Notes on Gravity Survey & Magnetic Survey Design

3/20/2017
Problems with this data set
1. Base station (@0) has a wide variety of values – this means that there were errors in removing the tidal variations
2. There is a large monotonic drop in $\Delta g$ on the west side of the area. If fixing #1 does not solve this it could be that the regional background subtraction has gone wrong.
Problems with this data set
1. The gravity variations are on the order of the tidal variations and exhibit a similar frequency (assuming that the data set was collected over 5-6 days). This indicates that the tidal correction may not have been done correctly.
Problem: One data set is inverted. So there was a sign error somewhere.
The second data set is mine, a number of data sets look like this – comparing the two gives you a sense of the degree of variations that we can expect between individual datasets.
Gravity Final Report

• A brief description of the problem
• A brief discussion of survey design considerations
  – How you decided on survey parameters
• Survey plan that you used based on discussion above
  – **Gravity station** interval along the single east-west line (in meters),
  – **Base station** location along the line and the frequency at which you will reoccupy the base station,
  – Number of gravity observations you will collect at each gravity station,
• A brief discussion of the survey design limitations and an estimate of the probability of success for this type of survey given the problem at hand
Gravity Final Report

• A summary of the data-processing and interpretation procedures (you may want to refer to a flow chart in the appendices)
  – A figure showing your final gravity survey
  – A figure showing the tides over time
  – A figure showing your regional background fit
• A clear and concise statement of your preliminary interpretation and an indication of the action that will be required to refine and validate that interpretation
  – Include figures showing best looking models to justify your interpretation
  – Be sure to indicate if more than one plausible model exists for subsurface features.
• For each feature a discussion of how and why you chose the "possible" models for each anomaly
• A description of any other anomalies that the survey turned up that could not be caused by a mine tunnel.
Magnetics Request for Bid

• Read over Request for Bid section
• Download magnetic apps
• Create a suite of gravity models for positive anomaly on west side of area
  – Consider plausible density contrasts
• Settle on preferred model
• Use magnetic dike app to help in figuring out how to set up the magnetic survey