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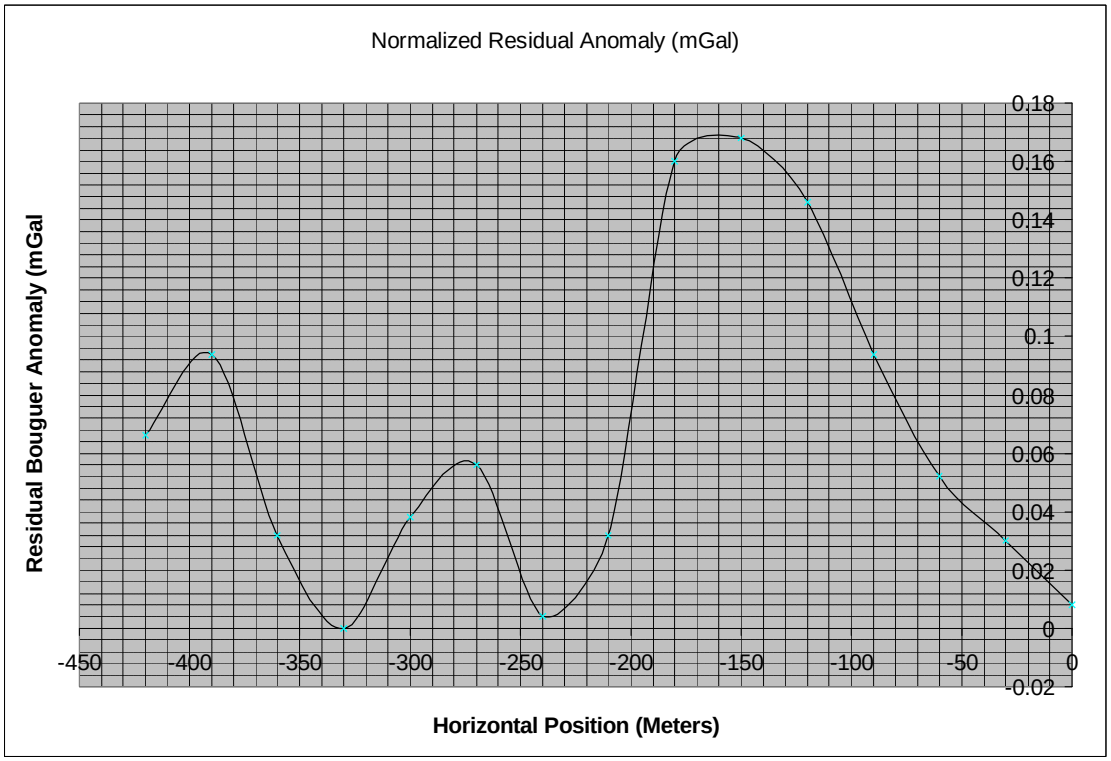
Geology 559
Exam 1—Take home portion

Qualitative and Quantitative Interpretation of Gravity Anomaly

Line 81 N

The electromagnetic survey indicates some sort of metallic ore body beneath the surface. Since the problem indicates that a conducting zone with a width of 50 m and a length of 750 m was discovered perpendicular to the gravity traverse, the ore body seems to have a roughly cylindrical shape.

My quantitative analysis assumes the ore body is composed of lead and zinc and has an average density of 3.65 g/cm^3. I assume that the country rock has an average density of 2.65 g/cm^3. My calculations and graphs are located on the next couple of pages. The properties of the ore body were computed assuming the ore body was both a cylinder and a sphere. The results of my calculations are located below:



Property	*Assuming the ore body is a cylinder*	*Assuming the ore body is a sphere*
Depth to center (ft)	170.6	222.6
Radius of ore body (m)	14.48	30.3
Volume of ore body (m^3)	493,841	116,031
Mass or ore body (tons)	1.987×10^6	466,845
Depth to top of ore body (ft)	123.1	123.2
Potential gross profit (0.1 oz gold/ton, $290/oz)	$57,621,200	$13,538,521