420k Field Trip 4, ‘14

Mapping a Basal Cretaceous Nonconformity, Mason Mt. W.M.A., Mason Co., TX
Mason Mt. W.M.A.

Location & General Geology

- Basal K unconformity
- Penn. NE-SW Faults
- Paleozoic sedimentary rocks
- Basal-C nonconformity
- PC metamorphic & igneous rocks
- K carbonates & clastics

Detailed geo. map

M. Helper, UT Austin, Geo420k

M. Helper, '06

Quaternary Sediments
Cretaceous Sedimentary Rocks
Paleozoic Fault
Paleozoic Sedimentary Rocks
~1.1 Ga Granitoid Intrusions
~1.3 - 1.15 Ga Metamorphic Rocks

20 Kilometers

M. Helper, UT Austin, Geo420k
Schematic Cross Section

M. Helper, UT Austin, Geo420k
M. Helper, UT Austin, Geo420k
1:100k (“Detailed”) Geology, Mason Area

- basal-C nonconformity
- K Carbonates & Clastics
- basal K nonconformity
- pC Packsaddle Schist ~1.25 Ga
- pC Katemcy Pluton ~1.1 Ga
- pC Lost Creek Gneiss ~1.25 Ga
- pC Valley Spring Gneiss ~1.3 Ga
- CO Sediments (e.g. Riley, Ellenburger)

M. Helper, UT Austin, Geo420k
1:24,000 Topography, Mason Mt.

Camping site

Approx. Mapping Area

Explanation
- WMA Boundary
- All Weather County Roads

NAD83, UTM zone 14N projection
Contour interval equals 20 feet

M. Helper, UT Austin, Geo420k
Note mismatch of geo. and topo.
Southwest dip; $pC_{tm}$ over $K_h = $ Overturned nonconformity!!?
1.10k Base Map, Mason Mt.

Purdy Hill Quad. base contours from TNRIS
500 m UTM zone 14 NAD83 grid
M. Helper, Jan. 09
3/20/2014

M. Helper, UT Austin, Geo420k
Day 1: 1st Task – Measure a Section

Example Template for Weathing Profile, S. Slope of Mason Mt.

--- Scale in meters here ---

Edwards Fm. (K_e)

Weathering profile of slope

Comanche Peak Fm. (K_c)

Hensell Fm. (K_h)

Paleozoic or Precambrian Units (pC_u)

Show lithologic detail here: beds, patterns, etc.

Llano Sheet Map Units

Fort Terrett Member, Edwards Fm.
Hensell Fm. - shoreward facies of Glen Rose Lm.
Paleozoic or Precambrian Units

420k Mapping Units

Edwards Fm.
Hensel Fm.
Comanche Peak Fm.
Paleozoic or Precambrian Units

3/20/2014

M. Helper, UT Austin, Geo420k
Day 1: 2nd Task – Map Unit Contacts

Llano Sheet Map Units

- Kft: Fort Terrett Member Edwards Fm.
- Kh: Hensell Fm. (shoreward facies of Glen Rose Fm.)
- pCtm: Paleozoic or Precambrian Units

420k Mapping Units

- Ke: Edwards Fm.
- Kc: Comanche Peak Fm.
- Kh: Hensell Fm.
- pCu: Paleozoic or Precambrian Units

Partially Mapped Unit Contact, e.g. top of Kh

3/20/2014

M. Helper, UT Austin, Geo420k
Day 2: Half-day – Finish and turn in map

MAP IS FINISHED WHEN:

1. All contacts are in ink, (dashed or solid lines)

2. All units are LIGHTLY colored

3. All units are labeled – e.g. “Ke”

4. All strike and dips are plotted

5. Name in date is in UPPER RIGHT corner

3/20/2014

M. Helper, UT Austin, Geo420k
Your weekend mapping goals:

• Is the digital Geologic Atlas of Texas, Llano sheet, correct?
• If not, what are the true geometric relationships and how do they map out?

Deliverables (before returning to Austin):

1. Geologic Map: showing nonconformity, K-unit contacts, and strikes/dips
2. Weathering Profile/”Measured Section”