

## TBL 6 Team - Expo Site Data Analysis

Team Number: \_\_\_\_\_

Participating team members (print you names):

In this TBL activity, teams analyze the EM-31 data from the Expo site and estimate the burial depth of one of the metallic object using Jupyter notebooks.

### Task 1

Download “em-31.xls” from the course website. Extract the in-phase and quadrature data along a NS profile at Easting = 70 for both of the boom orientations. For both boom orientations, make line plots of the in-phase and quadrature data as a function of Northing location. Use different colors and line styles to distinguish the four curves. Adjust the scale and range of the x-axis and y-axis so we focus on the anomaly near Northing = 50 m. Attach your plots below.

### Task 2

Load Jupyter notebook “EM\_ThreeLoopModel.ipynb” as you did in the lab. Click “Cell”, then “Run All”. The last section of the notebook simulates the EM-31 data for an EW-oriented pipe. Adjust “alpha” until the ratio of in-phase/quadrature in the simulation is approximately the same as in your field data plots above.

### Task 3

Then adjust “pipedepth” so the simulated data fit your plots in Task 1 as well as possible. Take a screenshot of the app’s output and attach here. Your estimated “alpha” and “pipedepth” are \_\_\_\_\_ and \_\_\_\_\_ respectively. Discuss how close are your simulated results to the field data on the in-phase data maps.

