Preliminary Geologic Results and Observations

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Main Topics

- Mapping Products

  Geographic Information System (GIS) and Final Geologic Maps

- Lithologic and Structural Age Relationships

  Geologic characteristics of youngest fracture zones

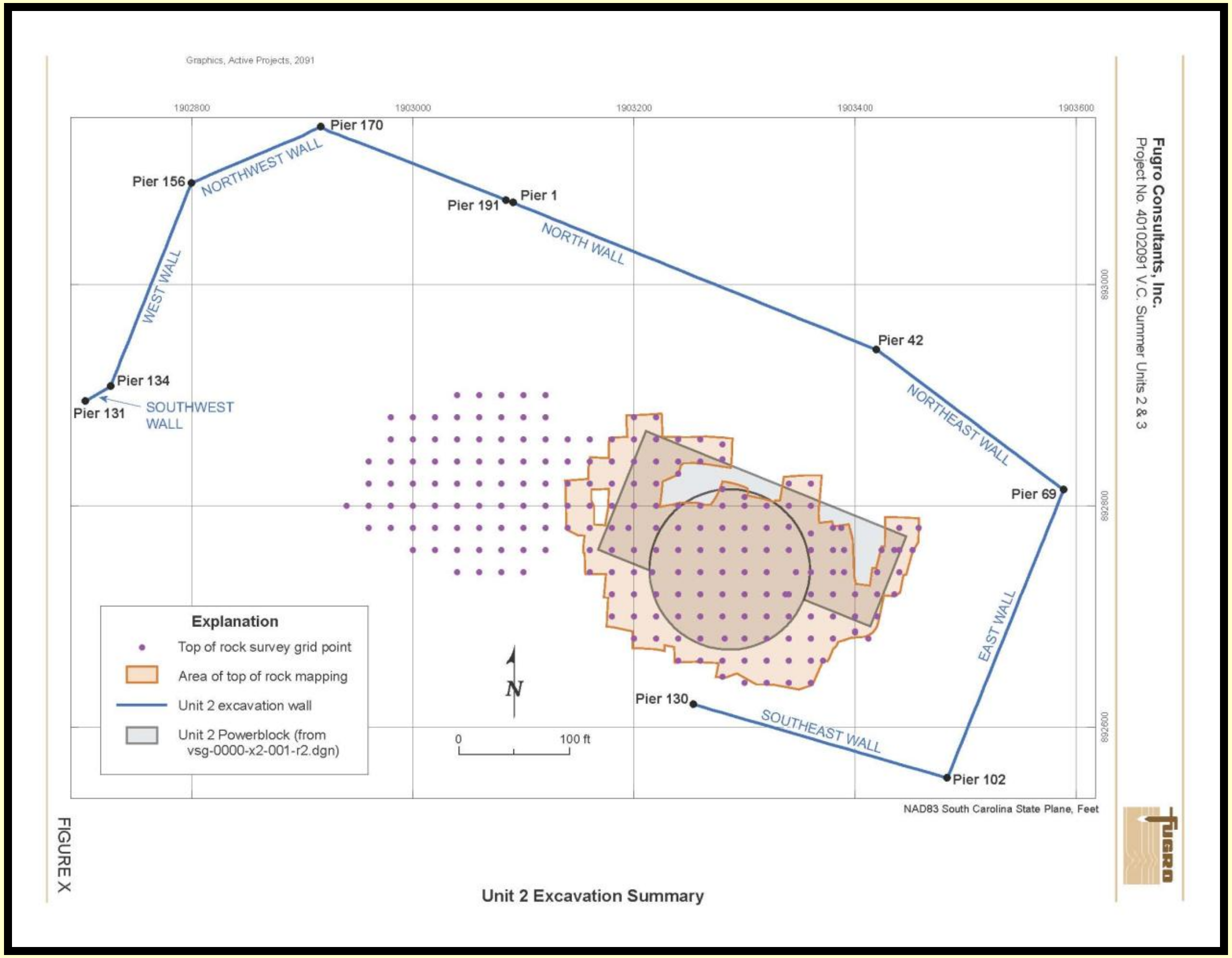
- Regional Geologic Setting

  Geologic characteristics of similar features as those discussed above documented in the surrounding region

- Preliminary Observations and Conclusions

  Nothing anomalous in Unit 2

Mapping Products



3D Model (.sxd) of major elements

GIS (.mxd) and Geologic Maps (.pdf – "layered") for:

Walls:

- Southwest Wall
- West Wall
- Northwest Wall
- North Wall
- Northeast Wall
- East Wall
- Southeast Wall

Top of Rock

Final Foundation

Mapping Products - GIS Functionality

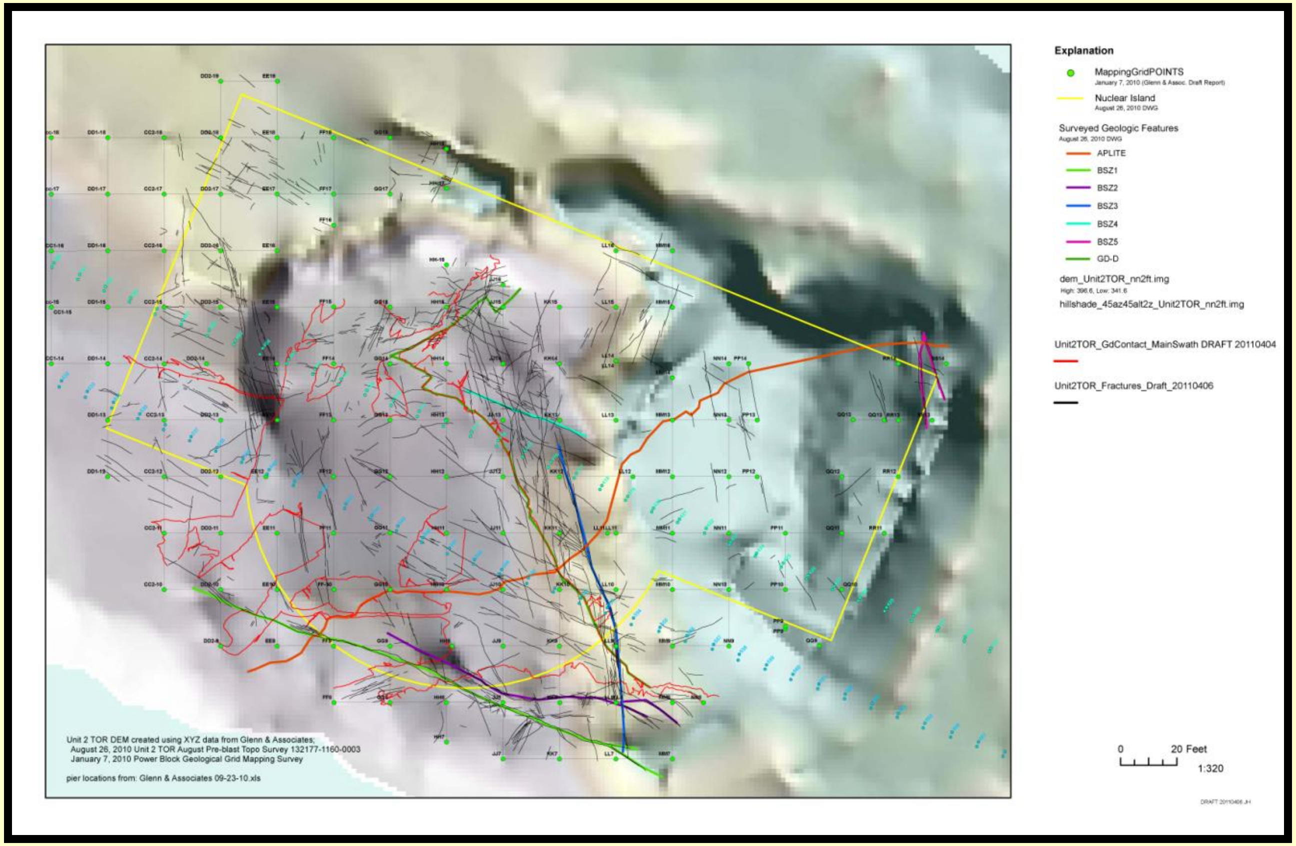
- .mxd for each of the maps listed previously
- .mxd compiled by digitizing basemaps produced in the field
  - Photographic distortion corrected by registering the photographs to surveyed fiducial marks
- Composed of polygons and lines representing geologic features on final maps in addition to observed offsets and structural data
- Used to manage the photographic database
  - Base maps – Annotated photos (index, .jpg)
  - High Resolution unannotated photographs (.jpg)
  - Subject specific detailed photographs taken of important features during mapping (.jpg)

Mapping Products – “Layered” .pdf

- Geologic maps listed previously in .pdf format for final report

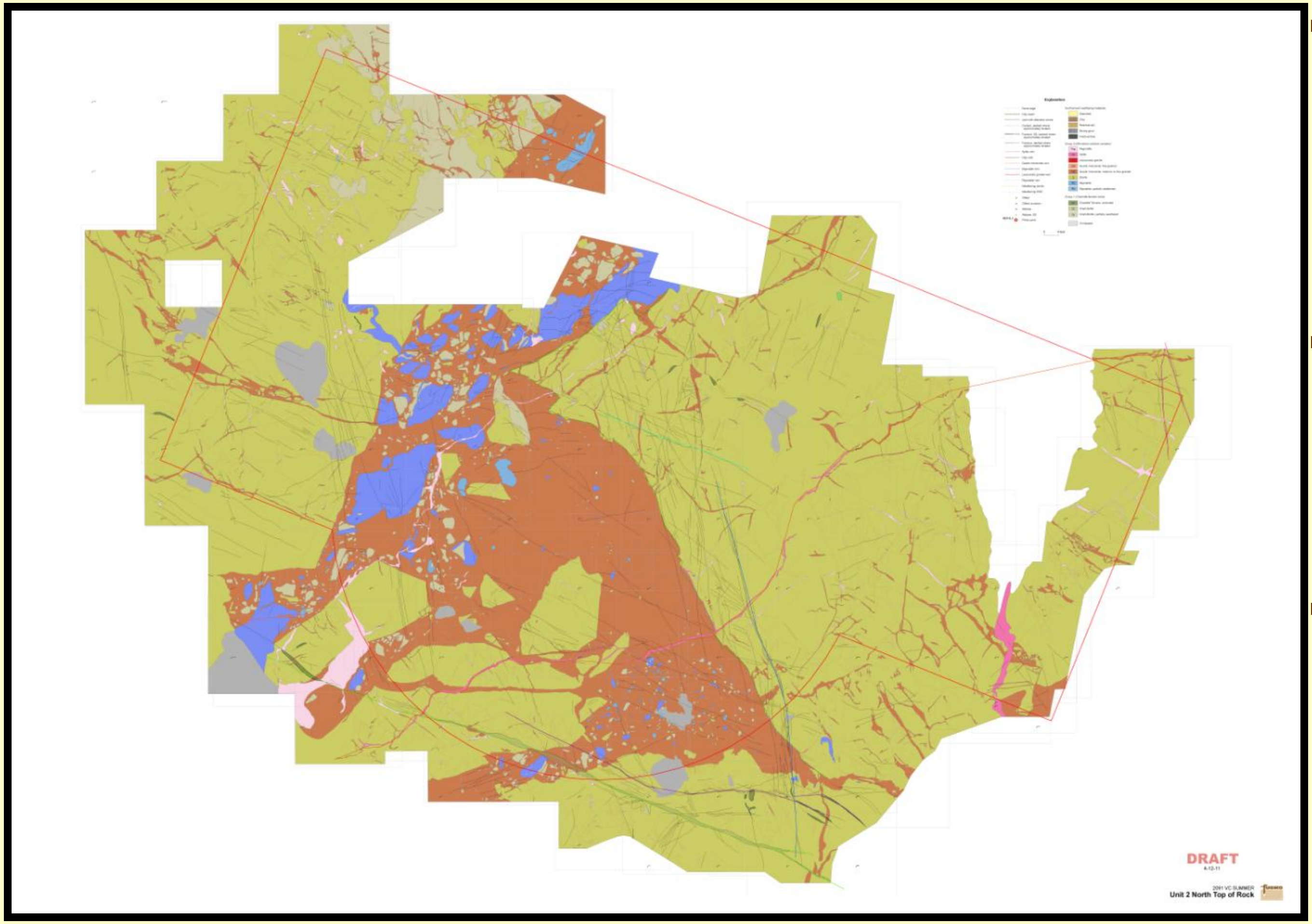
- “Layered” .pdf functionality

Lithologic and Structural Age Relationships



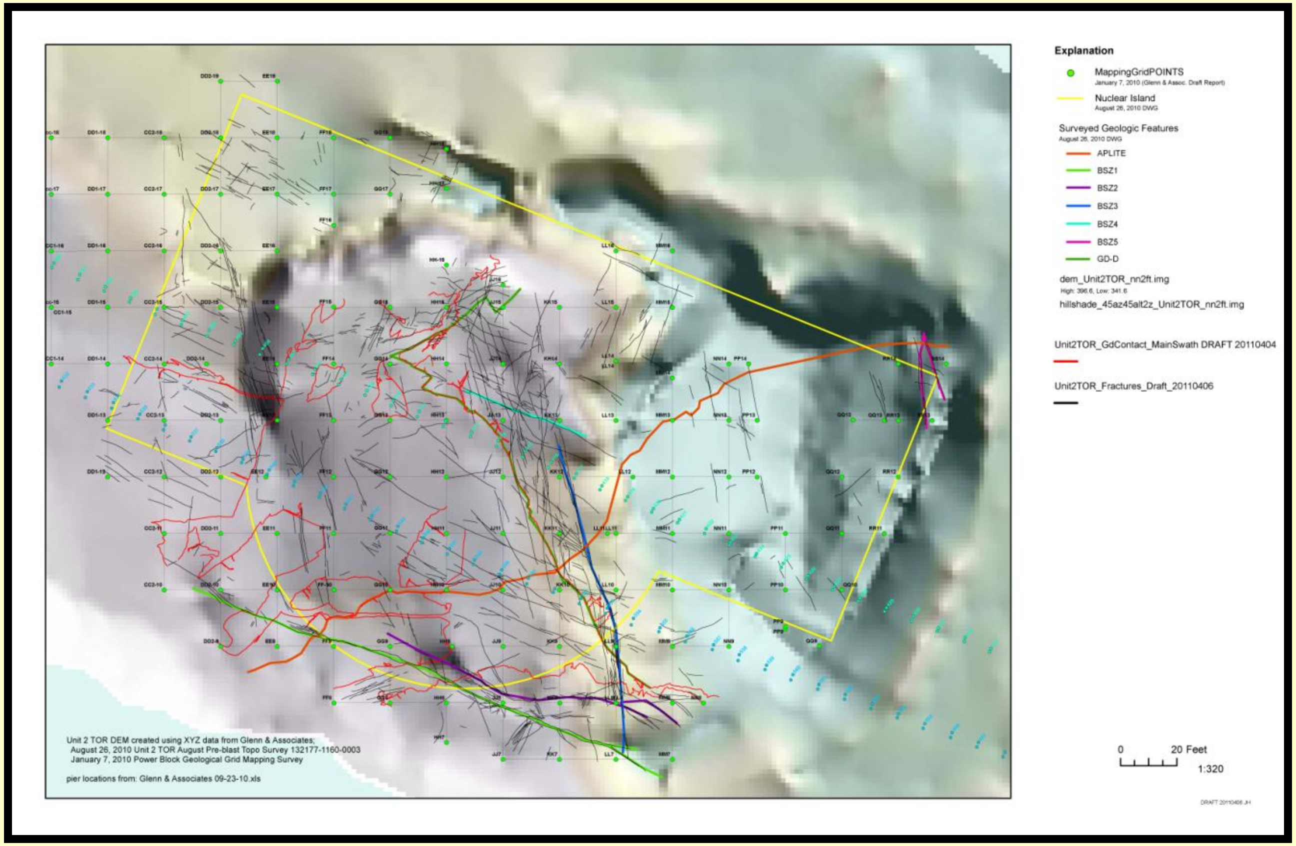
- Most offsets observed are “old” and related to intrusion
- Some fractures maybe younger and appear to cross cut all lithologies.

Lithologic and Structural Age Relationships



- Fractures subparallel to intrusion and xenolith boundaries
- Dikes of quart monzonite subparallel to fracture sets
- Fracture density greater in diorite (older unit) than in the quartz monzonite

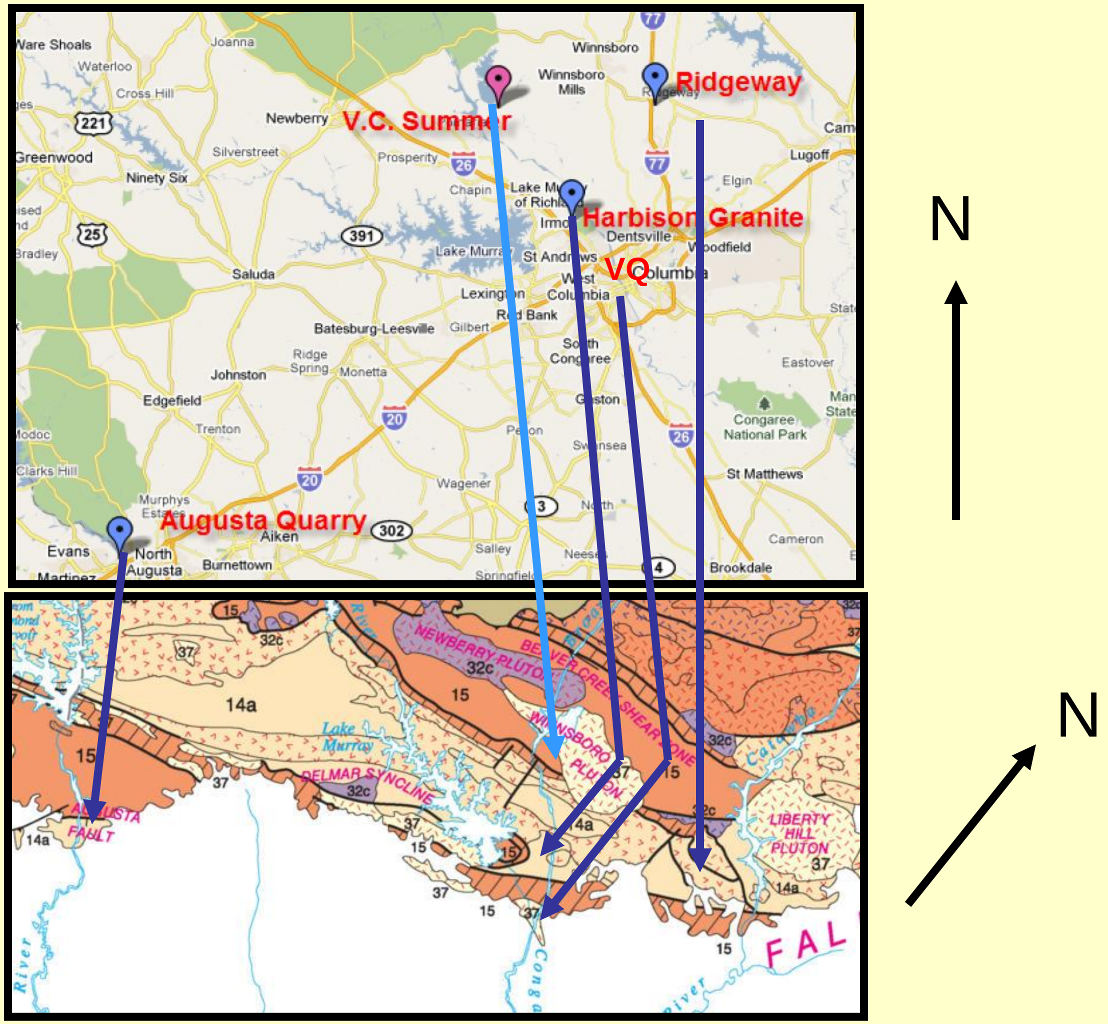
Lithologic and Structural Age Relationships



Younger fracture characteristics:

- Oriented @ 290 and 340 - 350 vertical to subvertical
- Greenschist facies mineralogy (chlorite and epidote)
- Associated with “pink staining”
- No - or very weakly defined lineation on the fracture surfaces
- Little shear displacement; mostly dilational

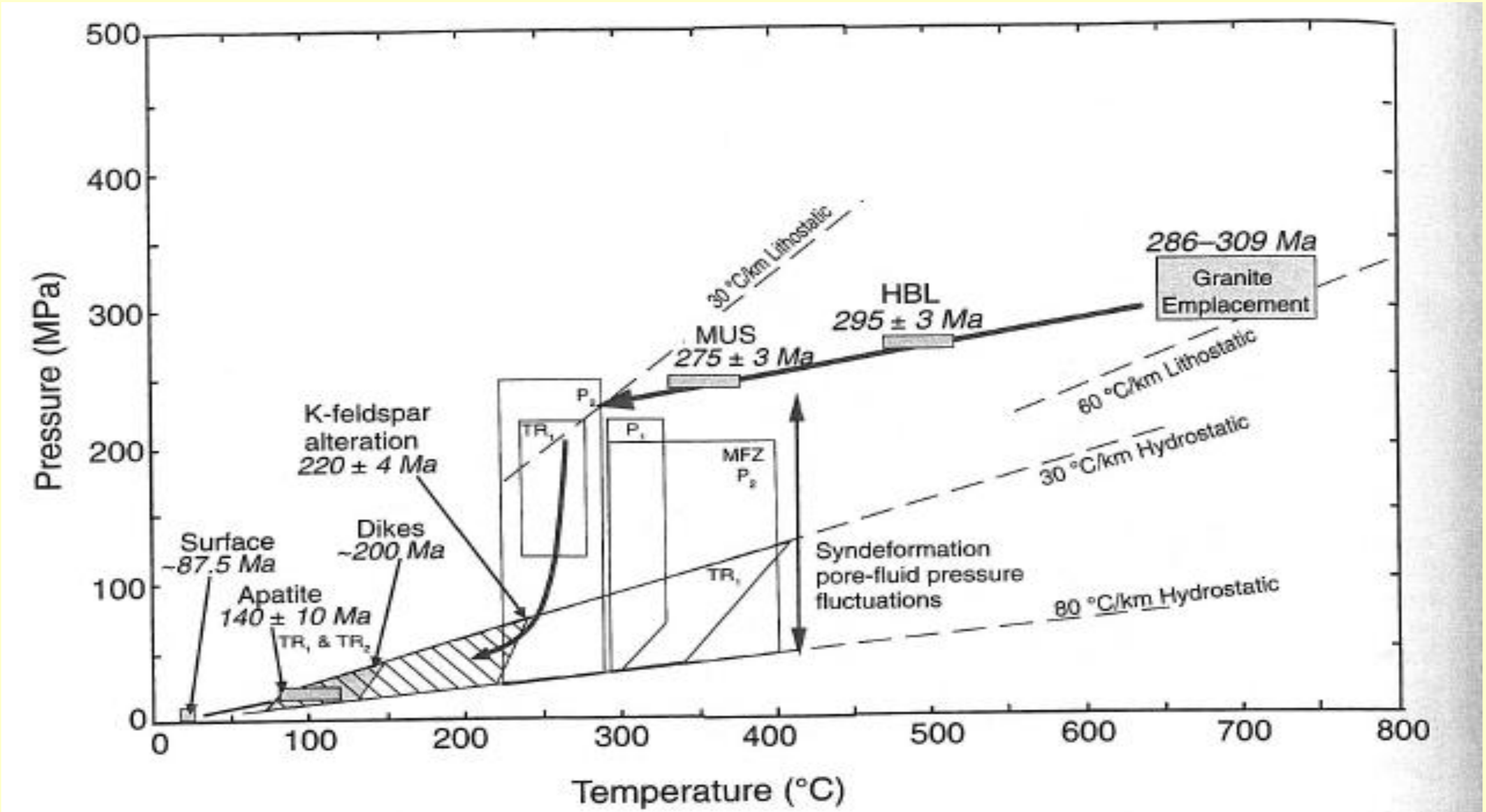
Regional Information about Fractures and Faults (Bartholomew and others)



Regional Fractures and Faults

Age	Nomenclature		Strike	Associated Metamorphism	Representative Primary Mineralization	Representative Secondary (late) Mineralization
Cret.	K1		reactivated TR3, JR2 (NW trend) and TR6 (SW	N/A		
Jurassic	JR2		reactivated TR4 and TR3	Zeolite to subzeolite ?	Overprint hematite + laumontite; calcite during and after JR2; JR2 typically non mineralized	late calcite on JR2
	JR1		reactivated TR4 and TR5			
TRIASSIC	TR6		~220 and ~40	Zeolite facies	K metasomatism > hematite; hematite < laumantite > hematite	late calcite
	TR5		~175	Zeolite facies	K metasomatism > hematite; hematite < laumantite > hematite	late calcite
	TR4		~200			
	TR3	TR3c	~50	Zeolite Facies	calcite ± chlorite ± zeolite; quartz	NA
		TR3b	355 to			
		TR3a	30			
	TR2		253±15 63±10	Greenschist and Zeolite facies	K metasomatism (pink staining) > chlorite ± pyrite ± epidote	zeolite (laumontite) + hematite ± calcite
	TR1	TR1b	080±15	Greenschist facies	quartz + chlorite ± pyrite ± epidote ± K- feldspar ± zeolite ± talc	calcite ± zeolite
		TR1a	288±10^0			
late Paleozoic	P2		354±28^0	Greenschist facies	quartz ± k-feldspar ± muscovite	calcite ± zeolite
	P1		053±10^0		quartz ± k-feldspar	N/A

Thermal History



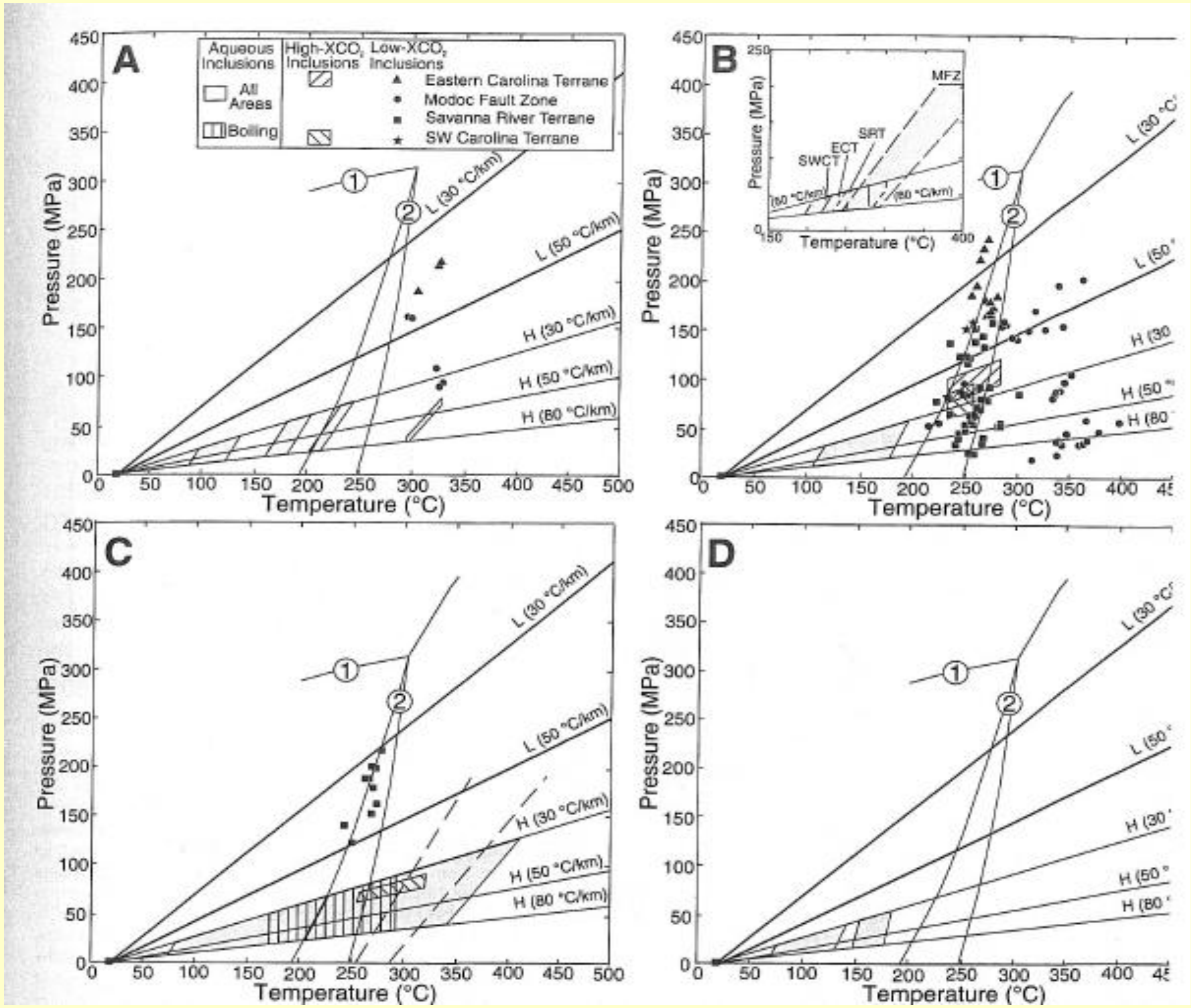
Conclusions

- Latest fractures were associated with Greenschist facies (deep subsurface) conditions and are Triassic in age.

- Similar features have been documented in several other areas in the surrounding region therefore these features are not “anomalous” for the area.

- The above conclusions are consistent with conditions observed in Unit 1 mapping and those reported in the FSAR which describe Mesozoic age structures.

Fluid Inclusions



Fluid Inclusions - Interpretation