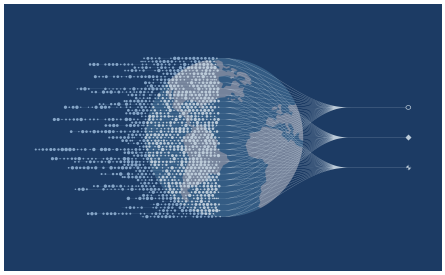

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2-D Radial Electrical Resistivity Imaging Profiles for Delineating Subsurface Explosion Disturbance Pattern around the 18:45 GMT 17 January 2024 Ibadan, Nigeria Explosion

2-D radial electrical resistivity imaging profiles established around ground zero of the 18:45 GMT January 17, 2024 Ibadan, Nigeria explosion was adopted as an on-site inspection geophysical approach to establish the subsurface explosion disturbance pattern and delineate the lateral and depth extents. The blast was reported to have resulted from poor handling of mining explosives causing loss of life and wreaked havoc, with noticeable destructive influence beyond the 500 m radius. Geophysical data acquisition, carried out hours after military clearance, employed 12 radial profile configuration established at 300 apart. Wenner electrode configuration was deployed at a=5, and increased serially at a multiple of 5 for 5 levels. Acquired data were filtered, inverted and combined to generate 2-D resistivity sections, radial iso-depth resistivity maps, and 3-D subsurface geophysical model. Characteristic very low resistivity zone, which reflects the blast induced subsurface disturbance, fans out from the centre of the analogy (ground zero) in an approximately semi-radial pattern and trends along northwest–southeast, with influence gradually reducing with depth up to 16 m. Numerous stress induced fractures which differ in pattern from the convectional Pan-African Orogeny-induced northeast-southwest lineament were delineated. The detected disturbance pattern suggests 2-D radial electrical resistivity imaging profile technique as a reliable on-site inspection tool for mapping subsurface explosions.

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