

April 28, 2010

CONFIDENTIAL: NOT FOR PUBLIC RELEASE

GEO 11 HAZING

Geology has been in the news a lot in 2010, and most of that news has not been good. Geological hazards such as earthquakes and volcanoes have killed hundreds of thousands and disrupted the economy of western Europe. These events have caught the attention of Amherst College's risk-adverse attorneys who are wondering about the possible exposure of the College. The Geo Department has reassured them that although the Amherst area is geologically interesting, it is not particularly dangerous. They have remained unconvinced and have asked us to undertake a Hazard Assessment and Zoning Investigation of the Nearby Geology (HAZING). To do this, the Geo Department solicits the services of well-trained two-person geologic teams to investigate the geology of a 26 X 26 km land parcel and prepare Geo 11 HAZING reports. You will find the ~675 km² study area exceedingly flat and offering abundant outcrop on which to base your study. Responses to this solicitation should provide:

A complete **geologic map** of the designated area, with **two accompanying cross-sections** and a **written report** on the geological history of the study area completed by **each 2-person team** executed to the following specifications:

- The map should be drawn on the grid base map supplied, on which the grid spacing represents 1 km, the northwest corner is at A1, and the southeast corner is at Z26.
- The map and cross-sections should be colored, using a different color for each rock unit and the same coloring scheme for both map and sections. Do not use heavy, dark, or vibrant colors that would obscure other data (such as strikes and dips) plotted on the map. Neatness is essential!
- The map should be given a title that indicates the location of the mapped area (e.g. "Geologic map of the Stinky Swamp Area").
- The map and sections should be accompanied by a "Key" or "Explanation" in which each rock unit is named (e.g. "Amherst Arkose, Belchertown Basalt") with its map color indicated. A geological age (e.g., Ordovician) must be assigned to each unit. In this key, all rock units should be listed in chronological order, with the oldest at the bottom. All geologic symbols used should appear in the Key as well.
- Two cross sections should be drawn: A-A' between the northwest and southern edges of the map, and B-B' between the western and eastern edges of the map respectively. These sections should be drawn with A and B to the left and A' and B' to the right, and both ends of the sections should be clearly labeled. The vertical and horizontal scales in the cross-section must be exactly the same, and must match the horizontal scale in the map. The geology of these cross-sections must, of course, correspond exactly where the two sections cross. A protractor will be necessary to draw the cross-sections accurately. Remember, sedimentary units tend to maintain a constant thickness.
- The map must have a north arrow and both the map and cross sections must have an appropriate bar scale shown.
- The report may be written in discursive form or in outline form.
- While concise, the report should be as complete as possible, including but not limited to: the formation of individual units and the nature of the environment in which they formed; uplift, erosion, and the creation of unconformities; orogenesis and the deformation and/or metamorphism of rocks; protoliths of metamorphic rocks; and igneous events. Include statements that document the observations on which the report is based.
- Every attempt should be made to place the events in relative order and where possible to place dates on these events.

Reports in response to this solicitation must be submitted to the Geo 11 HAZING Office (Room 310, ESNHM) by **10 AM on Friday May 14, 2010**

In addition, each member of each team will provide an evaluation of her/his level of participation in each aspect of the project.

May 5, 2010

CONFIDENTIAL: GEO 11 HAZING SUBCONTRACTORS ONLY

A certain amount of data is now available to your team to aid your investigations. Williamstown International Mineral Prospecting Services (W.I.M.P.S.) undertook initial geologic surveying under subcontract to HAZING. W.I.M.P.S. made strike and dip measurements, identified three (3) fossils, and completed three (3) radiometric dates. W.I.M.P.S.'s strike and dip data are given on the revised base map, and the fossil and radiometric dates are given in the table below. Finally, the logs for five (5) exploration drill holes are given below. Please note that W.I.M.P.S. are not as geologically skilled as you (possibly due to an inferior education at the local college). They were unable to provide proper rock names for the units that they identified. Instead the units were logged generically as "Unit A" or "Unit B", etc. W.I.M.P.S. did consistently give each rock type only one generic name. All of these data should be applied to the completion and interpretation of your map.

Reports in response to our April 28 solicitation must be submitted to the Geo11 HAZING Office (Room 310, ESNHM) by **10 AM on Friday May 14, 2010.**

W.I.M.P.S. GEOLOGIC DATA DRILL HOLE DATA

A1		A2		B1	
depth	lithology	depth	lithology	depth	lithology
0-264	A	0-983	E	0-704	G
264-847	B	983-1206	F	704-1688	H
847-1968	C			1688-1692	mylonite
1968-3391	D			1692-3701	I
3391-4980	E			3701-3704	mylonite
4980-5512	F			3704-3946	F
5512-5516	breccia				
5516-5735	F				

B2		B3	
depth	lithology	depth	lithology
0-925	I	0-1248	J
925-927	mylonite	1248-2493	D
927-1479	D	2493-3847	E
1479-2588	E	3847-4415	F
2588-3042	F		

FOSSIL IDENTIFICATIONS

Site P8	<i>Phillipsastraea gigas</i>
Site K4	<i>Clathropteris platyphylla</i>
Site J25	<i>Triticites ventricosus</i>

RADIOMETRIC DATES

Site X3	U/Pb zircon	647 ± 6 Ma
Site E22	K/Ar biotite	409 ± 6 Ma
Site U15	U/Pb zircon	279 ± 3 Ma