Rock-of-the-Week Description Guidelines

By John P. Hogan University of Missouri, Rolla

### Sketch! Very Important

All rock descriptions must include a sketch of the rock. This is **not** an artists "still-life" composition – instead this sketch should highlight the important geologic features of the rock. If necessary include a second sketch, an enlargement, to show finer details.

All sketches must include:

- 1) A succinct and accurate title.
- 2) A brief caption describing the rock.
- 3) A scale bar.
- 4) Labeled annotations of important features.

### Description

There are several basic questions to address every time you prepare a verbal or written description of a rock. These questions vary somewhat from rock to rock depending upon if it is sedimentary, igneous, metamorphic, or a tectonite. Examples of these questions are presented below. Remember that not all of these questions may apply to every sample. They are provided to help you get started. You may think of additional questions to add to this list. Rather than using complete sentences, answering these questions using one or two words and correct terminology. Then use these descriptive terms to create concise sentences that accurately describe the rock. For example the sentence "A fine-grained well-sorted white sandstone comprised of sub-rounded, frosted grains of quartz held together with a carbonate cement." provides a clear mental image of the fundamental character of this rock. You will find that the rock of the week exercise will help you build a working knowledge of this terminology over the course of the semester. This is the vocabulary you will be expected to use during your professional career. The best source for definitions is the American Geological Institute (AGI) Glossary of Geology.

#### **Rock Color**

**Question 1** What is the color of the rock? Be sure to indicate if you are describing a "fresh" or "weathered" surface, and if the surface is wet or dry.

#### **Components of the Rock**

**Question 2** What are the constituents that make up this rock? Are they lithic fragments (plutonic, volcanic, metamorphic, sedimentary), fossil fragments, or glass fragments, or are mineral grains or crystal present?

Question 3 What are the identities of the mineral grains/crystal that are present?

**Question 4** What are the approximate abundances of the individual grains and mineral species that are present? For example, a rock may be comprised of 90% quartz grains, 5% feldspar, and 5% of unidentified grains.

#### Size of the Rock Constituents

Question 5 What is the grain size of the rock? (e.g., fine-grained, coarse-grained etc.)

**Question 6** What is the variation in grain size? (e.g., equigranular, nonequigranular, well sorted, poorly sorted, etc.)

**Question 7** Is the grain size variation continuous or discontinuous? (e.g., Bimodal trimodal, porphyritic, etc.)

#### Shape of the Rock Constituents

**Question 8** What are the grain shapes? (e.g., angular, sub rounded, rounded) What are the crystal habits? (e.g., euhedral, subhedral, anhedral)

#### The Nature of the Cement

**Question 2** The extent of induration (well cemented or poorly cemented). Be sure to note if you are describing a "fresh" or "weathered" rock.

**Question 10** What is the abundance and composition of the cement (silica, carbonate, Fe-mineral such as hematite), matrix, or groundmass if present?

### Spatial Relationships among Rock Constituents

**Question 11** What is the nature and amount of pore spaces that are present? How are the grains packed together?

**Question 12** What are the spatial relationships among mineral grains? For example, does one mineral species typically occur as inclusions in another mineral species?

## **Structural Observations**

**Question 13** Are primary structures (mud cracks, ripple marks, cross-bedding, etc,) present? Describe them.

**Question 14** Is a rock fabric present? Does the rock exhibit a foliation or a lineation? If one or more of these features are present identify what type of foliation or lineation it is (e.g., mylonitic foliation, a mineral lineation, etc.).

**Question 15** Describe the presence of any secondary structures, such as cleavage, folds, faults, shear bands, joints, as best you can.

## **Rock Name**

Name the rock as best you can. You may need to review your notes from previous classes.

# **Analysis and Interpretation**

Based upon your observations discuss the significance of your observations. How did this rock form? What story does it tell (i.e, the geologic history of the rock)?

## Conclusions

Provide a brief synopsis of the major features and findings of your report.