No Projection and scale = 1,500,000***},
   * No, you are not crazy. You **DID** enter 2(Lambert Conformal) when creating a session, but please use NP when building.
   --**add the 1st session(i.e. obtwshp_d1) only**-- using default threshholds.

2) Edit the base(it should contain only state and county lines) so that there is only a node degree of 1, or fewest possible nodes.

3) Run build to add the 2nd session. Then edit those to have the fewest node degrees. **DO NOT JOIN TO STATE OR COUNTY LINE.**

4) Add symbols(see other counties, like ostwshp for an example).

30/Oct/02

PLEASE READ BEFORE YOU TILE BACK

****

1. **NEVER TILE BACK TO B-BASES! --- See 'updating highways' below**

2. Do tile back to N*(or G* bases after the edgematching is complete.
   * Only if you are tiling back from xxcntyn (NOT xxroads) or xxcntyg bases.

3. Use dictionary files*, bbase, hbase, or nbase, when tiling. They are in cd /home/kcd/Webster.
   * Make sure all the features are coded correctly.

Updating highways

1. Finish edgematching xxcntyn, then tile back to N-bases.

2. Create xxroads base from B and N-bases, using FCs from nbase dictionary file and add FCs for dams, T/R lines, city centers, HWYs/RRs, and airports, then print that xxroads base.

3. Using all the available resources, look for new highway/road constructions, airports, RR updates, new dam constructions, new feature locations(for citys, roads, etc.), new feature names, and anything else that differ from what we have in our databases.

4. Update whatever you find in step 3(do all the updating in xxroads)*.
   * You may need to draw the new highway/road constructions onto the topographic map, and digitize them in N-bases(or B-bases/ask Gina about which is the best). Do all the digitizing first, then tile to xxroads base.

5. After the map is published (or at any appropriate time/ask Gina), **tile xxroads base back to N-bases.**
   * Don't do anything with B-bases. You do not need to delete the original HWY/RR data from B-bases.

6. Enter in the project file(status.roads) that N-bases in that particular county now have the updated transportation system data. (It might be good idea to enter 'B-bases in this county no longer have the most current HWY/RR data' in readme.txt or status.txt file, just to be safe.)

Always check the 1:24k bases to make sure they are OK after tiling back from 1:50k.

Last updated on 10/Oct/02

TILE_2 : to create a projected tile base

TO CREATE A PROJECTED TILE BASE, SUCH AS **roads, **hydro, **lakes FOR LABELING

STEP 1 : Create a base

```
chico% tile

 PROGRAM TO CONVERT QUADS TO TILE

    1 = CONVERT QUADS TO SYMBOL LAYOUT BASE
    2 = CONVERT QUADS TO PROJECTED TILE
    3 = CONVERT QUADS TO TILE IN LONG/LAT
    4 = CONVERT TILE IN LONG/LAT TO QUADS
    5 = CONVERT G BASE TO M BASE
    6 = CONVERT M BASE TO G BASE
    7 = CREATE A LAT/LONG BASE
    8 = COPY CLIPPED LAT/LONG BASE
    9 = SPLIT COUNTY ARCS AT GEOLOGY ZONE INTERSECTIONS

 ENTER CONVERSION OPTION (1 - 9) :
2

 Enter Name of Base <ex. lvcntyg_aw> :
lvroads_aw  --------> first 2 letters of the county + roads(hydro, or lakes)
                      to be consistent (you'll save time by doing this)

 Enter Header for New Base :
lvroads_aw LC 50,000 27/Dec/01 MO tile-2

 Enter Weeding Threshold for excess point removal (0.0)?
0.001
  ...Precede Names file name with '*' if file is direct.

 Please enter Names File name?
lv.bn   ------> .bh when creating hydro or lake base

 Enter name of Webster Map Projection Dictionary
 Enter * to input map projection parameters from keyboard
leav   -------> county abbreviation such as jo, os, and mg are used.
                'leav' is an exception.

 SOUTH, NORTH Latitude =     38.875000000000    39.500000000000
 WEST, EAST Longitude =     -95.250000000000   -94.750000000000
 Selected coverage includes the following Quad maps:
    Rows   17 through   21
 Columns   56 through   59
      ***Output projection parameters ***
 Enter Table of Feature code ranges of
 Features you wish to Transfer to New Base

 Enter LOW - HIGH for range   1 (0 0 to stop)
#### ####  -------------> BE SPECIFIC when entering numbers.
 Enter LOW - HIGH for range   2 (0 0 to stop)
#### ####
```

```
 Enter LOW - HIGH for range   3 (0 0 to stop)
0 0
        Input Database Profiles:
   1. Base: lv1756m - w
. . . LOADING ARC DATABASE     -  44
. . . LOADING POINT DATABASE   -  202
.
.
.
 Sun's implementation of IEEE arithmetic is discussed in
 the Numerical Computation Guide.
chico%
```

STEP 2 : Add symbols to the base

FOR ROAD/HYDRO/LAKE BASES

Use 1:100,000 maps and the latest county and/or city map from KDOT's website, or Road Atlas if KDOT's data are older than the Atlas as the guides to placing labels. Use other resources as well if they are available in that county. See the list of symbols and other bases for reference.

FOR ROAD BASE

Extend the county lines(and state lines if applicable) to outside of the county wherever the surrounding counties intercept. The feature codes for those extensions are 4311 and 4321. [NOTE: to get the county latitude and longitude, go to ****box base and create a node degree on each of 4 corners. Then go to the TILE2_QDLNS in this manual, and follow the step 2, #3. Use other road bases as the reference to determine how long those extensions need to be.

Last updated on Dec/26/01

TILE_2BOX : to create ****box base

TO CREATE A ****box BASE WHICH CONTAINS THE STATE & COUNTY LINES AND MAP BORDER

STEP 1 : Create a base

```
chico% tile

 PROGRAM TO CONVERT QUADS TO TILE

    1 = CONVERT QUADS TO SYMBOL LAYOUT BASE
    2 = CONVERT QUADS TO PROJECTED TILE
    3 = CONVERT QUADS TO TILE IN LONG/LAT
    4 = CONVERT TILE IN LONG/LAT TO QUADS
    5 = CONVERT G BASE TO M BASE
    6 = CONVERT M BASE TO G BASE
    7 = CREATE A LAT/LONG BASE
    8 = COPY CLIPPED LAT/LONG BASE
    9 = SPLIT COUNTY ARCS AT GEOLOGY ZONE INTERSECTIONS

 ENTER CONVERSION OPTION (1 - 9) :
2

 Enter Name of Base <ex. lvcntyg_aw> :
leavbox_aw  --------> always the first 4 letters of the county + box

 Enter Header for New Base :
leavbox_aw LC 50,000 26/Dec/01 MO tile-2

 Enter Weeding Threshold for excess point removal (0.0)?
0.001
  ...Precede Names file name with '*' if file is direct.

 Please enter Names File name?
lv.m     -------> always use m-bases

 Enter name of Webster Map Projection Dictionary
 Enter * to input map projection parameters from keyboard
leav
 SOUTH, NORTH Latitude =     38.875000000000    39.500000000000
 WEST, EAST Longitude =     -95.250000000000   -94.750000000000
 Selected coverage includes the following Quad maps:
    Rows   17 through   21
 Columns   56 through   59
      ***Output projection parameters ***
 Enter Table of Feature code ranges of
 Features you wish to Transfer to New Base

 Enter LOW - HIGH for range   1 (0 0 to stop)
4310 4320
 Enter LOW - HIGH for range   2 (0 0 to stop)
0 0
         Input Database Profiles:
   1. Base: lv1756m - w
. . . LOADING ARC DATABASE    -  44
```

. . . LOADING POINT DATABASE - 202
.
.
.
Sun's implementation of IEEE arithmetic is discussed in
the Numerical Computation Guide.
chico%

STEP 2 : Edit and add symbols to the base
Make any node or node degree edits in 'ge' then edit symbols and add a box and 2 map borders to fit the map. Use F.C. 4000.

-> TO MAKE BOX SYMBOLS "FROM SCRATCH",

First make the box whatever size is necessary to encompass the entire map with legends, cross-sections, and a strat. column. You need at least 1/2" margin between the box(symbol) and those items.

Create a thin map border(frame). First, note the exact size and X,Y location of the box(symbol). Then click 'BORDER' and place it near the box mark. The size is 0.25" bigger than the box, the border width is 0.125", and X,Y location is 0.125" less than X,Y of the box.

Create a thicker border(frame). Note the exact size & X,Y location, then click 'BORDER' again and place it near the box mark. The size is 0.5" bigger than the thin border, border width is 0.25", and X,Y location is 0.25" less than X,Y of the thin border.

-> The painless way is to,

Run '**tilec**(see the manual for the actual runing of this program),' and modify the new base.

Last updated on 05/Nov/02

TILE_2QDLNS : to create **qdlns base

TO CREATE A **qdlns BASE WHICH CONTAINS QUAD LINES

STEP 1 : Create a base

```
chico% tile

 PROGRAM TO CONVERT QUADS TO TILE

    1 = CONVERT QUADS TO SYMBOL LAYOUT BASE
    2 = CONVERT QUADS TO PROJECTED TILE
    3 = CONVERT QUADS TO TILE IN LONG/LAT
    4 = CONVERT TILE IN LONG/LAT TO QUADS
    5 = CONVERT G BASE TO M BASE
    6 = CONVERT M BASE TO G BASE
    7 = CREATE A LAT/LONG BASE
    8 = COPY CLIPPED LAT/LONG BASE
    9 = SPLIT COUNTY ARCS AT GEOLOGY ZONE INTERSECTIONS

 ENTER CONVERSION OPTION (1 - 9) :
2

 Enter Name of Base <ex. lvcntyg_aw> :
lvqdlns_aw  --------> always the first 2 letters of the county + qdlns

 Enter Header for New Base :
lvqdlns_aw LC 50,000 26/Dec/01 MO tile-2

 Enter Weeding Threshold for excess point removal (0.0)?
0.001
  ...Precede Names file name with '*' if file is direct.

 Please enter Names File name?
lv.m      -------> always use m-bases*
                            * Do not use b-bases using FC 4330 (instead
                              use m-bases with FCs 4002~3) because that
                              will create a number of duplicate arcs.

 Enter name of Webster Map Projection Dictionary
 Enter * to input map projection parameters from keyboard
leav
 SOUTH, NORTH Latitude =     38.875000000000    39.500000000000
 WEST, EAST Longitude =     -95.250000000000   -94.750000000000
 Selected coverage includes the following Quad maps:
    Rows    17 through    21
 Columns    56 through    59
      ***Output projection parameters ***
 Enter Table of Feature code ranges of
 Features you wish to Transfer to New Base

 Enter LOW - HIGH for range   1 (0 0 to stop)
4310 4320
 Enter LOW - HIGH for range   2 (0 0 to stop)
4002 4003*     *see the note above
```

```
 Enter LOW - HIGH for range   3 (0 0 to stop)
0 0
        Input Database Profiles:
   1. Base: lv1756m - w
. . . LOADING ARC DATABASE     -  44
. . . LOADING POINT DATABASE   -  202
.
.
.
 Sun's implementation of IEEE arithmetic is discussed in
 the Numerical Computation Guide.
chico%
```

STEP 2 : Edit and add symbols to the base

1. Edit the quadlines to stop at the county and/or state lines.

2. Delete the county and/or state lines after editting from above is completed.

3. Add symbols like in "laqdlns," etc.
-> How to get latitude & longitude numbers:

After Step2 :1~2, click on the node degree('QUERY NODE') at county or state line. You'll need to convert the number into minutes. Do this for all node degrees, but first you need to open the calculator in your computer.
"Right click and hold" on a 'Acc' and choose '7 radix places.' Then follow the example.

example: If the node degree is 39.125, multiply .125 by 60.
You should get 7.50. You'll get 30.0 when you multiply .5 by 60.
Go to 'ge' and 39$g7'30" is the symbol you need to enter in 'TEXT' The size of the text is 0.045 for 1:50,000 and 0.025 for 1:100,000 maps.

Last updated 23/Sept/02

TILE_3g : Convert quads to lat/long base

This option is used to create lat/long bases(cntyg) for edge-matching.**

Step 1 : Create a lat/long base

*Before you start tiling, write down **all** the feature codes used in your county's g-bases*, OR you may use 1000-9999**.

***This is important because when you use option 4 to tile back to g bases, it will overwrite the bases with the edgematched data.**
So if you have FC 1410 in some of your bases but didn't include it when running the tile-option 3, you will lose that information when you tile back to individual bases using the tile-option 4.
****You MUST list the individual FC ranges when in Step 3.**

```
chico% tile

 PROGRAM TO CONVERT QUADS TO TILE

    1 = CONVERT QUADS TO SYMBOL LAYOUT BASE
    2 = CONVERT QUADS TO PROJECTED TILE
    3 = CONVERT QUADS TO TILE IN LONG/LAT
    4 = CONVERT TILE IN LONG/LAT TO QUADS
    5 = CONVERT G BASE TO M BASE
    6 = CONVERT M BASE TO G BASE
    7 = CREATE A LAT/LONG BASE
    8 = COPY CLIPPED LAT/LONG BASE
    9 = SPLIT COUNTY ARCS AT GEOLOGY ZONE INTERSECTIONS

 ENTER CONVERSION OPTION (1 - 9) :
3

 Enter Name of New Base <ex. lvcntyg_aw> :
xxcntyg_aw

 Enter Header for New Base :
xxcntyg_aw LC 50,000 lat/long Dec/27/01 MO

 Enter name of Webster Map Projection Dictionary
 Enter * to input map projection parameters from keyboard
xx
 Selected coverage includes the following Quad maps:
    Rows    1 through    5
 Columns    17 through    21

 NUMBER OF COLUMNS - MX,NX =    5   5
 NUMBER OF ROWS    - MY,NY =    5   5
 CHECK X WEST-EAST    =    -100.1250    -99.5000
 CHECK Y SOUTH-NORTH =      36.8750     37.5000

 HEADER X MIN-MAX OF NEW BASE =     0.750000     6.25000
 HEADER Y MIN-MAX OF NEW BASE =     0.750000     7.52619
```

```
 ...Precede Names file name with '*' if file is direct.
 Please enter Names File name?
xx.g

 OPTION TO KEEP OR DELETE QUAD EDGES
    0 = KEEP
    1 = DELETE QUAD EDGES FROM G BASES
    2 = DELETE QUAD EDGES - FEATURE CODE 4330
 ENTER OPTION:
0

 Enter Table of Feature code ranges of
 Features you wish to Transfer to New Base

 Enter LOW - HIGH for range   1 (0 0 to stop)
1000 4999** (*DO NOT do this if you are tiling for the last time)
 Enter LOW - HIGH for range   2 (0 0 to stop)
0 0


          Input Database Profiles:
.
.
..
. .
. . . UPDATING ARC DATABASE    -  2491 ** RECORDS (5177) (2457)
. . . UPDATING POINT DATABASE  -  9177 ** RECORDS (9821) (9161)
. . . UPDATING NODE DATABASE   -  2749 ** RECORDS (2879) (2715)
 Note: this program was linked with -fast or -fnonstd
 and so may have produced nonstandard floating-point results.
 Sun's implementation of IEEE arithmetic is discussed in
 the Numerical Computation Guide.
chico%
```

STEP 2 : Edge-match

- **Please read the instructions in "How to Make a Geologic Map," Step 11)** for the actual process of edgematching (and tiling back to g-bases, if necessary).

STEP 3 : Tiling to LAT/LONG for the last time(You are at Step 12)- A) in "How to Make a Geologic Map") **= adding state & county lines.**

- Everytime we tile with state and/or county lines, the program will create extra points on top of the node degrees where geologic arcs and state and/or county lines meet. Therefore, add state and/or county lines at the very end, and avoid tiling to lat/long after this step(BE VERY CAREFUL when tiling back to g-bases after this step; read the instruction(TILE_4g)).

A) Run Tile

```
chico% tile
```

```
.
.
 >>> Everything is the same until you are asked to enter the Names file name.<<<
.
.


...Precede Names file name with '*' if file is direct.
 Please enter Names File name?
xx.bg     -------> This time, you need to include the B-bases.


OPTION TO KEEP OR DELETE QUAD EDGES
    0 = KEEP
    1 = DELETE QUAD EDGES FROM G BASES
    2 = DELETE QUAD EDGES - FEATURE CODE 4330
 ENTER OPTION:
0

 Enter Table of Feature code ranges of
 Features you wish to Transfer to New Base

 Enter LOW - HIGH for range   1 (0 0 to stop) __
1410 1420(example)                             \
 Enter LOW - HIGH for range   2 (0 0 to stop)   \
2715 2715(example)                              DO NOT USE
 Enter LOW - HIGH for range   3 (0 0 to stop)   FC range of
2730 2730(example)                              1000-9999!!
 Enter LOW - HIGH for range   4 (0 0 to stop)
4210 4210                                       /
 Enter LOW - HIGH for range   5 (0 0 to stop) __/
4310 4320 -----> State & County lines from the B-base
 Enter LOW - HIGH for range   6 (0 0 to stop)
0 0
.
.
.
.
chico%
```

B) Edit the base

-Your base should look just like the previous LAT/LONG base, but this time it contains the state(if applicable) and county lines.

-Edgematch again(both geology and state/county lines).
  >>> **YOU DO NOT NEED TO JOIN GEOLOGY ARCS TO THE STATE/COUNTY ARCS. <<<**

C) Tile back to G-bases for the last time.

*You will not be using the same Names file name that you used in STEP 3 -A).

-> Read "How to make Geologic Maps(Step 12) - B))" and "TILE_4g."

Last updated 10/June/02

TILE_3hn : Convert quads to lat/long base

This option is used to create lat/long bases, such as **cntyh & **cntyn for edge-matching.

Step 1 : Create a lat/long base

*Before you start tiling, write down **all** the feature codes used in your county's h- or n-bases.* (You may use the all-encompassing FC range).
***This is important because when you use option 4 to tile back to h or n bases, it will overwrite the bases with the edgematched data.**
So if you have FC 1200 in some of your bases but didn't include it when running the tile-option 3, you will lose that information when you tile back to individual bases using the tile-option 4.

```
chico% tile

 PROGRAM TO CONVERT QUADS TO TILE

    1 = CONVERT QUADS TO SYMBOL LAYOUT BASE
    2 = CONVERT QUADS TO PROJECTED TILE
    3 = CONVERT QUADS TO TILE IN LONG/LAT
    4 = CONVERT TILE IN LONG/LAT TO QUADS
    5 = CONVERT G BASE TO M BASE
    6 = CONVERT M BASE TO G BASE
    7 = CREATE A LAT/LONG BASE
    8 = COPY CLIPPED LAT/LONG BASE
    9 = SPLIT COUNTY ARCS AT GEOLOGY ZONE INTERSECTIONS

 ENTER CONVERSION OPTION (1 - 9) :
3

 Enter Name of New Base <ex. lvcntyg_aw> :
cacntyn_aw

 Enter Header for New Base :
cacntyn_aw LC 50,000 lat/long Dec/27/01 MO

 Enter name of Webster Map Projection Dictionary
 Enter * to input map projection parameters from keyboard
ca
 Selected coverage includes the following Quad maps:
    Rows    1 through    5
 Columns    17 through    21

 NUMBER OF COLUMNS - MX,NX =    5   5
 NUMBER OF ROWS    - MY,NY =    5   5
 CHECK X WEST-EAST    =    -100.1250    -99.5000
 CHECK Y SOUTH-NORTH =      36.8750     37.5000

 HEADER X MIN-MAX OF NEW BASE =     0.750000     6.25000
 HEADER Y MIN-MAX OF NEW BASE =     0.750000     7.52619
```

```
 ...Precede Names file name with '*' if file is direct.
 Please enter Names File name?
ca.n

 OPTION TO KEEP OR DELETE QUAD EDGES
    0 = KEEP
    1 = DELETE QUAD EDGES FROM G BASES
    2 = DELETE QUAD EDGES - FEATURE CODE 4330
 ENTER OPTION:
0

 Enter Table of Feature code ranges of
 Features you wish to Transfer to New Base

 Enter LOW - HIGH for range   1 (0 0 to stop)
1200 1200* (*see the note under STEP 1)
Enter LOW - HIGH for range   2 (0 0 to stop)
2113 2119
Enter LOW - HIGH for range   3 (0 0 to stop)
2370 2370
 Enter LOW - HIGH for range   4 (0 0 to stop)
0 0


          Input Database Profiles:
.
.
..
. .
. . . UPDATING ARC DATABASE    -  2491 ** RECORDS (5177) (2457)
. . . UPDATING POINT DATABASE  -  9177 ** RECORDS (9821) (9161)
. . . UPDATING NODE DATABASE   -  2749 ** RECORDS (2879) (2715)
 Note: this program was linked with -fast or -fnonstd
 and so may have produced nonstandard floating-point results.
 Sun's implementation of IEEE arithmetic is discussed in
 the Numerical Computation Guide.
chico%
```

STEP 2 : Edge-match

1. Edge-match along the quad edges. Look for missing or miscoded arcs.

2. After edge-matching is done, tile back to quads(see instructions in this manual).

3. Digitize the missing or corrected arcs, then run tile: option 3 again for edge-matching. Tile back to quads after edge-match is completed.

Last Updated on 31/July/02

TILE_4g : Tile back to G-bases

STEP 1 : When you are not tiling back for the last time = you know that you will be tiling to lat/long later.

```
chico% tile

 PROGRAM TO CONVERT QUADS TO TILE

    1 = CONVERT QUADS TO SYMBOL LAYOUT BASE
    2 = CONVERT QUADS TO PROJECTED TILE
    3 = CONVERT QUADS TO TILE IN LONG/LAT
    4 = CONVERT TILE IN LONG/LAT TO QUADS
    5 = CONVERT G BASE TO M BASE
    6 = CONVERT M BASE TO G BASE
    7 = CREATE A LAT/LONG BASE
    8 = COPY CLIPPED LAT/LONG BASE
    9 = SPLIT COUNTY ARCS AT GEOLOGY ZONE INTERSECTIONS

 ENTER CONVERSION OPTION (1 - 9) :
4

 Enter Name of Base <ex. lvcntyg_aw> :
ckcntyg_aw
. . . LOADING ARC DATABASE    -  2679
. . . LOADING POINT DATABASE  -  15255
 setinll - lasta =   13853
 setinll - south,north =     36.875000000000    37.375000000000
 setinll - west,east   =    -95.125000000000   -94.500000000000

 HEADER X MIN-MAX OF L/L BASE =    0.800000    7.20000
 HEADER Y MIN-MAX OF L/L BASE =    0.800000    7.70920

 Selected coverage includes the following Quad maps:
    Rows   1 through   4
 Columns   57 through   61


 ...Precede Names file name with '*' if file is direct.

 Please enter Names File name?
ck.g

 SETINLL - ML =
 /home/kcd/base/maplist/cn.h
Enter Feature Code Ranges to be transfer to new base

Enter filename or '*' if ranges will be entered from keyboard
*
 Enter Low, High Feature Code  (-1,-1 to stop)
1400 4999(example)
 Enter Low, High Feature Code  (-1,-1 to stop)
-1 -1
```

```
  OPTION TO GENERATE QUAD EDGES
   0 - DO NOT GENERATE QUAD EDGES
   1 - GENERATE QUAD EDGES FOR G BASES
   2 - GENERATE QUAD EDESGS FOR FEATURE CODE 4330
 ENTER OPTION:
0  ----> Don't generate quad edges unless you are tiling back for the last time
         because it'll create extra points on top of node degrees at the
         intersection of geology arcs and quad edges.

          Output Database Profiles:

 setoutpro - direct =   0
 setoutpro - namin  = /home/kcd/base/mapli
 setoutpro - nrow,ncol =   1  57

    1.  Base: ck0157g_AW - w
. . . LOADING ARC DATABASE


*******************************************************************************
STEP 2 : TILING BACK FOR THE LAST TIME = when you know that you will not
                                         be tiling to lat/long again

A) Make sure that edgematching is complete.

B) Run TILE-'option 9' before tiling back to G-bases

C) Run TILE.
   chico% tile

   .
   .    (same as STEP 1)
   .

 Please enter Names File name?
ck.g   ------> Remember, you used ".bg" when you tiled to lat/long base for the
               last time instead of ".g," but DO NOT use that file here because
               you are not going to tile back to B-bases.

SETINLL - ML =
 /home/kcd/base/maplist/cn.h
Enter Feature Code Ranges to be transfer to new base

Enter filename or '*' if ranges will be entered from keyboard
*
 Enter Low, High Feature Code  (-1,-1 to stop)
1400 4999(example)
 Enter Low, High Feature Code  (-1,-1 to stop)
-1 -1
  OPTION TO GENERATE QUAD EDGES
   0 - DO NOT GENERATE QUAD EDGES
   1 - GENERATE QUAD EDGES FOR G BASES
   2 - GENERATE QUAD EDESGS FOR FEATURE CODE 4330
 ENTER OPTION:
1(*Fcs 4000-4003)
```

TILE_4hn : Tile back to H(N)-bases

(Change the appropriate information when tiling back to N-bases.)

```
chico% tile

 PROGRAM TO CONVERT QUADS TO TILE

    1 = CONVERT QUADS TO SYMBOL LAYOUT BASE
    2 = CONVERT QUADS TO PROJECTED TILE
    3 = CONVERT QUADS TO TILE IN LONG/LAT
    4 = CONVERT TILE IN LONG/LAT TO QUADS
    5 = CONVERT G BASE TO M BASE
    6 = CONVERT M BASE TO G BASE
    7 = CREATE A LAT/LONG BASE
    8 = COPY CLIPPED LAT/LONG BASE
    9 = SPLIT COUNTY ARCS AT GEOLOGY ZONE INTERSECTIONS

 ENTER CONVERSION OPTION (1 - 9) :
4

 Enter Name of Base <ex. lvcntyg_aw> :
cnhydro_aw
. . . LOADING ARC DATABASE     -  2679
. . . LOADING POINT DATABASE   -  15255
 setinll - lasta =   13853
 setinll - south,north =     39.5000000000    40.125000000000
 setinll - west,east   =    -102.1250000000000   -101.37500000000000

 HEADER X MIN-MAX OF L/L BASE =    0.800000    7.20000
 HEADER Y MIN-MAX OF L/L BASE =    0.800000    7.70920

 Selected coverage includes the following Quad maps:
    Rows   22 through   26
 Columns   1 through   6


 ...Precede Names file name with '*' if file is direct.

 Please enter Names File name?
cn.h
 SETINLL - ML =
 /home/kcd/base/maplist/cn.h
Enter Feature Code Ranges to be transfer to new base
Enter filename or '*' if ranges will be entered from keyboard
hbase
```

[NOTE: This file is in the following directory.]

```
chico% cd /home/kcd/webster
chico% more hbase
      2411,2411
      2421,2421
```

```
                2431,2431
                4121,4121
                4131,4131
                4141,4141
                4151,4151
                4161,4161
                4171,4171
                4181,4181
                4191,4191
                -1,-1

 OPTION TO GENERATE QUAD EDGES
  0 - DO NOT GENERATE QUAD EDGES
  1 - GENERATE QUAD EDGES FOR G BASES
  2 - GENERATE QUAD EDESGS FOR FEATURE CODE 4330
 ENTER OPTION:
0

         Output Database Profiles:

 setoutpro - direct =   0
 setoutpro - namin  = /home/kcd/base/mapli
 setoutpro - nrow,ncol =   22  1

    1.  Base: ca2201h - w
. . . LOADING ARC DATABASE

- - - -
..Initialization of the NODE file...

      ...   Phase I   ...
      ....    Phase II    ....
      .....     Phase III     .....
      ......      Phase IV      ......


 LAST NODE =   104   MAX NODE DEGREE =   6
 NUMBER OF NODES REMOVED =   4
 NUMBER OF NODES WITH DEG 1 =   41
. . . UPDATING ARC DATABASE    -  128 ** RECORDS (277) (123)
. . . UPDATING POINT DATABASE  -  404 ** RECORDS (409) (401)
. . . UPDATING NODE DATABASE   -  104 ** RECORDS (118) (99)
 setoutpro - direct =   0
 setoutpro - namin  = /home/kcd/base/mapli
 Note: this program was linked with -fast or -fnonstd
 and so may have produced nonstandard floating-point results.
 Sun's implementation of IEEE arithmetic is discussed in
 the Numerical Computation Guide.
```

TILE_5 : Convert G base to M base

```
chico% tile

 PROGRAM TO CONVERT QUADS TO TILE

    1 = CONVERT QUADS TO SYMBOL LAYOUT BASE
    2 = CONVERT QUADS TO PROJECTED TILE
    3 = CONVERT QUADS TO TILE IN LONG/LAT
    4 = CONVERT TILE IN LONG/LAT TO QUADS
    5 = CONVERT G BASE TO M BASE
    6 = CONVERT M BASE TO G BASE
    7 = CREATE A LAT/LONG BASE
    8 = COPY CLIPPED LAT/LONG BASE
    9 = SPLIT COUNTY ARCS AT GEOLOGY ZONE INTERSECTIONS

 ENTER CONVERSION OPTION (1 - 9) :
5

  ...Precede Names file name with '*' if file is direct.

 Please enter Names File name?
wl.g

 Enter name of Webster Map Projection Dictionary
 Enter * to input map projection parameters from keyboard
wl

 SOUTH, NORTH Latitude =     37.375000000000    37.7500000000000
 WEST, EAST Longitude =     -96.000000000000   -95.5000000000000
 Selected coverage includes the following Quad maps:
    Rows    5 through    7
 Columns    50 through    53

      ***Output projection parameters ***

        Input Database Profiles:
   1. Base: wl0550g - w
.
.
.

 Sun's implementation of IEEE arithmetic is discussed in
 the Numerical Computation Guide.
```

Last updated 31/Oct/02

TILEC

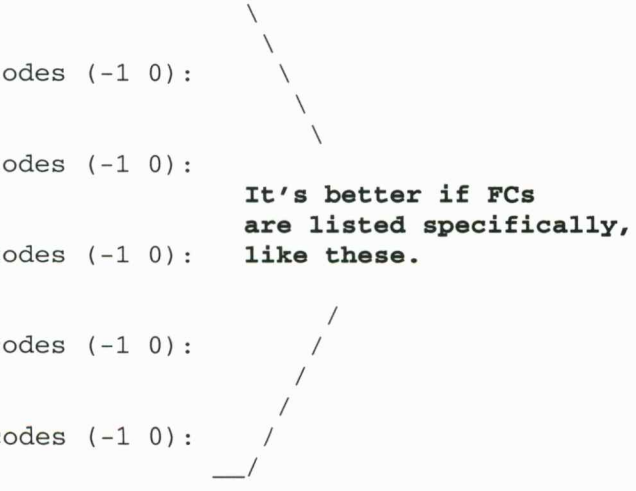
****

TILEC IS A PROGRAM TO COPY SYMBOL(S) FROM ONE BASE TO THE OTHER. IT SHOULD ONLY BE DONE WHEN: PROJECTION PARAMETERS(LATITUDE AND LONGITUDE), PROJECTION, SCALE FACTOR ARE THE SAME.

-> **The base you are updating must have at least one symbol in order for you to run this program**, so add a symbol(single line, one letter, one arc point etc.) to the new base before you start.

1) **Run TILEC.**

```
zeppo% tilec

PROGRAM TO CONVERT QUADS TO TILE

  12 = ADD SYMBOLS TO A BASE

Enter filename of SYMBOL base to update
oborbox_aw (example)
. . . LOADING SYMBOL DATABASE -  123

Enter filename of SYMBOL base to copy from
bourbox_aw (example but recommended)
. . . LOADING SYMBOL DATABASE -  135

Enter Text and Symbol scale factor:
1    ------> Don't enter '24000' or '50000.'

Enter Feature Code Dictionary file name
or enter * if table will be entered from keyboard
*

Enter LOW and HIGH feature codes (-1 0):
50 50

Enter LOW and HIGH feature codes (-1 0):
4000 4000

Enter LOW and HIGH feature codes (-1 0):
5001 5002

Enter LOW and HIGH feature codes (-1 0):
5004 5005

Enter LOW and HIGH feature codes (-1 0):
5011 5011

Enter LOW and HIGH feature codes (-1 0):
5013 5013

Enter LOW and HIGH feature codes (-1 0):
-1 0

Number of symbols = 134 -- Number of symbols copied = 114
. . . UPDATING SYMBOL DATABASE -  237 ** RECORDS (114) (236)
```



--->

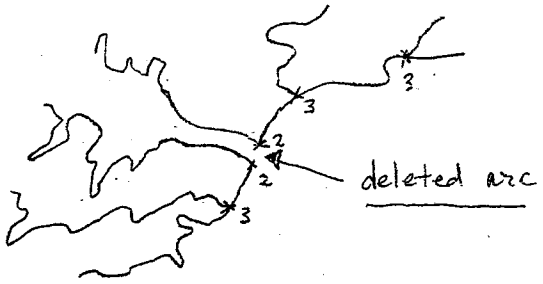
2) **Edit the header.**

Open the base that you copied the symbols to. Click on 'EDIT HEADER.' Your base has the header from the base that you copied the symbols from, so you need to change the header to fit your base.

TILE : note
****
-> also see ZONG.note <-

'TILE-long/lat to quads' deletes any arc which contains no interior points, only a begin and a end node.

Be aware of this because you may come across an area such as:



(the deleted arc needs to be drawn back in using the same feature code)

So when edge-matching, make sure especially at quad edges, that the arcs connecting across quad edges contain one or more points on each side of the quad edge.

When digitizing, make sure to have at least 2 interior point in each arc. This may not apply to roads because the length of arcs is generally great.

LIST* OF ALL STRATIGRAPHIC COLUMN LEGENDS

* Legends are listed in order they appear on rockchart. This order must be kept for any other maps.

Ones included in the rockchart	Ones NOT included in the rockchart and their explanations and/or additional notes
1. **sangrav_aw**	**opaline_aw**(Read README.TXT in /home/kcd/plot/rockchart)
	sangros_aw(Read README.TXT in /home/kcd/plot/rockchart)
2. **sandbox_aw**	If geologist prefers the label "Sandstone," use FCs4101/4201
3. **crossnd_aw**	
4. **chertgr_aw**	
5. **siltsto_aw**	**unsands_aw**(this one is also commonly used). Consult
	geologist. (Read README.TXT in /home/kcd/plot/rockchart)
6. **unsiltc_aw**	
7. **shclays_aw**	If geologist prefers the label "Mudrock," use FCs4101/4201
8. **blacksh_aw**	
9. **soilbox_aw**	
10. **calcash_aw**	
11. **varicsh_aw**	
12. **shironc_aw**	**shconcr_aw**(Read README.TXT in /home/kcd/plot/rockchart)
13. **calconc_aw**	**shconcr_aw**(Read README.TXT in /home/kcd/plot/rockchart)
14. **coallig_aw**	**undercl_aw**(Read README.TXT in /home/kcd/plot/rockchart)
	If using "coallig," enter FC4119 in addition to 4100 if
	underclay label is needed.
	If geologist prefers the label "Coal," use FCs4101/4201
15. **limesto_aw**	**wavylim_aw**(Read README.TXT in /home/kcd/plot/rockchart)
16. **chalkls_aw**	In older projects, chalksh(chalky shale) might have
	been used. Please change chalksh to chalkls.
17. **chalkbx_aw**	
18. **oolitic_aw**	
19. **chertls_aw**	
	conglls_aw(Read README.TXT in /home/kcd/plot/rockchart)
20. **shalyls_aw**	Use the label from **argills_aw** if geologist prefers the
	label "Argillacerous ls," but do not use this legend on
	the map. (Read README.TXT in /home/kcd/plot/rockchart)
21. **sandyls_aw**	
22. **crossls_aw**	In older projects, crossbd(with the same label) might
	have been used. Please change to crossls.
23. **dolomls_aw**	
24. **dolomit_aw**	
25. **chedolo_aw**	
26. **shadolo_aw**	
27. **bentoni_aw**	
28. **glaucon_aw**	
29. **gypsuma_aw**	
30. **redbeds_aw**	
31. **saltbox_aw**	
32. **igneous_aw**	
33. **volcash_aw**	
34. **unconfo_aw**	

* When using the option(s) high-lighted in , make sure to double check the cymplt file. This is to avoid more than two explanation labels to show up on the map. It might be easier to enter those feature codes individually in the script.

COMMANDS you should know:

```
pwd         'present working directory'
            to find out what directory you are currently in
            example: chico% pwd
                     /home/kcd/projects/bourbon

cd          'change directory'
            example: cd /home/kcd/plot/shawnee

textedit    to edit a text file
            example: textedit sn.s.ps &

rafp        to find out what parameters a Quad/County has
            example: rafp dg1655g w
            (See a detailed example in this manual)

!!          repeats the last command you typed
!(letter)   repeats the last command you typed starting with that last letter
            specified
            example: chico% !!
                     pwd
                     /home/kcd/projects/bourbon

                     chico% !p
                     pwd
                     /home/kcd/projects/bourbon

ls          lists all files by their names

more        view a text file without typing 'textedit.' You cannot edit the file.
```

HOW TO KILL A PROCESS

There are 2 ways to kill a job:

1) type control y in the same window
   --> Don't even think about using this to kill MAPGEN, MAPGEN2, TILE, OR ZONG.

   [MAPDIG: Only works when used before the control points were taken. If control points were already taken, finish taking the points, then exit the program by pressing button 0 and typing bye from the keyboard. Start a new session.
   BUILD: Not recommended. The best way to kill this program is to continue as if there is no problem, but enter "-1" (Exit Build - Do Not Save Changes) at the end.]

2) type ps -ef | grep (name of the program) in a different window, then type kill -KILL (job number)

   EXAMPLE:

```
chico% ps -ef | grep tile
acmieko  6380  6137 17 15:23:25 pts/8    0:07 tile  ----------.
acmieko  6383  5811  0 15:24:15 pts/6    0:00 grep tile       |
          |
          `--- job number       Use the job number from the line that
                                does not say 'grep' before the program name.
chico% kill -KILL 6380
```

Last updated Dec/26/01

IF YOU WANT KNOW HOW TO CREATE	THEN GO TO...
**quads base,	mapgen.quads
**twshp base,	mapgen.twshp
****box base,	tile_2box -OR- tilec
**qdlns base,	tile_2qdlns
**index base,	kcd.copy_index(under appendix)
**hydra base,	"
**geola base,	"
**cntya base,	"
**qpits base,	"
**folda base,	"
***road base,	"
symbols by copying	tilec

Last updated Dec/26/01

KCD.COPY

****

TO DUPLICATE DATA INTO NEW FILE OR BASE

1. TO COPY A BASE,
go to /home/kcd/base/<first letter of county>
type; ls <name of the base to be copied>
example: ls xx1234h*
xx1234h_aw xx1234h_nw xx1234_pw xx1234_sw

A. WITHIN THE SAME DIRECTORY:

type; cp <original base> <new base> **for each database**
example: cp xx1234h_aw xxtesth_aw
cp xx1234h_nw xxtesth_nw
cp xx1234h_pw xxtesth_pw
cp xx1234h_sw xxtesth_sw
then open a new base and change the header, date, initials, etc.

B. FROM ONE COUNTY TO THE OTHER:

type; cp <original base> ../<new county letter>/<new base>
example: cp xx1234h_aw ../a/axtesth_aw
cp xx1234h_nw ../a/axtesth_nw
cp xx1234h_pw ../a/axtesth_pw
cp xx1234h_sw ../a/axtesth_sw
then open a new base and change the header, date, initials, etc.

2. TO COPY A FILE, go to the directory that file is in

A. WITHIN THE SAME DIRECTORY:

type; cp <original file> <new file> ----> original file still remains
example: cp status.txt status.roads

OR type; mv <original file> <new file> **-> original file no longer exists,**
example: mv status.txt status.roads **so BE CAREFUL!!**

B. FROM ONE DIRECTORY TO THE OTHER:

type; cp <file name> <location of the directory>
example: suppose you've created a status.txt file under a wrong
county by mistake(i.e. /home/kcd/projects/cherokee),
and you want to move it to the right directory,

type: cp status.txt /home/kcd/projects/sheridan/status.txt
OR type; mv status.txt /home/kcd/projects/sheridan/status.txt

C. FROM A DIRECTORY TO SUBDIRECTORY:

type; cp(or mv) <file name> <location of the subdirectory>
example: suppose you've created a status.txt file under
'/home/kcd/projects' instead of '.../projects/<county>,'

cp(mv) status.txt /home/kcd/projects/sheridan/status.txt

Last updated Dec/27/01

KCD.COPY_INDEX

****

A. TO CREATE **index BASE THAT IS PLACED IN THE LEGEND OF THE MAP
B. TO CREATE OTHER LEGENDS, SUCH AS **hydra, **geola, **cntya, etc.

1. TO COPY AN EXISTING **index BASE,

go to /home/kcd/base/k

a) type; ls ksindex_*w

example: ls ksindex_*w

```
ksindex_aw  ksindex_nw  ksindex_sw
ksindex_bw  ksindex_pw  ksindex_zw
```

b) type; cp ksindex_aw ../<your county letter>/<(county abbreviation)index_aw>

example:

```
cp ksindex_aw ../c/ckindex_aw
cp ksindex_bw ../c/ckindex_bw
cp ksindex_nw ../c/ckindex_nw
cp ksindex_pw ../c/ckindex_pw
cp ksindex_sw ../c/ckindex_sw
cp ksindex_zw ../c/ckindex_zw
```

c) type; cd ../<your county letter>

example: cd ../c

then list the new index base to make sure all the files were copied correctly.

example: ls ckindex_*w

```
ckindex_aw  ckindex_nw  ckindex_sw
ckindex_bw  ckindex_pw  ckindex_zw
```

2. TO MODIFY THE NEW BASE,

a) open the new base in 'ge' and change the header to the correct name, date, and initials, leaving the projection and scale the same.

b) go to 'EDIT ZONES' and color your county 1013(should be defined as a gray in your color dictionary(/home/kcd/webster/cal)), and all the other counties should be 9990(which should not br defined in the dictionary).

How to compile a lake map:

SUMMARY

Lake maps are produced as requested by the Publication Sales office. The files are compiled from start to finish on the Macintosh® in. They are compiled from the cropped DRG TIFF files available by request from DASC. When the files become available, they are retrieved with the Fetch® program and saved onto the "ac" disk on the KGSSERVER. The files are cropped and edge-matched into one file using Photoshop®. Next the file is brought over into Canvas® and the template is adjusted (title, map number, lat/long degrees, index maps, contour interval, other text, size of border, north arrow etc.) to match that particular lake. The file is saved in CV6 format and the final copy that goes to Publications is printed on "Test Printer" (the HP 3500 54") using the 3M® water-resistant paper.

PROCEDURE

LOG ON TO AC DISK ON KGSSERVER:

On the Macintosh, under the colored button, open Chooser. "AppleTalk Zones" should default to KGS, and you need to click on . Under "Select a file server:" double-click on "KGSSERVER". Log on method should be "Microsoft Authentication". Username: ac Password: password. Click "OK" until you are done. This should mount the AC disk on your desktop. Double-click on this disk to open it up. Create a new folder (under "File -> New Folder") with the name of your lake (e.g. "tuttle"). This folder is where you are going to be saving all your files related this lake map.

REQUEST THE DRG'S FROM DASC:

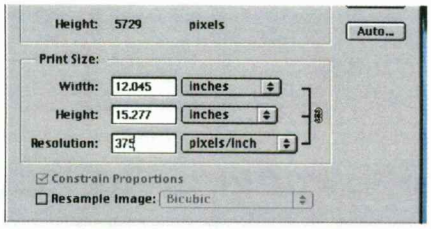
Eileen Battles has been handling my requests for the cropped DRG files. E-mail her (battles@kgs.ukans.edu) and tell her the row and column numbers for the quads you need for your lake. They number their quads the same way we do using the row and column numbers. She will probably call or e-mail you when these files are ready to be retrieved from their FTP site. This should only take a couple of days at the most.

RETRIEVE THE FILES FROM DASC'S FTP SITE:

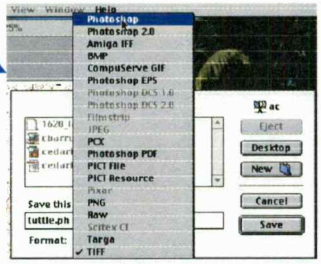
On the Macintosh, under the colored button, open Fetch®:

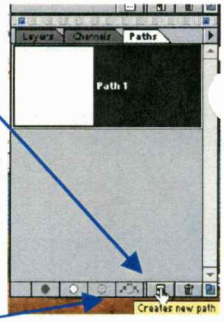
It will open a screen where you need to open a new connection to DASC's ftp site: Type in the entries just how you see them here (the password can be anything).

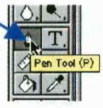
You will be jumped to a screen where you need to go to the folder where Eileen put your DRG's. Select the DRG's you need and click "Get File". You will need to save them in the lake's folder on ac.

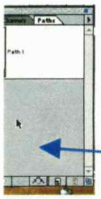
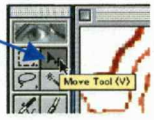


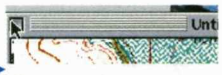
TILE THE QUADS TOGETHER USING PHOTOSHOP®

1) Open Photoshop®. Under File --> Open, select the quad showing the biggest area of the lake.
2) Under Image --> Image Size, change the resolution to 375 pixels/inch; this results in a scale of 1:36,000.
3) Increse the Image --> Canvas Size big enough to make room for the other maps along the edges.
4) Under File --> SaveAs, 

save this file as <lakename>.ph (e.g. "tuttle.ph"). The file format should be Photoshop®. This should be saved in the appropriate lake name folder on ac disk.
5) While still leaving the 1st file open, open an adjacent quad.
6) Change it's Image --> Image Size resolution to 375 pixels/inch.
7) Now you need to draw a path along the quad edges. On the path palette, click the "Creates New Path" button. This creates a path named "Path 1" and it becomes the active layer (because it is in black). 

8) Use the "Zoom Tool" to zoom to 300% at one corner of your quad.
9) Click the "Pen Tool" on the toolbar. 

10) Using the "Pen Tool", click once on each corner of the quad edges. You will see it connect a line through all the points. Finish your selection by clicking again on the 1st point to close the path. 
11) Click "Load path as a selection" at the bottom of the path palette.
12) Click off the "Path 1" layer by selecting the gray below it.
13) Go to Edit --> Copy.
14) Click on your 1st DRG and go to Edit --> Paste. Your selection will be pasted into the 1st DRG and now needs to be moved into place.
15) Click the "Move Tool" 

to adjust the newly pasted quad. You will need to zoom in very close along the quad edge and use the arrow keys to fine tune the adjustment. 
16) Quit your other window by clicking the upper left corner of it. Don't save the changes.
17) Repeat steps 5 through 16 for the rest of the quads that make up your lake map.
18) Use the "Rectangle Marquee Tool" to select the area to be used for 

the map. A good rule of thumb is to include about 1 mile around the map plus any

important (named) highways, rivers, or cities that might help the user locate themselves on the map.

19) Go to Image --> Crop to crop the selection.
20) Save this as <lakename>.ph (e.g. "tuttle.ph"). The file format should still be Photoshop®.
21) Go to File --> Quit to quit Photoshop®.

USE CANVAS® TO ADJUST THE LAYOUT OF THE MAP

1) On the ac disk open "laketemplate.CV5" .
2) To make most of the changes, you will need to select the object then go to Object --> Ungroup. The following things need to be changed to customize for your lake:
   A) Title
   B) "with lake-bottom topography" (or leave this off if no contours in lake itself)
   C) Map No. (from /home/kcd/base/maplist/m.series file)
   D) "Location of mapped area" (adjust location of black box in state)
   E) "Wilson NW . . . Contour interval" (delete names if not necessary, or delete the one that says 20 feet or 10 feet if it's not necessary)
   F) "Index to 1:24,000 . . ." (change names, lat/long degrees, orientation of boxes, amount of gray shading)
   G) Choose File --> Place and bring in the file in ac named "narrow.CV5". This is your north arrow. The degrees, MILS, and year in the paragraph need to be changed to match the 1:100,000 topographic maps for the county that contains the most of your lake.
   H) The 2nd paragraph that talks about the color of the lake needs to be changed to match the names of the quads for your map, if they show up in different colors. If there are no contours, you need to change the entire paragraph to match that of Marion Lake Map M-69.
   I) After all the symbols are changed, you should select multiple symbols and use Object --> Align to align symbols to each other. These should be grouped once the spacing is set.
   J) Go to File --> Save As and save this file in the correct lake's folder on the ac disk in the form <lakename>.CV6 in Canvas® format.

3) After you are done making the changes to the layout of the map, you need to go to File --> Place and place the file <lakename>.ph into the Canvas® file you are working on.
4) Adjust the location of the <lakename>.ph file along with all the other symbols in the layout of the map.

5) Adjust the black-line border. Drag in the edges so that there is a 1/2 inch space between the map and the border. Go to Object --> Ungroup to ungroup the two boxes that make up the border. You need to adjust the size of these borders so that there is a .2 inch space between them all around the map. To find out the size, select the outer border and go to Object --> Object Specs. This gives you the size. The inner border should be .4 inches smaller in the X and Y directions. Then select both borders and use Object --> Align to center them horizontally and vertically. Object --> Group to group them together.
6) This should finish creating the lake map. Save the file again.
7) On the desktop, select Test Printer by clicking it once then go to Printer --> Set Default Printer if it is not already selected. This should cause the Test Printer icon to have a thick black outline.
8) Go back to Canvas® and under File --> Page Setup change the paper size to 36" X 60". If this is your final copy, go and load the waterproof 3M paper into the printer. If this is a test copy, just use regular paper and use Test Printer Two for your default printer.
9) File --> Print, then click OK.
10) After the file has printed you can go to File --> Quit to quit Canvas®

Once the map has been reviewed and is completely completed, tell Gina and she can make a CD of the entire folder for that lake.