

Geology 3063

Exam 1

September 22, 2000

Instructions.

1. Place all books and notes on the floor.
2. Read each question carefully, then read it again.
3. **Think** before you write.
4. Organize your thoughts and outline your answer mentally before writing. If you are not certain, put your ideas down on the back of the page before proceeding.
5. Answer the questions in the space provided. Use the backs of the pages to outline and doodle, but not to answer the question.
6. You have 55 minutes. All exams must be turned in by 9:55am. You are responsible for pacing yourself.
7. Proceed when ready.

This too shall pass

- 20pts.* 1. What type of surface features would you expect to find on a joint formed under a primary Mode 1 load, but with a minor Mode 2 component of loading? Draw the surface and label the features associated with each.

- 20pts.* 2. Compare and contrast a restraining bend and a hinterland dipping, foreland progressive duplex. How are they similar, how are they different? Discuss the possibility of the formation of a strike-slip duplex. What sequence of faulting would you expect to find in the development of a strike-slip duplex? Provide annotated drawings of each, and of the sequence of development.

- 30pts.* 3. Interpret the faulting/fracture pattern of the map provided. Give a discussion of the evolution of the fault/fracture system, and the key observations you made to determine the overall “style”. Describe what you see, **in detail**, including any changes in orientation of the faults, types and amounts of offsets, and how you determined them. Please note that conglomerates are shown with a circle stipple pattern on the map.

30pts. 4. Describe, **in detail**, the geometry, origin and significance of the following fracture pattern.