GEOLOGICAL MAPS

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Scientific Notebook #044 for
the Analogs Project

ENGLISH PEARLY
SANDY NGUYEN (SN)

CNWRA
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Contents Page

Data and codes referred to on pages 1-57 (i.e., those manipulated by J. Garcia) have been superseded by those handled by S. Nguyen. Pages 58 on describe the disposition of data and codes used significantly in this work.

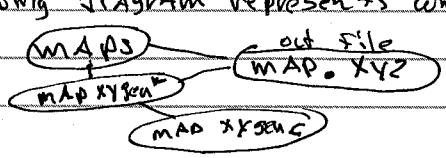
E.C. Pearcy
12/8/94

Initial entries 5/27/92 by Jose M. Garcia

5/27/92 JMG. In this notebook, I will be keeping notes on the work that I will be doing with the computer, that is, making geological maps which will contain specific needs ~~from~~ for my supervisor English Pearcy. (Peña Blanca, Mexico Project) EP 12/7/94

On this date, an account on the Silicon Graphics (SGI) computer was given to me. The login name is jgarcia. I was given the home directory to be USR1 or /usr1/jgarcia. The userid/groupid (UID/GID) is 1670/110, and the default shell is CS4. Also, to login an appropriate password was given to me, which I can later change. Several handouts on the information above and appropriate commands to run the computer and printers were also issued to me.

Work on the project on Peña Blanca, Mexico — sample readings were taken during a trip, from that a hand drawn map was generated. Now a more precise and neat computer map is needed. In order to create this map several things need to be done. First a program in the language of C was written to generate the X, Y coordinates of the map. This program is stored under the name of map xygen*, and it also generated the compiled program map xygen.C. The output was stored in a file named map.xyz. To complete the total input values, the z values, I entered them into the file by using the Vi screen editor. All of these files are in the directory called maps and the following diagram represents what is currently stored



5/28/92
JMG

From the output file MAP.XYZ contour MAPS were created. In order to create this MAPS, the software called ISM7 was used. This software is currently being used in the SGI or also refered as IRIS, where SGI works on the IRIS. From running these programs a series of files were created

jose.ans jose.fwd jose.log jose.prj
jose.rep

The file jose.prj is the file that is being used while making changes to the operating setting of the MAPS. The original grid was stored in the file named MAP.2grd and after ~~creating~~ JMG revise a preliminary contour MAP called MAP.plt was plotted on the screen.

MAP.2grd MAP.XYZ
MAP.plt MAP xygen*
MAP xygen.C

Jose Garcia

5/29/92
JMG

On this date ~~~~ program used to print the MAPS in the screen was introduced into the directory. This program converts the screen pixels being used into signals to print to the printer. The programs name is ismplotdm* and it must be runned every time a new file containing a MAP needs to be printed.
The current file containing the grid (MAP.2grd) and a file create to plot the values (MAP.plt) were combined and stored into the file (plot.hpgl). The program ismplotdm was runned and the file plot.hpgl were written into the programs commands or prompts. Then the command used to print the file or map in the laser printer: ~~the Postscript~~ JMG 5/29/92

ipr -Pimagen -Lhpgl Plot.hpgl
with origin in 0,0

To print to the big type paper printer or drafter the command used is

CP Plot.hpgl /scr0/plots

for C type paper the origin is 4, -2

Since it ~~was~~ JMG 5/29/92 is Friday and something may happen during the weekend, that is the files may be erased by a black out this files were saved in the public optical disk
The following commands were using
cd /opto to change to the disk for storage
mkdir jgarcia to open a block of memory
cd jgarcia
cp /usr1/jgarcia/maps/* .

ECP 12/6/94

6/2/92 The file containing the MAP (MAP.2grd) was modified by digitizing the line around the portion covered when the radiation readings were taken and the geological ground
the file boundary. Ant was created to make a boundary around all of this limits several node and zoom commands were used to make this possible.

6/3/92 JMG I generated a MAP called lowread.plt which contain the contour lines for the low intensity reading in El NOPAL MINE. The range I used was from 0 to 4 and the printout or the final plot came out with grid artifacts. This plot was on a 30 X30 grid. I am going to regrid the data in a finer grid spacing.
The grid that was more approvite was 90X90 where the values in between the entered values are estimated. Two copies were made both in the laser printer and in the Draft Master. One shows the low level radiation readings contoured and the other the high level readings. The low range is from 0 to 0.5 with spacing of .05, and the high range is from 0.5 to 28 with spacing of 1.

6/4/92
JMG

The low reading contour create in 6/3/92 was modified to have a interval between contours of 0.2 and the interval of the contours are from 0 to 6.5 so only about 3 contourlines are shown. this map was stored in the file name lowread.plt. Also this map was created later with color filled contours in a gray scale. several 8½ X11 copies were made to get an insight how the actual colors come out in gray.

6/5/92
JMG

The previous contour maps created which are for the low and high gamma reading were tried to put in gray colors, by making several polygons in each map. Each contour interval would have a different gray scale. Only computer images came out when doing the polygons, and no copies could be made. The original hardmade ~~matte~~ has a line which represents the visible uranophane limits. This line was entereded or disctized into a file called uranboun.dat and is was combined in with the outer boundaries (boundary.dat) and the grid file (map-xyz) to create a map containing the outerboundaries, the gamma values and the uranophane line. Copies of this map (uranline.plt) were made in the Draft Master in size C paper. A file called traverses (traverses.dat) was made containing the sample locations.

ECP 12/7/94

6/8/92 The file to create a map containing the location in the grid with its coordinates of the rock sample along the East-West and North-South traverses and the randoms was edited. The command written into the file to print the coordinates as text is SRFPST where the location of the sample rocks taken of the ground. The text needed to be written is enclosed in quotes. Another command used for handling the text size was SETXT, but the bad of this command is that it can only make the letter size only down to 1 that is the default size. A file (plotfile) was create containing the traverses, bad the East-West traverse is not clear, because it is written one on top of the other.

- A copy of the uranline.plt was done in the Master Drafter with dimesions of 15 inches to each side to get this the X and y limits of -2, 32 and reduced for 8½ by 11 paper by 5 to have 6.80 x6.80 in normal paper, and multipling by 2.2 to have above a 15 inche on each side on of size C paper.

6/10/92 The file or map containing the traverses was modified to contain only the traverse symols on the proper locations. The symbol used in the map for the samples is a circle (o). Several copies wave made with the stmple location. One only with the location and the boundary (traverse.plt), another with boundary, location, and grid with gama values (tragama.plt). the last was with the traverse locations of the uranophane visible line.

I started in a geological map of two square kilometers around the El Nopal mine. Several contour lines were digitized in to the file or plot file called ~~geomap.plt~~ JMG 6/10/92 geomap.grd.

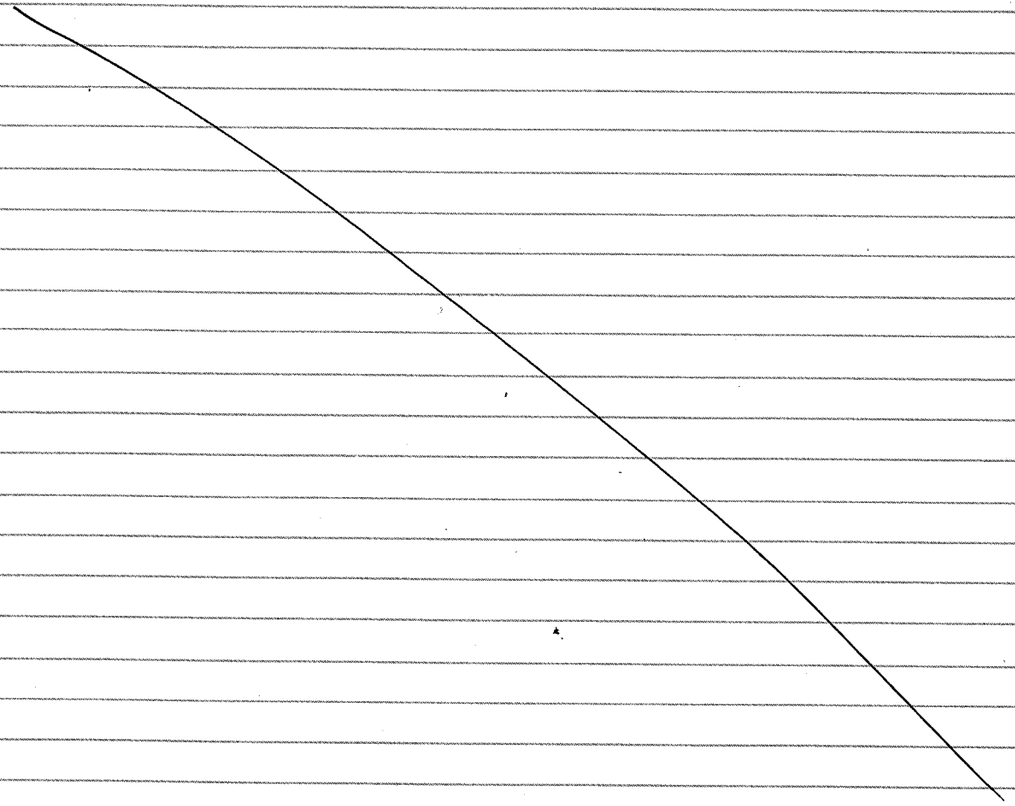
ECP 12/7/84

6/11/92 The two square kilometer geological MAP was digitized further. Most of the contour lines with ~~their~~ their values and Z values were entered into the file geomap.grd. The WAY to get into working with this particular creation of contour lines by digitizing is by First Going into the File Option CAMMAND. The select "4" Graphic editor, enter the edited file, in case geomap.grd and then select the digitizer (UBANGI) and start digitizing the lines with the menu on the grid board.

6/12/92 The contour lines in the file geomap.grd were finished digitized. With the CAMMAND replace section in the SCATTERED DATA CAMMAND under the Graphic editor the lines that were not meeting were replaced and connected. A geomap.plt or a plot file was created with the XANDY minimums AND MAXIMOMS is a Xmin (398200, 400700) and Ymax (3220400 3222400). the plot file contains all of the scattered data points.

6/15/92
JMG

On the two square kilometer map of the surrounding of UOPAI I. The lines indicating the roads, creeks, building, and trails were digitized and stored in the annotation file called georoad.ant. The teritary line that indicate what type of land were also digitized and stove in a file called geoter.ant. The symbols indicating the type of soil of rock were also inputted as text in the same file geoter.ant. A little work on the file boundary.ant was done to try to expand the boundary lines so that the reading points are inside the boundary line. A temp file of the boundary was created called ~~boundary.t~~ JMG 6/15/92 tmpboundary.ant to work of the orisinal boundary.ant to be able to modify it. A laser printout of the file geoma.plt was made and contains all the scattered points



6/16/92
JMG

Work on the file containing the boundary of the Level 10 UOPAI I. The boundarys of this flat section were finished expanding. Now all of the grid points containing gamma values are inside the boundary lines. The way the boundarys were expanded is by deleting points in the file containing the x,y coordinates making each lines.

- On the two square kilometer map. the file containing the scattered points (geomap.grd) was also named or copied to a file called (geomap.ant), the .ant means it is an annotation file. Plot file were created with this annotation files. This plot files were named geomap1.plt and geomap2.plt. They were made with the regular x, y coordinates (Not UTM). Big plot copies were done to compare with the orisinal paper. The plot file was created by using a program (gen_line.c) to write the command SRFLNE in the file to connect the points.

6/17/92 JMG

- Work on the two square kilometer topographical map from Peña Blanca, Mexico.
Since the map is already completed it is needed to be revised with the original copy or the paper copy from Mexico. When the mapswere compared some lines were not meeting. This lines were corrected by going into ism7 and replacing the sections with the Replace Section command under Scattered data in the Graphic editor.
At this time the USR1 disk in the IRIS is 100% used and cannot let me do procedures that require a map on the screen.
- Now I change to scr∅ which is not packed and which is erased every Friday. In here all of the file in the /usr1 were copied and modify. That is, many files were erased because they were not needed, and others were given new names or moved (mv) to another named for better understanding of what that particular file contains.
The following is the list of the files in the scr∅ which will later be pasted back to USR1 And to a backup desk for security purposes.

scr∅ /JGARCIA
maps/

scr∅/JGARCIA/MAPS'	mine/	roads_right.plt
gen_line*	outcrop.ant	topomap.ANT
gen_line.C	plot.(hpgl	topomap.xyz
ism3.toC	road_crks.ant	topomap_right.plt
ismplotdm	roads_left.plt	

scr∅/JGARCIA/maps/mine

boundary.ant	map90.2grd	uvanboun.ant
map.xyz	traverses.ANT	

6/17/92 JMG

Short description of every file left in the directory maps.

gen_line.C - program in C language to modify the file and maked scattered points in topomap.ANT have lines from one point to another. The SREFLUE 1, 1, ∅ command was used to connect the pts.

gen_line* - (Do not erase) file produced when the program gen.line.C is runned. Maybe used to ~~comp~~ JMG 6/17/92 run the program.

ism3.toC - (Do not erase) file used to run the program ~~ismplotdm~~ or contains the list of the files in the table of contents. EG 12/7/94

ismplotdm - A program that is used to print plot files. It interprets pixel location and store printer commands in file called plot.hpgl.

plot.hpgl - A file that is used to print. this file is recreated every time the program ismplotdm is executed.
Ex. to print to laser prints
{#} ipr -Pimagen -Lhpgl plot.hpgl
to print in Draft master or Big plotter
{#} cp plot.hpgl /scr∅/plots
★ Do this after executing ismplotdm.

mine/ - It is a subdirectory in maps directory. It contains the t10 level gamma reading values. It is about a 30x30 meter map with different annotation files to produce desired plot map.

outcrop.ant - An annotation file for the two square kilometer topographical map. It contains the territory boundarys or lines. It also has symbols representing what kind of mineral it encloses.

6/17/92
JMG

road_crks.Ant - An Annotation file for the two square kilometer map. It contains the lines for the roads, creeks, and trails.
Roads - - - - - -
Creeks. — — . — . — . —
trails . — — — — — —

topomap.Ant - Annotation file for the two square kilometer map. It contains the scattered points which were copied from map.xyz. This program contains of of the X, Y coordinates of the scattered points connected by a line. The gen_line.c program was used to modify this file.

topomap.xyz - Scattered data file that contains all of the X,Y,Z points creating contour lines. Does the same thing as topomap.ant, but only on the screen. This file is the one that was digitized point by points and will be used to make more correction if needed.

Plot Files *(plot coordinates will be given later)
roads_right.plt - plot file of 2 square kilometer map containing the roads, creeks, trails (In road_crks.Ant) and territory lines (outcrop. Ant)
- only the right side of the map.
roads_left.plt - same as roads_right.plt, but only the left side.
topomap_right.plt - plot file of the two square kilometer map containing the contour lines created from the file (topomap.Ant)
- Only the right half of the map.

coordinates for plot topomaps of 2 square kilometer maps

leftside		rightside	
Xmin	XmAx	xmin	XmAx
398400	399400	399400	400500
Ymin	YmAx	ymin	YmAx
3219925	3222075	3219925	3222075

6/18/92
JMG

Short description of files in the subdirectory mine in the directory maps. (contains the t10 level files of NOPA(T)

map.xyz - File containing 6/18/92 JMG all of the X, Y and Z values. X and Y are the grid coordinates, and Z values are the gamma readings used later for contour maps to show patterns or location of radiation on the t10 level.

map90.2grd - File contains the grid of these maps, used to bring up maps on the screen and to plot them. It has a grid of 90.90 make contour lines more smoother with less artifacts.

boundary.Ant - Annotation file that contains the boundary lines around JMG 6/18/92 ~~the~~ or enclosing the t10 level.

uranboun.Ant - Annotation file that contains a line representing the limit of visible uranophane. It need to be combined with boundary.Ant for better understanding.

traverses.Ant - Annotation file that contains the location of sample rocks taken from the t10 level. It has a circle (o) indicating the location.

—

(UTM)- Universal transverse mercator
1866 - zone 12

—

Fast editing to all SRFLNE 1, 1, 1 to change to SRFLNE 1, 1, 0
do
:g /SRFLNE 1, 1, 1 /s// SRFLNE 1, 1, 0

6/18/92 JMG

Notes on how the plots have been printed out (values used or dimensions of desired plot maps).

- on the mine subdirectory maps.

1. Xmin, Xmax, Ymin, Ymax
   - -2, 32, -2, 32
   ~~2. when run~~ JMG 6/18/92
2. Value to make it acceptable or to make it fit in a regular 8½ by 11 page. is 5 which gives a drawing of 6.80 by 6.80 inches.
3. Value to make it fit in the regular page after or while running ismploddm is 1, And to have a 15 in. by 15 in. map is increasing the scale by 2.2.

- On the topomaps of the two square kilometer area.

1. Xmin, Xmax, Ymin, Ymax for each side are in page 16.

2. The value to make it acceptabe or to make it fit in a type C paper in the Draft master is 50.8.

3. The values to make it fit in a regular page after or while running ismploddm is 0.2, and to have in fit in the C type paper the scale factor in 1.

- Work on computer.
  on the two square kilometer topographical maps.
  the annotation files topomap.ant and road_cuts.Ant and outcrop.Ant were modified in the Graphic editor menu.
  The lines that were incorrect or meeting one another were seperated so they will not appear to lie over one another.
- New copies of the map ~~on~~ JMG 6/17/92 were made.
  Four different copies:
  topomap_left.plt - contains left half of map with contour lines
  topomap-right.plt - contains right half of map with contour lines
  roads_left.plt - has the left half of roads, outcroplines, creeks and trails.
  roads_right.plt - has the right half of roads, outcroplines, creeks, and trails.

ECP 12/7/94

6/19/92 Procedure to save in the tape

ECP 12/7/94

telnet bren
login
password

JMG 6/19/92 ~~/U6bren~~ JMG 6/19/92

cp ~~/scr6/jose~~
cp -r /scr6 (osiris6) /jose/* /U6/jgarcia

tar -cuf /dev/rst6 /U6/jgarcia/*

tar -tuf /dev/rst6 /U6/jgarcia/* - list whats on disk

Iris
cp -r /scr6/jose/* /U6bren/jgarcia

Sun	Iris
gsirs6	scr6
U6	U6bren
U7	U7bren

Procedure to save files in tape in the Sun Disk Drive
1. First save in U6bren disk (Not extend)
go into U6bren by {#} cd U6bren
{#} ls
banos/ llll / jgarcia/ ... /
{#} cd jgarcia
{#} ls
nothing
{#} cd /scr6/jgarcia
{#} ls
= =
{#} cp -r * /U6bren/jgarcia/
or cp -r /scr6/jose/* /U6bren/jgarcia)

{#} cd /U6/bren/jgarcia
{#} ls
= =
{#} telnet bren
login:
passwd:
% cd /U6/jgarcia
% ls
~~% tar -cvf /dev/rst0/U~~ JM 6/19/92
% tar -cvf /dev/rst0/ /U6/jgarcia/* (copies to tape)
% tar -tvf /dev/rst0/ ~~/U6/jgarcia/*~~ JM 6/19/92 (list them)

% exit
% logoff

6/22/92 Plot files were created to obtain copies of the topomap.
- First a grid file was created using the scattered data file topomap.xyz.
- Second base map plots containing only the axis were plotted ~~JM~~ JM 6/22/92 to get coordinates of the origin of the paper type C.
- After several trials the origin came out to be 4.75, -2.
- A plot file containing contour lines using the topomap.2grd with intervals of 5. And the annotation files road_cvks.ant and outcrop.ant. was created and plotted on C type paper with origin already discussed. This plot was reduced from the intervals of about 2000, by 10% when running the wsm7 program. (topomap.plt)
- Another plot file containing digitized line and annotation files road_cvks.ant and outcrop.ant was created with the same values as the previous plt. (topoant.plt)

- A new subdirectory (Level_0) was created to place the information of the 0 Level wall in the ELNORA I.
3 Files of Annotation were created in this subdirectory.
bnd_lvl0.ant - contains the boundary
frac_lvl0.ant - contains the fractures

Location points were marked in red.

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6/23/92 The third file of the subdirectory level+Ø was created (mineral_lvlØ.ANt)
this File contAins txt symbols showing the location of certain kind of minerAls
* The Letters H and B cAnnot be entered as text.

- A new subdirectory wAs created (level+1Ø) And Two files were workedon
  - bnd_lvl+1Ø.ANt - contains the boundary
  - Frac_lvl+1Ø.ANt - the fracture lines were started.

6/24/92 Work on the subdirectory (level+1Ø)
Two more files were created
mineral-lvl1Ø.Ant - contains symbols showing the location of certain kind of minerals.
curscAle_lvl1Ø.Ant - contains the axis were the eye points or marks for the directions of the curved wAll.

- In directory (level+Ø)
  - ~~curscAte.Ant~~ JMG 6/24/92
  - curscAle_lvlØ.Ant - contains the same as curscale_lvl1Ø.Ant, but of different Level.

- Two plot file were created
  level Ø.plt - contains all AnnotAtion files of level+Ø div
  level1Ø.plt - contains all Annotation files of level+1Ø dive

- A new piece of pAper or the next cutted section of the mAp wAs plAced on the digitizing board.

- work on level+Ø - second pArt
  - files bnd_lvlØ.Ant, frAC_lvlØ.Ant, mineral_lvlØ.Ant And curscAle_lvlØ.Ant were all edited fAuther by digitizing this second pArt of the mAps.

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6/26/92
JMG

Work on the level t10 maps.
- bnd_lvl10.Ant - was edited further by adding a second portion of the boundarys.

- Frac_lvl10.Ant - was edited further by add fracture line (not finished).

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6/29/92
JMG

- Work on the level t10 maps
- Frac_lvl10.Ant - was finished being edited.
- curscale_lvl10.Ant - was also edited further by adding second part of the whole map.
- mineral_lvl10.Ant - was also finished edited for part two the the t10 level map.

- Work on the level t0 maps
- bnd_lvl0.Ant - was edited to finish the total boundary line of the level t0 map. (the 3rd part was add)
- Frac_lvl0.Ant - was also edited but not finished
  (Due to malfunction of the MICROGRID II mouse)
  * A new mouse and sytles pen were ordered to replace the broken mouse

7/1/92
JMG

Work on the topographic map (topomap).
The topoMAP in form of the contour MAP WAS used to MAke a three dimensional MAP.

- The topomap.xyz which contained the X, Y, Z and line numbers was changed to or used to make:
  topomap.xyp2 which contains X, Y, P, and Z values.
  The P value is the address or name for the solid coordinates under the surface layer that have the X, Y, Z coordinates. (P is equal to "0")
  P is equal to 1300 to make the thickness of the solid in the program used.

- Run IUMCAIC (new program)
  program used to generate the 3-D plots.
  - Go into 3-D grid calculations to generate a 3-D grid.
  topomap.xyp2 was used as the data file.
  - topomap.3grd was produced
  note: - tolerance of factor of 5 was used
  - a grid of 50X50X18 - was used to determine accuracy.

Go back to Main Menu
- 5) create display file
use topomap.3grd to create a display file
* All names need to have Facesstring (x name.faces

topomap.faces was produced and contains all the specifications discussed above.

7/6/92
JMG

- Work on the 30 by 30 MAPS of El VOLCANO which contain contour lines made from the low and high gamma radiation readings.
- New plots were created, and they are stored in /usr1/jgarcia/mtps, they made under this directory because the file or grid file when copied to another directory it does not work.
The plot file that were created are hightrav.plt, hightrav2.plt, lowtrav.plt, lowtrav2.plt, and lowtrav3.plt
- The objective was to create contour MAPS with the East-West and North-South traverse locations of the rock samples.
The two plot files that contain the good plots are hightrav2.plt and lowtrav3.plt.
hightrav2.plt - has the traverses or traverses.dat file and contour lines with intervals of ~~15mG~~ from 0.5 to 25.
lowtrav3.plt - has the traverses and the contour lines with intervals of 0.05 from 0 to 0.5.
- Work on the Vertical MAPS.
All of the original paper MAPS were scaled, that is a scale was written on them, and scattered reference points were located.

EGP 12/7/94

7/8/92
JMG

Started working with the MAPS or Annotation files of the vertical MAPS of NOPAL I
- The new digitizer and sytlist pen are in+ command

cat c' /dev/ttyd10

: to check or start using a new digitizer (that is a different kind)

All level+0 files were finished.
Work on level+10 files was done.

7/9/92
JMG

Work on the vertical maps of NOPAL I.
The file in the directory Level+10 were worked on. They were edited further

bnd_lvl10.ant
frac_lvl10.ant
mineral_lvl10.ant
curscale_lvl10.ant

7/10/92
JMG

Work on the 30 x 30 contour maps of gamma readings of level #10 El Nopal I.
Objective: generate two versions of this map.
1.) Remove numeric values, leave grid nodes (+) leave sampling traverses locations (o), leave contours
2.) Same as #1, except use gray-scale shading for the contoured region, with lowest values & highest values dark gray. Make sample locations (o) solid dots (●).

- The annotation file with the traverses (traverses.ant) was modified by changing the symbol type. The number was changed from 13 to 22.

- A contour map of the high gamma readings was generated (intervals of 1 from contour .5 to 25).
*had been generated before and plotted. (highlvau.plt)

- This contour map or the contour file map90.3grd was transferred or copied to an annotation file called map90.cnt (cnt for contours). program gen_line.c was used
This annotation file was modified under the graphic editor by removing contour lines that extend past the boundaries.

- A plot map was generated with this annotation file, the boundaries, the grid nodes and the traverses with solid dots.

- Several maps using the color fill contouring were also generated.
command to make a color plot to black + white
tobw nopal_clr.rgb nopal_bw.rgb

- To generate gray scale maps to change the color file being used.

7/10/92
JMG

The command used to change or create a new file was {#} cte
Select any color the color bars are showing
- In this case a white was placed on one extreme and a black on the other. to generated a gray scale.

The plots either came out be be dark on the outside with decreasing scale on the contours or white outside and increasing grayscale on the contours.
File created with different color or black+white mixes.
Jose
Jose2
Jose3
Jose4
The file that was used to create the last plot was Jose 4.
command to from black to white or white to black
{#} invert nopal_bw.rgb nopal_ibw.rgb

command to paste plot on screen
{#} ipaste nopal_ibw.rgb

command to run program to change plots into postscript in order to be printed in printer.

{#} tops nopal_bw.rgb -b 4 > nopal_bw.ps

command to print

{#} ipr -Pimagen nopal_ibw.ps

7/10/92
JmG

List of new files that were added to the directory.

nopal-clr.rgb - contour map with color combinations
nopal-clr.ps - contour map in color converted into postscript.
nopal-bw.rgb - contour map in black and white
nopal-bw.~~rgb~~ JmG 7/10/92 PS - contour map (black and white) in postscript.
nopal-ibw.rgb - inverted black & white map
nopal-ibw.ps - inverted black & white map in postscript.
File used to turn in.
nopal-bw2.rgb - contour map in black and white
nopal-ibw2.rgb - contour map inverted in black and white
nopal-ibw2.ps - inverted black & white MAP in postscript.

7/13/92
JmG

Work on the vertical maps of El Nopal I.
A new subdirectory was introduced to the directory. This new subdirectory in called level+30 and will contain the same type of files as the rest of the level subdirectorys already worked on. The following are the new files created or started in level +30:

bnd-lvl30.ant - contains the boundary lines
frac-lvl30.ant - contains all of the lines which represent the fractures on the walls.
mineral-lvl30.ant - contains symbols representing what type of mineral at particular location obtains.
curvalo-lvl30.ant - contains an x-axis that has reference points with measured directions of the cutted hill.

7/14/92
JMG

Work on the vertical MAPS of NOPAL I walls. Level+10 files were edited further
Files that were edited in subdirectory level+10
bnd_lvl10.Ant
Frac_lvl10.Ant
mineral_lvl10.Ant
curvscale_lvl10.Ant

- Level+30 files were also edited further
file that were edited in subdirectory level+30
~~bnd_to130.Ant~~ JMG 7/14/92 bnd_lvl30.Ant
frac_lvl30.ant

All files in /scr0/jose JMG were copied to another memory storage unit called 7/14/92 u6bren
command used:
cp -r /scr0/jose/* /u6bren/jgarcia

A tape back was made of all of the files in /scr0/jose
command used in lu6
tar cvf /dev/rst0 ./jgarcia

7/15/92
JMG

Work on the vertical wall maps of El NOPAL I.
- Level+30 files were edited further
The files that were worked on are as follow:
Frac_lvl30.Ant
mineral_lvl30.Ant
curvscale_lvl30.Ant

- Work on the 30 x 30 map
- contour maps were generated in different contour intervals and in different scales of color-fill.
- Surfaces models were also generated from the 30 X 30 map using ISM, by going into plot map, perspective map, and the either mesh or contour mesh from there on it is the same as generating any base map.
- Pictures were taken of several color-fill contour maps and from the 3dimensional models.

- Work on the two square kilometer map
- Another topomap.face x that is another display map was created called topomap2.faces.
- this was created again by running IVM calc and IVM Draw to display the 3dimensional map in the screen.
- Several pictures were also taken of this map in different colors and showing the mine location.

- ~~two~~ JMG 7/15/92

7/16/92 JMG

Work on the vertical wall maps of Peña Blanca, Mexico

- Work was done on the levels 30 And 10
- Level 30 files were finished digitized.
- Level 10 was Almost finish digitized

7/17/92 JMG

Work on the vertical wall maps of Cl Nopal I in Peña Blanca, Mexico.

- Level +10 was finished digitized.

- A new subdirectory in the directory was added For the information of Level +40 the name in (Level +40) Agian new files were created with ism7 and they are as follow

  bnd_lv140.aut
  frac_lv140.Aut
  mineral_lv140.Aut
  curscal_lv140.Aut

- Level +40 was finished edited or digitized.

- Another subdirectory was add name (Level +20) contains or will contain the files for the +20 level.

7/20/92
JMG

Work on the vertical wall maps of El Nopal I in Peña Blanca, Mexico.
Level 20 was started to be edited
The names of the files that were started or worked on are as follow:
bnd_lvl20.ant - contains the boundary of the map
frac_lvl20.ant - contains the fractures as lines
mineral_lvl 20.ant - contains mineral symbols placed in the location where the mineral in found.
curscale_lvl20.ant - contains a x-axis scale with marked points and the direction from on points to the other.

7/22/92
JMG

Work on the vertical wall maps of El Nopal I in Peña Blanca, Mexico.
Level 20 subdirectory was continued being edited.
work on files:
bnd_lvl20.ant
frac-lvl20.ant.

7/23/92
JMG

Work on the vertical WALL MAPS of El Nopal I in Pena, Blanca, Mexico.
Level120 subdirectory was edited further
The files that were edited are:
bnd_lvl20.Ant
Frac_lvl20.Ant
mineral_lvl20.Ant
curscale_lvl20.Ant

~~7/23/92~~ jmg 2/24/22
7/24/92
JMG

Work on the vertical WALL MAPS of El Nopal I in Pena, Blanca, Mexico.

- Level120 subdirectory was edited and finished.
files that were worked on are:
frac_lvl20.Ant
mineral_lvl20.Ant
curscale_lvl20.Ant

- Plots file in subdirectory (Level110) were regenerated in order to practice and get a specific Factor of printing of the Draft Master

7/27/92 JMG

Work on the vertical wall maps of El Nopal I in Pena Blanca, Mexico.

Level+10 subdirectory was edited to fix small things in order to have an accurate plot.

All of the levels were printed in the Draft master

The five levels ~~include~~ JMG 7/27/92 include the following files:

bnd_lvl#.Ant
Frac_lvl#.Ant
mineral_lvl#.Ant
corsctle_lvl#.Ant

level+10 and level+20 were printed on paper type E with an scale of 4.9 in the origen around 4,-2 and 4,7

level+0, level+10, level+30 and level+40 were printed on paper type C also with a scale of 4.9 and origin around 5,-2.

the names of the files are
level0.plt
level10.plt
level20.plt
level30.plt
level40.plt

7/31/92 JMG

The vertical maps of El Nopal I as well as the others need the proper legends and titleblocks.

- work on the vertical maps of El Nopal I

Since the original legend of the maps have symbols and line shapes representing mineral location the legend commands the involve LGDTXT (legend text) will not work.

1 In order to put a legend on this maps an annotation file was first created with the text entered in the Graphic editor where the line shapes were also entered. (titlevel.Ant)

2 A plot file of the Annotation file was then created for refrence of the montage commands used later. (titlevel.plt)

3 A file was written done (level_montage.Ant)

```
SETPEN 12 1
LGDFRM -1 -1 0
LGDBOX -9 1 25% 50% 0 0
LGDZFL "titlevel.plt" 1 0 9
```

This file was entered when producing the plott file

file for making legend of color contours

legend_contour.Ant

```
LGDFRM 0 0 1
LGDBOX 2 2 100% 15% 1 1
LGDCFC 2 4 5.0 1.0 2
```

8/3/92
JMG

Work on the vertical maps from El Nopal I
- The legend being placed on the vertical map was finish edit, that is, it was fixed.
The file that was edited is (titlevel.Ant)
Since this file was adjusted a new plot file (titlevel.plt) was written or overwriten

- The montage file level_montage.Ant was then copied to all of the other level subdirectories

After fixing the Annotation file, the plot files were recreated with the level_montage.Ant file to add the Legend box.
- All of the plot files were copied the same scale as before (see page 42) 4.9 scale in ism7

- The the scale was double by recreating all of the plot file of every level
The scale factor in ism7 was 2.5

- This plots were printed on paper size or type E with origin on 4, -2 and on type C paper horizontal with a new origen of -7, 3.

- Work on the new map of the tunnel or Adit of El Nopal I. Strik/Dip function were reviewed inorder to work on the map.

8/4/92
JMG

List of the most important files in /u6bren/jgarcia, A short description if needed will be included

/u6bren/jgarcia

level+00/ level+20/ level+40/ topo/
level+10/ level+30/ mine/ tunnel/

level+#/ - contains Annotation files and plot files. of ~~the level~~ JMG 8/4/92 each level vertical walls of El Nopal I represented by the #.

mine/ - contains files from the 30 x 30 radiation reading map.

topo/ - contains the files from the two square kilometer map from Peña Blanca

tunnel/ - will contain the files from the tunnel or adit of the +10 level surface.

All of the directories with (level+##) names basicly contain the same file names with the same type of information.
/u6bren/jgarcia/level+##

- bnd_lvl#.Ant - boundaries of the vertical maps
- curscale_lvl#.Ant - a scaled axis or x-axis with marked points and the direction from one point the, the other.

8/4/92
JMG

- Frac_lvl#.Ant - fracture lines of the vertical walls (Annotation file)
- mineral_lvl#.Ant - text symbol in Annotation file indicating type and location of minerals on map.
- level_montage.Ant - file as an annotation creating a Legend box ~~or more~~ JMG 8/4/92 using montage commands and placing it inside vertical map frames.
- titlevel.Ant - text and graphically edited lines used to creat the information in (level_montag.Ant). (only in level+0)
- titlevel.plt - plot file of the Annotation file titlevel.Ant used as reference by level_montage.Ant
- level#.plt - plot of ~~the~~ JMG 8/4/92 all the vertical walls incuding all Annotation files. except for level+10 & level+20 which are divided into left and right plots (level#_left.plt)
- ismplotdm - program used to convert plot langoase into hpgl' longuase for printing. (in all directories)
- ism3.toc - information or file containing ism settings.

ECP 12/7/94

8/4/92
JMG

/u6bren/jgarcia/mine

- boundary.Ant - Annotation file containing the boundary line of the 30x30 map. +10 level
- traverses.Ant - annotation file which has a set of dark "dot" symbols representing sample rock location on the +10 level surface.
- uranboon.Ant - annotation file which contains one boundary line on the +10 level representing the boundary where the uranium mineral shows.
- map.xyz - scattered data point of the +10 surface map. the z-values represent gamma radiation readings.
- map90.2grd - the grid file used to make the contour maps
- map90.Ant - Annotation file containing the contour lines created using map90.2grd as Annotation lines.
- map90.cnt - file that contains the contour information used to convert map90.Ant into an Annotation file
- Jose#.clr #=2,3,4 - contain color files used on the contour maps. Jose4 has a gray scale
- legend_contour.ant - Legend file creating a legend for contour scale and north arrow box.

8/4/92 JMC

- map-xygen-c - program to generate an x and y consecutive coordinates, used for creating map.xyz

- gen-line.c - program to read from a file of x and y ~~coord~~ JMC 8/4/92 coordinate and draw a line from point to point.

/u6/bren/jgarcia/topo

- outcrop.Ant - Annotation file that contains the boundaries of type of outcrop which are represented by symbols.

- road-crks.Ant - Annotation file which represents lines differently for roads and ~~creeks~~ JMC creeks.

ECP 12/7/92

- topomap.Ant - Annotation file containing the contour lines of the two square kilometer map.

- topomap.xyz - contains the data of every digitized point (x, y, z, line number) use to creat 2grd.

- topomap.2grd - A grid representing the surface of the topomap.

- topomap.3grd - A grid representing the topomap in 3dimensions that with x,y,p,z

- topomap.xyp2 - contain scattered data points (x, y, p, z) to creat a ium display

8/4/92 JMC

- topomap.rgb - a topomap color file

- gen-line.c - generate lines, program

- xyz2xyp2.c - program that reads x,y,z values and writes x,y,p,z values

/u6/bren/jgarcia/tunnel

- will contain files from tunnel or adit under level the surface.

8/5/92
JMG

Work on directory mine/
- The legend box containing the colorscale, for the contour color-fill MAP was continued to arrange.

- After getting the color scale several plots were created on the screen.
  - This plots were the contour MAP done before in a grey scale which then was inverted to change the black and white colors and then changed to postscipt file for printing.

The procedure to get this kind of MAP is the following:
- Running ISM7 create the contour MAP till the point where the plot appear on the screen.
- On another terminal login into the same directory And type
  icut name.rgb
- A box with the icon will appear on the screen of the console
  1. Move the box up one to corner of the screen And press left mouse button once
  2. Place the icon (arrow) in the icut box and the press the spacebar and keep it holding down
  3. Move the icon to one corner of the plot and press left mouse button and keep it press And move to the opposite corner of the plot and release left mouse button and space bar
  4. wait a little while

This procedure will save the screen in a file under the name entered when icut command was enter on the other terminal.

8/5/92
JMG

Since the colorfile that was used was a grey scale (Jose4.ch) the screen is all black and the scale goes to white. So to invert this colors type this following command
  invert name.rgb name_i.rgb

And to print type:
  toPS name_i.rgb -b 4 > name_i.PS

to change to postscript so printer can read & print.

- More color-fill contour MAPS were created with a variable numbers of contour intervals lines and step intervals of colors.
  - Pictures were take to generate slide images.
- All of the levels as plots were also taken pictures for slides.

8/7/92
JMG

Work in directory mine1

- contour maps were generated containing different contour intervals.

The command under option settings and Base and contour map setting whe the Interval option for contours was turned on.

The way the intervals were entered was by choosing the contour line and type as many times contour values and keeping track of the interval being entered.

Several plots were generated but the best plots result was by chossing the fdlowing intervals 0.1 to 0.5 with increments of 0.1
1 to 23 with increment of 1

The data were plotted on 8½ by 11 paper.

8/10/92
JMG

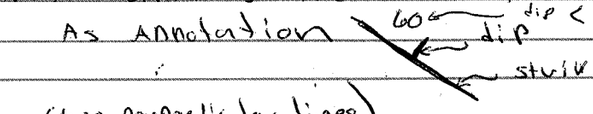
Work on directory tunnel1

The mylar copy of the Adit or tunnel from level tØ or under level tlØ was started and finished digitized, The tunnel limits, visible uranophine, fractures and strike and dip of fractures were entered in different Annotation files
List of new files and description

tunnel_boun.Ant - contains the tunnel limits or wall as a horizontal top view) cross section cut.

mineral_tunnel.Ant - contains "t" symbol indicating location of uranophane mineral

strike_dip.Ant - contains the strike and dip As annotation



(two perpendicular lines)
Als contains the fracture faults represents by the broken line - - - -

legend_tunnel.Ant - contains the explanation or legend entered as an annotation file

legend-tunnel.plt - plot of legend-tunnel.Ant to be used in the montage file

tunnel_montage.Ant - File creating a montage in the lower left side corner

Adit.plt - plot from all the file discussed above.

8/11/92
JMG

Work on the directory tunnel/

- the Annotation file strike-dip.Ant was edited in order to move text to a more visible position.
- A paper copy 8½ by 11 was generated out of this directory containing all the Annotation files needed to produce to tunnel map.

Work on the directory mine/
- Fifteen different versions of the contour map were created in order to hand pick the best to plot.
List of plot file (provisional) will be earsed!

lc.plt - low contours
lcg.plt - low contours, grid
lcgt.plt - low contours, grid, traverses
lcgv.plt - low contours, grid, z values
lcgvt.plt - low contours, grid, z values, traverse

hc.plt	cc.plt
hcg.plt	ccg.plt
hcgt.plt	ccgt.plt
hcgv.plt	ccgv.plt
hcgvt.plt	ccgvt.plt
hc - high contours	combination contours

low contours - 0.05 to 0.5 in 0.05 intervals
high contours - 1 to 24 in 1 intervals
combination contours - 0.1 - 0.5 in 0.1 intervals and from 1 to 23 odd contours

All the levels vertical maps were also plotted on 8½ by 11 to keep as files reference for Joe Jangs

8/12/92
JMG

New work on the directory mine/

The +10 level surface map which contained the gama readings also has drawn fractures and other information

- These fractures and other information was digitizes similarly like the tunnel map.
Three new Annotation files were opened to store the digitized information

Frac-Fault-Ant - contains the fractures and faults as lines in Annotation.

strike-dip.Ant - contains the strike and dip 90 and an angle as Annotation data.

mineral-area.Ant - contains different lines and the mineralization of the map. H ——-——-H ⇒ hematite location
------ encloses a certain area
it also contains symbols and oder letters

This map was not finished digitized on this date

8/13/92
JMG

Work on directory mine

The map was finished digitized and then it was modified for correct character size.
the command that were fixed and entered thorought to file were SCTCHR And SCTTXT

- A copy was generated containing of the the following files
  boundary.Ant
  frac_fault.Ant
  strike_dip.Ant
  mineral_area.Ant
  uranboun.Ant

on the plotter in 18 by 18 inches

map boundaries -4 32 -4 32
and a factor of 2 was used in ism to reduce the map to 18 by 18
a factor of 1 was used to print on the plotter

ECP 12/7/94

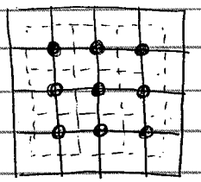
8/14/92 All of the files in /scr0/jose/ were recopied to /u6bren/jgarcia

- Back ups in 8mm tape ~~will~~ JMG were done
  - two tape were used, that is the files in /u6/jarcia were tape to the tapes
    one tape for Joe Dangs and the other for English Peary
  command use to do back ups
  in /u6bren/
  tar cvf /dev/rst0 ./jgarcia

EW 12/7/94

2/10/94
STN

English request:
get fracture count and fracture length at each meter grid. try to shift grid such that the location at each sampled gamma is the center of the meter grid.



□ - master grid

⋮⋮ - shifted grid

• - sampled gamma

should be done in 4 wks. (3/11/94)

Result is used for statistical comparisons.

2/14/94
Stn

Meet w/ English + Amitava Ghosh

1. Verify fracture arcs are not broken up @ intersections.
2. Add missing fractures (~ 894)
3. Use 1, 2, 3, 4, + 5 meter grids
   - fracture density
   - fracture intersection instead of block density
   - discontinuity network where # of fractures/grid = 0
     ∴ as size of grids decreases, # of ∅ count grids increases

see paper "Fractal characteristics of rock discontinuities" by Ghosh.

3/10/94
stn

Meet w/ English

To do:

✓ * Compile final fracture map (w/ new data)
✓ * recalculate fracture density (both ways)
✓ * compile final gamma map + contour
✓ * for each grid point, calculate a fracture density so that we may calculate a correlation coefficient btwn each type of fracture density + the gamma distribution.
(Ascii file w/ x, y, gamma, frac1, frac2)

Optional:

① Calculate the "fractal dimension" of the ~~fractal~~ fracture network. stn 8/24/94
② fracture intensity (fracture density) } aka Ghosh
③ fracture interconnectivity }

Deadline is April 6.

3/15/94 Stn

New fracture Map (3/94)

- Map scanned in by English, brought into MacDraw Pro & saved as EPSF file, fract_9403.eps.

- Replace ^M w/ newline character.
  % ctrlM < fract_9403.eps > new.eps
  % mv new.eps fract_9403.eps
  Edit fract_9403.eps to remove extra chars @ beginning & end of file.

- egrep "^1 1.0 | ^\[" fract_9403.eps > ~~junk~~ fract.dat Stn 8/26/94
  - extracts the markers & the fracture data points.
  - move the "Line" commands to markers.dat.

Actual axis	EPS axis
10,30	165, -100
10,25	165, -428
10,20	165, -756
10,15	165, -1084
15,30	492, -100
15,25	492, -428
15,20	492, -756
15,15	492, -1084

  - To translate EPS axis to Actual axis
    $x = (eps\_x - 165)/65.4 + 10$
    $y = (eps\_y + 100)/65.6 + 30$
  - edit ~~junk~~ fract.dat Stn 8/26/94 to keep only the translation line & the "CP" command line.

- Run fract.scr to get nodes & vertices of each fracture using fract.awk. (i.e., generates lines.gen file to use as input file for arc generate command)
- Create tics.gen file as input to arc "generate"

- Build Lines coverage
  arc> generate fract_9403
  generate> input lines.gen
  generate> lines
  generate> input tics.gen
  generate> tics
  generate> quit
- To store attributes about spatial data, must create feature class
  arc> build fract_9403 ~~cp~~ Stn 8/26/94 lines

3/16/94
stn

Create a new coverage containing strikes & dips from the original map in 92(?). Result of the new coverage consists of most of the strikes & dips and some missing fractures. Some of the strikes & dips were already present. (Used 5mgrd, fractand hem, and bnd02cn ~~as~~ stn 8/26/94 for background coverages)

Append fracthem, ~~nopal~~ fract 8/26/94 stn 9403, and strikes_dips coverage to form newfracthem.

3/17/93
stn

Cleaned up the covered ground coverage called ground_all to take into account the new fractures and the strikes & dips from the original data set. (Used newfracthem as background)

Regenerate the 3 fracture-related maps.

1) Fracture Map: (fract.aml)
- instead of using fracthem, for now ~~used~~ newfracthem. eventually, ~~[illegible]~~ 8/26/94 stn fracthem will be deleted & newfracthem will be renamed to fracthem.
- To highlight new fractures, fract_9403 & strikes_dips ~~[illegible]~~ stn 8/26/94 are drawn w/ different colors.

2) Fracture Density (fract_freq.aml)
- Regenerate ~~[illegible]~~ stn 8/26/94 frequency grid by running go_freq.aml. ~~to start~~ to run frequency.aml w/ ground_all, metergrd, & newfracthem as input coverages. Output is freq_rsp, sampled ~~[illegible]~~ stn 8/26/94 @ .1 meter

3) Fracture length (fract_len.aml)
- Regenerate length grid by running go_len.aml to run length.aml w/ ground_all, metergrd, & newfracthem as input coverages. Output is len_rsp ~~samp~~ 8/26/94 stn sampled @ .1 meter.

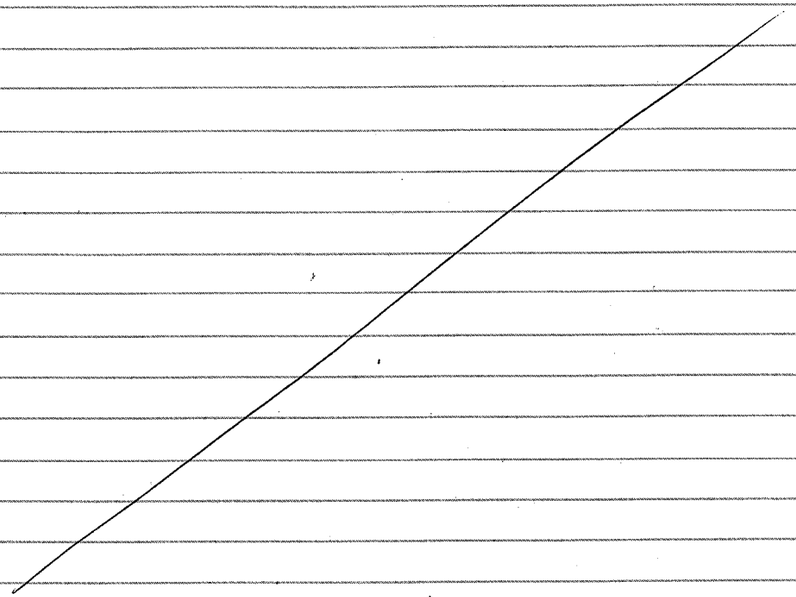
- Modify frequency.aml, length.aml, & normalize.aml to use the root of the file specification as part of the item name instead of using the who file specification.
- frequency.aml & length.aml now will immediately convert metergrd ~~[illegible]~~ 8/26/94 stn polygon coverage to a grid and be resampled @ .1 meter using bilinear interpolation.

English requested the output maps to be in Adode Illustrated format, so used "display 1040 3" and a filename.ai

2/18/94 pt

New Gamma data collected 3/94

- extend level 0 area.
- there is a geologic map of the extended area but English is not confident w/ the fractures since the ground 8/24/94 pt consists of sand which is unstable.
- some day the map will be digitized for summary report.
- no boundary for the new gamma data. Thus make a nice curve connecting the values at the edges of the area. Later, when the 8/26/94 pt other level 0 geologic map is digitized, 8/26/94 pt the made-up boundary will be replaced w/ the actual boundary.



3/22/94 pt

- Found some inconsistencies w/ the 8/24/94 pt original gamma data. I assume the gamma file used for contouring is gamma.xyz, but what is gamma.bu1? 8/26/94 pt 8/24/94 pt It looks like gamma.bu1 is a subset of gamma.xyz but some of the 8/26/94 pt cells have different values and some of the cells in gamma.bu1 are not in gamma.xyz.

x	y	gamma.bu1	gamma.xyz
-2	14	15	10
-3	14	20	15
-4	14	20	15
-4	15	15	
-5	14	25	15
-5	15	25	15
-6	14	20	15
-6	15	15	10
-7	14	10	15
-8	15	15	10
-9	15	15	10
0	0	0	10
0	10	10	15
0	12	10	12
0	9	15	10
~27	~10.5	1300	
~27	~11	2800	
~28	~11	1500	
~27	~11	1950	
~29.5	~12	150	

For now assume gamma.xyz was the data taken in May of 93.

Create new 8/26/94 pt gamma grid coverage for contour plot
- combined nopal_9305/rawdata/gamma.xyz and nopal1/9403/gamma.dat to allgamma.xyz
- wrote gamma.awk to multiply gamma values by 100 to eliminate floating point.

- wrote gamma.ser to run the awk script using allgamma.xyz as input & send the output to newgamma.xyz
- modified ascigrid.c to change minimum x & y to -16 and maximum x,y to 50
- also modified ascigrid.c to shift the grid down and to the left by ½ meter.
- % ascigrid > ascigrid.log
  reads newgamma.xyz & writes gamma.asc
- arc: ascigrid gamma.asc gamma_int
- arc: polygrid gamma_int gamma_cov
- using gamma_cov as background coverage, redraw level 0 boundary manually to include new gamma values.
- arc: rename boundary8/24/94 stn to gamma.bound
- arc: grid: gamma.rsp = resample (gamma_int, .1, bilinear)
- arc: latticeclip gamma.rsp gamma.bound gamma.clp
- gamma_clp is the grid coverage to plot.

(Note: may want to think about renaming
gamma_int to gamma_1m
gamma_rsp to gamma_.1m)

3/23/94 stn

Modified gamma.aml to work w/ new gamma_clp & gamma_bound.

- 8/24/94 stn Create new Smgrd to include new level 0 area.
  *arc: create gamma_Smgrd Smgrd
  * arc: generate gamma_Smgrd
    generate: fishnet
    Origin Coordinate: -20, -20 — y: 8/24/94 stn = -20 to 60
    y-axis coord. : -20, 60 — x: 8/24/94 stn : -20 to 45
    Cell size : 5, 5
    # of rows, cols: 16, 13
  * create Smgrd_ann.gen 8/24/94 stn containing labels for axis. This 8/24/94 stn file is used as input file to generate for creating annotation. (* Can use larger font & labels can be closer to grid)
  * arc: generate gamma_Smgrd
    generate: input Smgrd_ann.gen
    generate: annotations # # 16 ← text symbol
    Note: to regenerate a feature w/out having to start from scratch, use dropfeatures command. Arg. are: 8/24/94 stn
    (e.g., arc: dropfeatures gamma_Smgrd anno.* geometry)
  * 8/24/94 stn Use arcedit, to justify the labels or whatever else needs to be done.
    arcedit: editfeature anno
    arcedit: drawelement anno
    arcedit: draw
    arcedit: select many
    arcedit: list $all - list all pseudo variables
    arcedit: calculate $justify = 'cl' ☐1
    'cr' 1☐
    'uc' ☐
    'lc' ☐

- Create new block (coverage) to use gamma_bound.
  arc: ~~copy~~ 8/24/94 gamma_block gamma_bound.
  arcedit: ef arcs
  arcedit: coordinate keyboard
  arcedit: add
  2, -20, -20
  1, 45, -20
  1, 45, 60
  1, -20, 60
  2, -20, -20
  } add a border around the boundary the size of 5 mgrd.
  arc: build gamma_block
- In gamma.aml, change mapscale from 3.7 to 4.25; "Level +10" & "Level +00" labels need to be moved; & replaced the old coverages ~~for~~ 8/26/94 stw w/ the new coverages.
- Still needs to be done: redraw the nranoplane line.

To send map to a postscript file:

Adobe Illustrated

arcplot: display 1040 3
arcplot: & run .ai ____

ARC graphics file → postscript

arcplot: display 1040 1
arcplot: & run .gra ____
arc: postscript ____.gra ____.ps <scale>
1 = 20 x 23
.42 = 8½ x 11
.55 = 11 x 17

To send to color PS printer from jdsc2c
% lpr -Pcps2 -s ____.ps

3/24/94 stw

Generate an ASCII file 8/26/94 stw ~~for~~ containing X, Y gamma frac freq frac len

- To get the metergrd (used to calculate fracture stats) to line up w/ gamma ~~values~~ 8/26/94 stw grid, need to shift down & to the left by ½ mete.
  arc: 8/26/94 stw create mgrid_shift metergrd
  arc: generate mgrid_shift
  generate: fishnet
  Origin coordinate: -19.5, -14.5
  y-axis coord: -19.5, 55.5
  Cell size: 1, 1
  # of rows, cols: 71, 56
- Add frac_num attribute to ~~coverage~~ 8/26/94 stw mgrid_shift used in calculating fracture statistics
  arc: build mgrid_shift
  arcedit: ~~edit~~ 8/26/94 stw edit mgrid_shift
  arcedit: editfeature polys
  arcedit: additem 8/26/94 stw frac_num 9 9 I
- Recalculate fracture statistics using mgrid_shift instead of metergrd (go_freq.aml, go_len.aml)
  - Modified frequency.aml to automatically convert freq_mgrid 8/26/94 stw to coverage to freq.asc Ascii file.
  - Did to w/ length.aml (gridasci.awk)
- Wrote an awk file to take the ascii grid file and convert it to "x,y value" format.
- Wrote a script, gridasci.scr, to:
  - convert ascii grid files; gamma.asc, freq.asc, & len.asc to x,y value format, *.xyz
  - sort the .xyz files (*.srt)
  - join the 3 files
  - the output file is gam_frac.tbl

3/30/94 stn

- Modified 8/26/94 stn annotations in 8/26/94 stn gamma_5mgrd to be .5* (mapscale) from the edges and text size to 1.5 m (mapscale) 8/26/94 stn
  1) Modified 5mgrd_ann.gen
  2) Dropfeatures anno.x
  3) Regenerate anno w/ 5mgr_ann.gen
  4) Used arcedit to reset the justification

- Did the same thing to 5mgrd coverage
  8/26/94 stn Copied & Renamed 5mgrd_ann.gen to gamma_5mgrd_ann.gen.
  - 5mgrd_ann.gen is now modified to be used 8/26/94 stn to generate annotations for 5mgrd coverage

- fract.aml, fract_freq.aml, fract_len.aml, & gamma.aml use global vars .data_root, .gamma_root, .aml_root, & .fract_calc_root to specify path

- fract.aml, fract_freq.aml, & fract_len.aml changed mapscale from 3.7 to 3.75 to take into account the larger 8/26/94 stn 5mgrd labels.

- 8/26/94 stn Create different size grids to use for fractal calculations
  - Renamed metergrid to 1mgrd to be consistent w/ the 5mgrd naming convention
  - Created 2mgrd, 3mgrd, & 4mgrd from 1mgrd
  - Used generate to add fishnet to 2mgrd, 3mgrd, & 4mgrd w/ following params w/ 0,0 being the origin

2mgrd	3mgrd	4mgrd
-20, -16 8/26/94 stn	-21, -15	-20, -16
-20, 0	-21, 0	-20, 0
2, 2	3, 3	4, 4
36, 28	24, 19	18, 14

  - Build polys for 2mgrd, 3mgrd, 4mgrd, & 5mgrd

3/31/94 stn

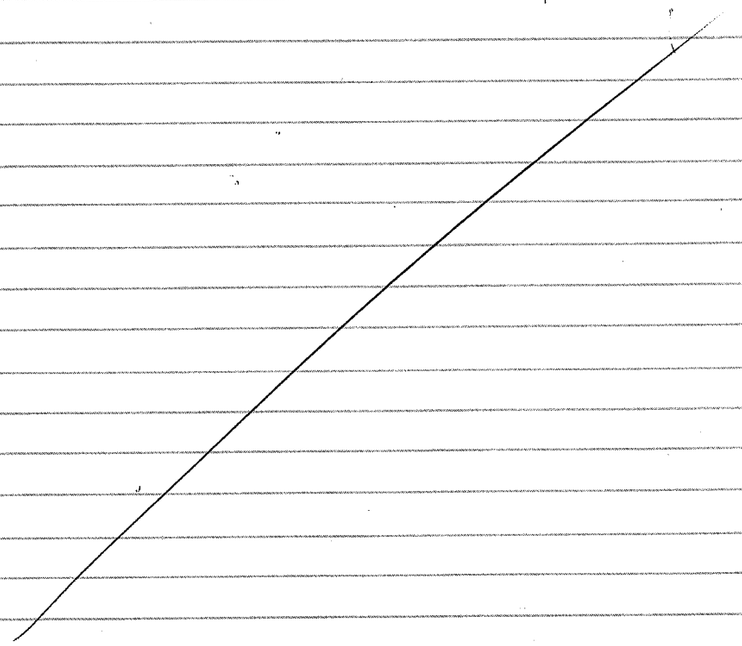
In addition to getting fractal dimensions for the various characteristics of visible discontinuities, English would also like a contour map of fracture intersection frequency.

- After reviewing the ascii file, gam-fract.tbl, English found no statistical correlation among the different parameters.

- Rename 1mgrd, 2mgrd, 3mgrd, 4mgrd, & 5mgrd to grd1m, grd2m, grd3m, grd4m, & grd5m, respectively
  NB: cov. name starting w/ a # is not supported, doesn't work when trying to reselect w/ cov-id (1mgrd-id)

  for grd1m, grd1m-id=1 starts at upper left corner
  for grd2m, grd3m, grd4m, & grd5m, id=1 starts @ lower left corner of grid.

Update fract.aml, fract_freq.aml, fract_len.aml to reflect the new cov. names (grd5m)



4/1/94
stn

- Generic count.aml
  - ~~8/24/94 stn~~ replace frequency.aml & length.aml
  - instead of have coverages as arguments, have an aml-config. file setting global variables to be used in count.aml.
  - Count.aml will now be able to do statistics for both area & point features.
  - can either get the frequency or specify other statistical summaries
  - set all of frac.num to zero before calculating frac_num
- ~~8/24/94 stn~~ Generate a point coverage containing points of fracture intersection, use cross_fract.aml the output coverage ~~8/24/94 stn~~ from this aml can then be used as a ".frac-cov" in count.aml.
- ~~8/24/94 stn~~ Use fract_freq.aml to create fract_cross.aml to contour the intersections of fractures.

4/4/94
stn

- Wrote fractal.aml to get the values for calculating the fractal dimensions.
- After reviewing fractal.aml output, noticed that length & # of intersections are not ~~8/24/94 stn~~ consistent as the grid size increases. ~~8/24/94 stn~~ Thus maybe a problem w/ norm.aml for partially covered ~~8/24/94 stn~~ grids.
  Original: frac_num = frac_num / (cell_area - area_total)
  New: frac_num = (frac_num * cell_area/cell area - area_total)

4/5/94
stn

gave *.asc files to Amitava Ghosh for review & to calculate the various fractal dimensions.

4/6/94 stn

- According to Amitava, the fracture network is fine but the fracture density needs to be calculated w/ an n^2 grid.

- Redo the fractal calculations 8/26/94 stn for 20 x 20 m grids

  - Create/generate grd[1...5]m_small

1m	2m	3m	4m	5m
5,10	5,10	5,10	5,10	5,10
5,30	5,30	5,31	5,30	5,30
1,1	2,2	3,3	4,4	5,5
20,20	10,10	7,7	5,5	4,4

  - Run small_count.aml

  - Run small_fractal.aml

- Comparing the new fractal dimensions w/ the old ones, there 8/26/94 stn were not many discrepancies. English decided to go ahead + use the old original data set.

4/28/93 stn

- Convert the fracture maps & contour maps to black/white

English request:

fracture map

- general background - white
- exposed ground - white
- 5m axis - black
- lines along 0 8/26/94 stn axes - black + dashed
- vis. iran line - thinner ~ 1/2 width

Contour maps

- Convert shade contours to line contours
- similar 8/26/94 stn changes as fracture map.
- legend goes away.
- boundary - thicker line than contour lines.

Solution

- To convert shade contours to line contours, wrote an AML called grid2polys.aml
  - Use grid command, slice, to remap the grid value, i.e. if a cell value is w/in a certain range, then assign a value to that cell. This is done to the resampled grid, (the one used to do the shade contours)
  - 8/26/94 stn grid command, grid poly to convert a grid to a polygon, 8/26/94 stn same cell values are included in one polygons.
  - arc command, INTERSECT to intersect the contour polygons w/ the boundary to eliminate of the task of masking out 8/26/94 stn when plotting the data.
  - the resulting coverage is then used for display.
- make the 5m axis gray instead of black so it would hide in the background
- 8/26/94 stn create color + black white workspace, move original map AML's to color workspace + put a copy 8/26/94 stn in black-white ws.
- Gave English map in Adobe Ill. format (display 1040 3) so he can smoothe contour lines + add labels.

Next task:

go thru old backup tapes to find topological data created by Joe Baups 11/21/94 stn for Ron Green. These data could be in IVM (Interactive Volume modeling) 11/21/94 stn ISM (Interactive Surface Modeling), or EarthVision. ISM + IVM eventually became EarthVision. Talk to Bruni Henderson to get pro's/con's on converting ~~or keeping data~~ 11/21/94 stn data to ARC/INFO or keep in EarthVisions

11/1/94 stn

- Copy u7_940221.tar.Z to performer and extract the pena directory.

- Convert ISM/IVM files to EarthVision
  - untoc - Convert TOC entries to EV File headers

Option files such as bangs.prj are not useful under EarthVision.
Header added and file boundary.ant renamed to boundary.ann.
File boundary.plt unchanged.
Header added + file grid-lines.ant renamed to grid-lines.ann
Renaming associated files in header of pena_hirez.2grd...
(Changing scattered data file from pena_hirez.xyz to pena_hirez.dat.)
Rewrote grid pena_hirez.2grd w/ updated header.
Renaming associated files in header of pena_hirez.3grd...
(Changing scattered data file from pena_hirez.xypz to pena_hirez.pdat)
Rewrote grid pena_hirez.3grd w/ updated header.
File pena_hirez.faces unchanged
" " .plt "
Header added + file pena_hirez.xypz to pena_hirez.pdat.
" " " " " .xyz " " .dat.
Renaming associated files in header of sub_2km.grd...
(Header not changed).
File sub_2km.2grd unchanged.
File sub_2km.plt "
Header added + file sub_2km.xyz renamed to sub_2km.dat.
Renaming assoc. files in header of sub_hirez.2grd.
(Changing scattered data file from sub_hirez.xyz to sub_hirez.dat)
Rewrote grid sub_hirez.2grd w/ updated header.
Renaming associated files in hdr of sub_hirez.3grd...
(Changing scattered data file from sub_hirez.xypz to sub_hirez.pdat)
Rewrote grid sub_hirez.3grd w/ updated hdr.
File sub_hirez.faces unchanged
" sub_hirez.prsp renamed to sub_hirez.plt.
Header added + file sub_hirez.xypz renamed to sub_hirez.pdat.
" " " " " .xyz " " " .dat.
Renaming assoc. files in header of topomap.2grd
(Changing scattered data file from topo_map.xyz to topo_map.dat)
Rewrote grid topomap.2grd w/ updated header.

File topomap.plt unchanged.
Header added + file tunnel_boun.ant renamed to tunnel_boun.ann.
File tunnel_gamma.plt unchanged.
Hdr added + file tunnel_gamma.xyz ~~[illegible]~~ renamed to tunnel-gamma.dat.
• Convert IVM color files – convertclr -v -p *.p
colorfile2.p converted to colorfile2.pclr
colorfilebak.p " " colorfilebak.~~pclr~~ pclr

11-17-94 STW Brought road_crks.ann from performer to bren to put into arc/info.
Separate attributes by roads, trail, buildings, + creekline.
Use generate to create arc coverages.

Pages 1 through 81 of this Scientific Notebook were reviewed for compliance with QAP-001 in response to Corrective Action Request 94-02. Corrections and clarifications were made as appropriate. In some cases, the date of a change will reflect the date of this review rather than the date of the original Scientific Notebook entry.

Randy Fitch
SWRI-QA
12/8/94

12-7-94 STN

Rick Klar digitized ~~the 2x2 km~~ (12/7 STN) faults for the 2x2 km of the NOPAL Region. Moved the raw data to ~/pearcy/nopal/pena_2x2 & named it 'faults'.

In ARC/INFO, ~~Build~~ (BUILD 12/7 STN) faults coverage w/ LINE feature. Do not use CLEAN, it breaks arcs at intersections.

1-10-~~94~~ (1/12 STN) 95 STN

- English and I cleaned up the surfgeo coverage in ~/arcinfo/pearcy/nopal/pena_2x2 by removing all the outcrops and adding lines to close-up the different geologic areas. The resulting coverage is stored in surfgeo.cln.

- English verified 'faults' coverage Rick Klar had digitized. We added a new fault line that was not on the original milar.

- English gave me a text file containing the measurements of the apertures at different fracture locations.

TASKS:

✓ 1/12 1) Contour aperture measurements as they are } level #0
✓ 1/12 2) Contour only those measurements <10 mm }
✓ 1/12 3) generate a list of gamma & aperture values @ each gamma location.
✓ 2/10 4) Import surfgeo.cln from ARC/INFO into Earth Vision & overlay the pena.2x2 topology map.
✓ 2/10 5) Import pena.2x2/faults from ARC/INFO into EA & also overlay the topology map.

1-11-~~94~~ (4/12 STN) 95 STN

Included w/ the aperture text file is the mineralogy data (iron oxides, manganese oxides, kaolinite, & calcite)

TASKS:

1) Produce map locating all data points on existing gamma contours).
2) Produce maps locating subsets of mineral types on gamma contours)
   a) for the following groups: iron oxide
      manganese oxide
      kaolinite
   b) & the following combinations: 0010, 1000, 1010, 1100, & 1110
      where #### represents iron oxide, manganese oxide, kaolinit, & calcite, respectively.

- Copy ~/arcinfo/pearcy/nopal/gamma/allgamma.xyz to performer: ~/pena/allgamma.dat.
- In EV, create 2-D minimum tension grid from scattered data, allgamma.dat. using Exact scattered data range. size = 57x62, X range = -14 to 42, Y range = -16 to 45. output grid is allgamma.2grd
- Import ARC/INFO coverage, ~/arcinfo/pearcy/nopal/boundary on to EV & called it ~/pena/nopal-bound.ply.
- Using EV Utility - Polygon Filling to set all grid values outside the Nopal boundary to NULL. The resulting grid is allgamma.bnd.2grd

- Extract the 1st 3 columns (X,Y,Z) of the text file containing the fracture aperture data and put it on performer: as aperture.dat
- Removed all apertures >= 10 mm & stored in as aperture2.dat
- Generate aperture.2grd, aperture2.2grd, similar to that of allgamma.2grd w/ the following parameters:

aperture.2grd	aperture2.2grd
size = 39x51	→ same
X range = -10 to 28	→ same
Y range = -5 to 45	→ same
scattered data = aperture.dat	aperture2.dat

1-12-95
Stw

Under EV-Visualization - Base & contour maps, create contour maps of allgamma_bnd.2grd, aperture_bnd.2grd, & aperture2_bnd.2grd overlay by the nopal_bound.ply polygon file.

allgamma contour map uses the following contouring ~~parameters~~ 1/12 Stw parameters:

- Variably Spaced Contours @ .07, .15, .45, 1.0, 2.5, 5.0, & 7.75
- Variable spacing Color-filled Contours also @ .07, .15, .45, 1.0, 2.5, 5.0, & 7.75 w/ color symbols 10, 20, 30, 40, 50, 60, & 70.

aperture & aperture2 contour maps use the following params:

- Regularly spaced contours w/ CI = .5
- Regularly spacing Color-filled contours also w/ CI = .5 & automatic color ~~bar~~ 1/12 Stw assignment.

The output contour maps are in postscript called allgamma.ps, aperture.ps, aperture2.ps (renamed to aperture_lt10.ps for English)

~~~

Generate a list of each gamma & the 1/12 stw its corresponding aperture & aperture2 values.

- On performer, convert the EV 2grd files to scattered data format for allgamma_bnd.2grd, ~~of~~ 1/13 stw aperture_bnd.2grd, & aperture2_bnd.2grd.
  % ev_export -o aperture_grd.dat aperture_bnd.2grd
  % ev_export -o aperture2.grd.dat aperture2_bnd.2grd
  % ev_export -o allgamma_grd.dat allgamma_bnd.2grd
- Copy the *grd.dat files to Brew: under ~/arcinfo/pearcy/nopal/gamma/aperture & remove the headers at the beginning of the files.
- Write a script called gam_aper.scr to sort & join the 3 files. This script is similar to that described on 3/24/94.

1-13-95
Stw

After reviewing the 3 contour maps, English would like to have the contours flushed to the boundary. It is not important to get this done right away but will be necessary for presentation in April.

* HINT to flush contour area to boundary:
Currently grid size is set to 1 m². If the grid size is decreased, thus increasing the # of grids, before setting the outside ~~bnd~~ 1/13 Stw polygon area to NULL should come close to having the contour area flushed to the boundary.

English found negative numbers in aperture values from the gamma_aperture.hol file.
Solution: Regenerate the grids. This time set the z limits to the exact z range. This eliminated the negative values.
Question: what if the gridding calculation is above the maximum value? Should we raise max z but leaving the min z to 0?

1-24-95
Stw

Import 1/24 Stw ~/arcinfo/pearcy/nopal/pena_2x2/faults 1/24 Stw EO ARC/INFO coverage into EarthVision to be plotted w/ ~/pena/topomap.2grd using
EV-Utilities-Data Import-ARC/INFO Coverage Import
Coverage type - line
Attribute - FAULTS-ID
Calculate Annotation File (faults.ann)
NOTE: output file must end w/ .ann else ev will plot it as a scattered file.

1-25-95
Stw

To convert surfgeo.cln coverage into a polygon coverage, must add a border box close to the map extent and get rid of all dangle nodes. The border is specified @ (398395, 3219978), (400505, 3219978), (400505, 3222083), map extent (398395, 3222083).
This was done in arcedit w/ editfeature arcs, coordinate keyboard, and add. To get rid of the dangle nodes, ef nodes, & move.
The output coverage 1/25 Stw is surfgeo_bnd.
~~~

1-26-95 Stn

To add labels & attributes to surfgeo_bnd, SN 1/26

- ARC: createlabels
- ARC: clean

Create INFO file called GEOCODE

- ARCEDIT: create geocode info
  - code, 4, 4, I
  - description, 25, 25, C
  - abbreviation, 3, 3, C

  } items
- ARCEDIT: add
- AE: calculate code = 1
- AE: calculate description = 'Quaternary Alluvium'
- AC: calculate abbreviation = 'Qal'
- AE: add
- AE: calculate 2, 'Quaternary Talus Material', 'Qdt'
  add
  3, 'Nopal Formation', 'Tn'
  4, 'Coloradas Formation' 'Tc'
  5, 'Pozos Formation', SN 1/26 'Tp'
  6, 'Tamaulipas Formation', 'Kit'
- ARCEDIT: save

Add geocode attribute to surfgeo.bnd

- ARCEDIT: edit surfgeo.bnd ~~dat~~ SN, 1/26
  - AE: additem geocode 4 4 I
  - AE: select surfgeo-id eq 3 or surfgeo-id eq 8 or surfgeo-id eq 5 or surfgeo-id eq 10
  - AE: calculate geocode = 1
  - AE: select surfgeo-id eq 1 or surfgeo-id eq 7
  - AE: calculate geocode = SN 1/26 3
  - AE: select surfgeo-id eq 2 or surfgeo-id eq 6
  - AE: calculate geocode = 4
  - AE: select surfgeo-id eq 4 or surfgeo-id eq 11
  - AE: calculate geocode = 5
  - AE: select surfgeo-id eq 9 or surfgeo-id eq 12
  - AE: calculate geocode = 6
- ARCEDIT: save

2-3-95 Stn

Import ~/arcinfo/pearcej/nopal/pena_2x2/surfgeo.bnd ARC coverage into EV.

EV - Utilities - Data Import - ARC/INFO Coverage Import

Coverage type - polygons
Attribute - GEOCODE
Options - Assign colors

Values	Color
1	2 - Green
3	3 Blue
4	4 Red
5	5 Brown
6	6 Magenta

Assign patterns - All solid fills
Calculate - Convert to annotation (output - surfgeo.ann)

Create Base & Contour map w/ topomap.2grd, faults.ann, surfgeo.ann

Contour Parameters) nuds
Contour Interval = 5
Index color = 1
Index line width = .01
Calculate map saving the script file in geomap.sh

Note: In going thru the menu user interface, the grid is always the base layer. To avoid the solid fill surfgeo.ann from ~~overwriting~~ SN 2/3 overdrawing the contour lines, switch the plotting order in the script file geomap.sh & ~~plot~~ SN 2/3 generate the map from the script file instead and redirecting the output to a plot file. Then use the plot option from the GUI to ~~plot~~ SN 2/3 view the map or ev.pltconvert to convert plot file to a different format.

i.e., to generate map from script file,
% geomap.sh > ____.plt

~~To include~~ SN 2/10

2-10-95 stw

To include a legend to the geomap, create a legend file, surfgeo.lgd.

Follow the procedure as before & add surfgeo.lgd as one of the files, to display. Again save the script ~~surfgeo~~ geomap.sh 2/10 & reorder the plotting procedures.

Gamma maps locating fracture mineralogy.

- Clean fracture_mineralogy.sandy.txt ~~analy~~ 2/10 using vi
  - Delete text @ beginning of file.
  - Replace "x" w/ space (The 'code' column can be used to reproduce mineral columns)

  fracture_mineralogy is in ~/arcinfo/pearcy/nopal/rawdata
- Produce point generate file & aperture point coverage
  - write awk script, aper_gen.awk, to create a new file w/ an id & x y location & ends w/ "END". aper_gen.awk in ___/nopal/tools
  - % awk -f aper_gen.awk ../rawdata/fracture_mineralogy.sandy.txt >../rawdata/aperture.gen.
  - Create aperture coverage ___/nopal/data

    arc: ~~Build~~ generate 2/10 aperture point 2/10

    generate:

8-9-95 Met w/ Janet Buckingham & Bob Mason. They requested an Ascii file containing the gamma x,y coordinate, the gamma value, the distance from a chosen pt w/ the visible wraparound line, the # of fractures w/ in a meter wide strip, sum of the length of the fractures, & the # of intersecting fractures. This is for all gamma values outside the vis. wrap. line.

8-24-95 Algorithm for generating the ASCII file:

Given: Ux, Uy, Gx, Gy, Width, FractCov

$delx = Ux - Gx$

$dely = Uy - Gy$

$distance = \sqrt{delx * delx + dely * dely}$

/* Find delx & dely for perpendicular slope $= -\frac{\Delta x}{\Delta y}$

factor = (Width/2) / distance

$delxT = -factor * dely$

$delyT = factor * delx$

/* Find 4 corner pts

$x1 = Gx + delxT$

$y1 = Gy + delyT$

$x2 = Gx - delxT$

$y2 = Gy - delyT$

$x3 = Ux - delxT$

$y3 = Uy - delyT$

$x4 = Ux + delxT$

$y4 = Uy + delyT$

- Delete tmp1.cov if exists

- create tmp1.cov w/ this polygon
  (x1,y1) (x2,y2) (x3,y3) (x4,y4) (x1,y1)
- Delete tmp2.cov if exists
- Intersect tmp1.cov w/ FractCov = tmp2.cov
- Get statistics from tmp2.cov
  - # of fractures
  - Sum length of fractures
  - # of intersections

The aml files created are located in
/us/snguyen/arcinfo/pearcy/nopal/aml/stats

stat1.aml — is the implementation of the above algorithm.

do_stat1.aml — reads each gamma value from a text file and runs stat1.aml

The chosen center point of the new wranophane line is (18,12)

gamma_110_nowran.dat — contains all the gamma values outside the vis. wran. line ~~for~~ for level +10. It was created from Earth Vision.

stat1.bat — is a ~~DOS~~ script to generate data under batch mode.

stat1.out — this is the output file containing
- GammaX
- GammaY
- Gamma Value
- Distance from (18,12)
- # of fractures
- Sum of length of fractures
- # of intersecting fractures

} w/in a 1 meter wide strip.

This project was terminated by reductions in the NRC budget. Perhaps, one day — long into the future perhaps — we will be able to complete this work ...

E. C. Pearcy

6/21/96

ADDITIONAL INFORMATION FOR SCIENTIFIC NOTEBOOK #: 044

Document Date:	05/27/1992
Availability:	Southwest Research Institute® Center for Nuclear Waste Regulatory Analyses 6220 Culebra Road San Antonio, Texas 78228
Contact:	Southwest Research Institute® Center for Nuclear Waste Regulatory Analyses 6220 Culebra Road San Antonio, TX 78228-5166 Attn.: Director of Administration 210.522.5054
Data Sensitivity:	■"Non-Sensitive" □ Sensitive □"Non-Sensitive - Copyright" ☐ Sensitive - Copyright
Date Generated:	1992 through 1993
Operating System: (including version number)	UNIX
Application Used: (including version number)	Various
Media Type: (CDs, 3 1/2, 5 1/4 disks, etc.)	3 - 8 mm tapes
File Types: (.exe, .bat, .zip, etc.)	
Remarks: (computer runs, etc.)	Media contains: Early Nopal maps, Nopal fracture data; bands visible over Nopal.