ROSEBUD · SPECIFIC GRAVITY

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FAXED 8/29/96

HECLA MINING COMPANY
ROSEBUD PROJECT

August 29, 1996

Memorandum to: Don Cameron

From: Charlie Muerhoff Charlie

RE: Specific Gravity Measurement of Drill Core (in the field)

I apparently do not have a written set of guidelines pertaining to taking specific gravity measurements of drill core.

Based on advice from TerraMatrix (Rosebud geotechnical consultants) and from personal experience, here is my recommendation for taking specific gravity measurements of core:

1. Select and weigh core pieces to be tested (whole core, not splits); core lengths ≥ 6 inches are desirable.
2. Oven-dry the core until no additional weight loss occurs.
3. Weigh each dry piece of core and record.
4. Fill graduated cylinder with clean water and record volume.
5. Submerge core piece in graduated cylinder and record new volume.
6. Subtract beginning volume from new volume = displacement.
7. Specific Gravity (g/cc) = weight of core piece / displacement.
8. Rinse out graduated cylinder and refill with clean water for next measurement.

↑ at a minimum, core length should be ± twice the core diameter.

important →

For samples that were clay-rich and/or vugy, it was recommended to us that the dried sample be coated with a thin layer of acrylic enamel and re-weighed prior to immersion in water. We found that tightly wrapping the core piece in plastic food wrap also worked well if the samples contained large vugs that could not be coated or filled in with the enamel.

If this work is being performed in the field, I know oven-drying may not be very convenient, but it is worth it if you wish to compile accurate density numbers. Based on my own experience, sun-drying the core for a week or so is not sufficient enough to completely dry the core (not even in Nevada's summer sun) if there is much of a clay component. I've had to learn this the hard way! If the work is being performed at or near one of the operations, access to drying ovens shouldn't be a problem. If the work site is remote, you may want to consider having the assay lab do the specific gravity measurements prior to the analytical work (assuming whole core is submitted for assay).

If the measurements are taken in the field, it probably isn't a bad idea to take 10% or so of the sample population and send them to a professional lab for specific gravity measurements.

Hope this is of some help. Call if you have any questions.

I may have a copy of commercial lab procedures - let me know if you want me to send it to you.