

**LATE CRETACEOUS RAKEFET MAGMATIC COMPLEX, MOUNT CARMEL, ISRAEL:
PRELIMINARY GEOLOGICAL OBSERVATIONS WITH RESPECT TO DIAMOND EXPLORATION**

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The Cenomanian Rakefet Magmatic Complex (RMC) is a composite, basic to ultra-basic volcanic system interbedded with shallow marine carbonates of the Late Cretaceous Judea Group in the southern portion of Mount Carmel. The RMC, situated within a northwest-southeast trending fault zone, is comparatively well exposed along the south-west flank of the Nahal Rakefet where some 45 hectares of the previously-recognised, two lower, pyroclastic-dominated units (V1 and V2) crop out with a further +20 hectares of the topmost (V3) basaltic lava flow preserved higher up the valley slope. To date, our exploration efforts in Shefa Yamim demonstrate that the RMC:-

- (i) hosts rock types within the lower two units, V1 and V2, that have kimberlitic affinities with volcanoclastic (VK) and reworked volcanoclastic (RVK) facies preserved;
- (ii) has at least two principal vents within the lowermost unit (V1) comprising massive, intensely veined (predominantly calcite) magmatic facies that are probable feeders to the subjacent V1 and higher-lying V2, bedded VK and RVK tuff, welded tuff, lapilli tuff and agglomerate units;
- (iii) is a source of kimberlitic indicator minerals (KIMs - notably chrome diopside, which is the most abundant indicator, garnets of purple, red and orange colour varieties, ilmenite, spinel/chromite) and rare fine diamond, particularly from the well-bedded, coarse-grained tuff layers with kimberlitic affinities in the lowermost V1 and V2 units. Such KIMs recoveries are unusual given the rifted nature of the Levant margin and the mineral chemistries of these KIMs are therefore being investigated further with respect to diamond potential.
- (iv) is more likely to yield fine diamonds from a VK or RVK unit(s) that represents an explosive (extrusive) facies than the massive, veined, feeder magmatic units where diamond resorption is more likely to have occurred due to residence time in the magma.
- (v) is, based on garnet geochemistry, a major contributor to KIMs found within the incipient diamond placers of the Cainozoic Kishon Valley fill, and is thus also the most probable origin of many of the fine diamonds found to date in such preliminary placers.