

Correlation between magnetic intensity and pipe-to-soil potential of PGU III Pipeline System

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The variations in pipe-to-soil potential readings of the main pipeline system of Sector 3, Peninsular Gas Utilisation III have been suspected, for quite some time, due to local telluric currents interference. A survey to confirm the correlation between the geomagnetic induced currents and potentials was carried out by means of 24 h data logging of field magnetic intensity and the pipe-to-soil potentials (PSP). Linear regression of field data at 16 monitoring stations resulted into 5 stations having *good* correlation (correlation coefficient, R2 from 0.5092 to 0.6236), 7 stations having *acceptable to poor* correlation (R2 from 0.2703 to 0.4832), and 4 stations having *no* correlation between the PSP pairs (R2 = 0). Diurnal variations caused such PSP fluctuations with stations being determined as very quiet, fairly quiet and fairly hectic based on their normalized delta plots. The resultant effect from combined currents (telluric, AC and DC) was suspected to yield low to zero correlation coefficients.
