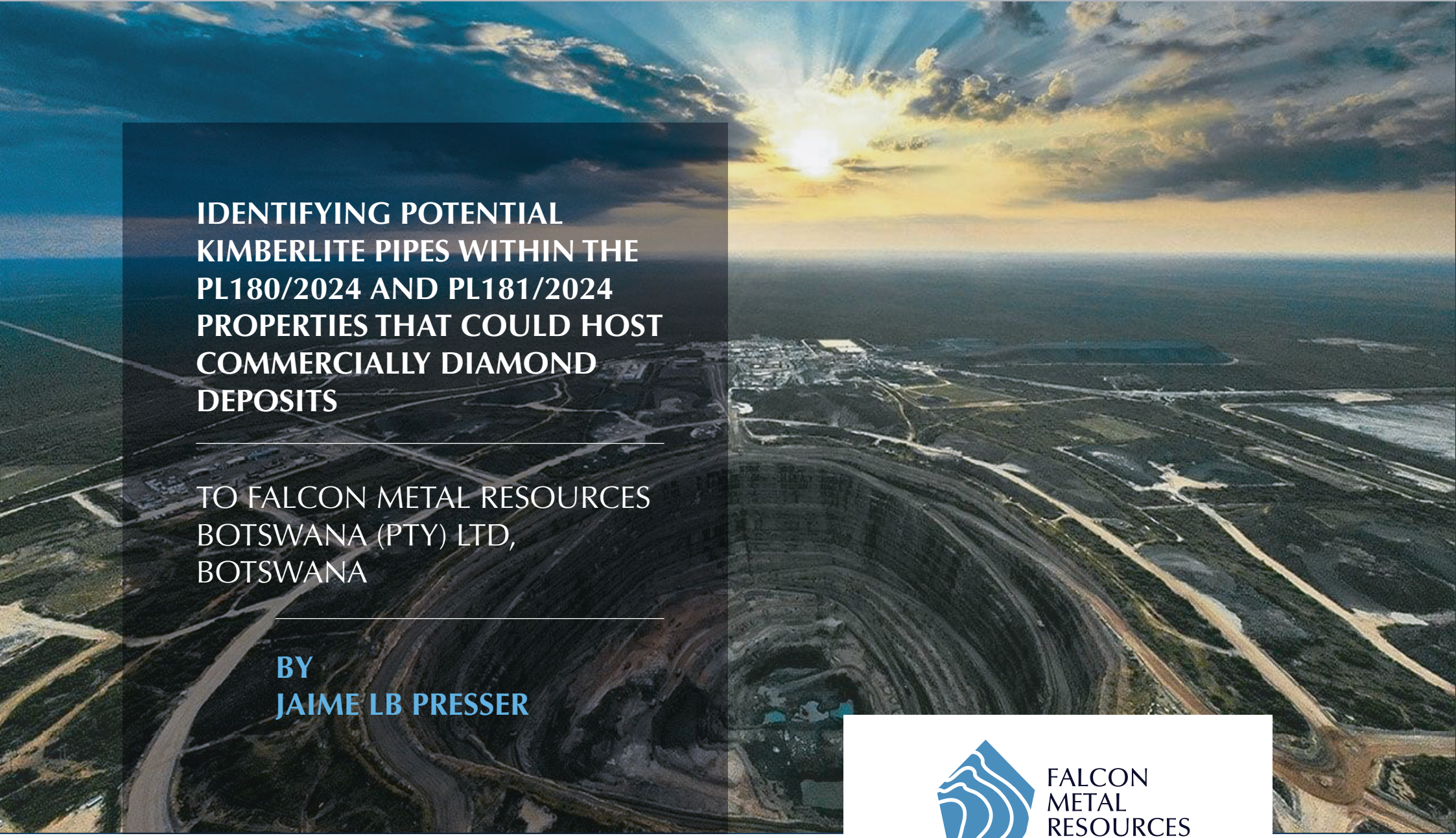


IDENTIFYING POTENTIAL KIMBERLITE PIPES WITHIN THE PL180/2024 AND PL181/2024 PROPERTIES THAT COULD HOST COMMERCIALLY DIAMOND DEPOSITS

TO FALCON METAL RESOURCES BOTSWANA (PTY) LTD, BOTSWANA

BY
JAIME LB PRESSER

FALCON METAL RESOURCES BOTSWANA

Falcon Metal Resources Botswana (Pty) Ltd (Falcon) Is A Prominent Player In Botswana's Mining Sector, Specializing In Gold And Diamond Exploration. The Company Actively Seeks To Unlock The Potential Of Prime Mining Locations Across The Country, Encompassing Gold-Rich Regions Like Francistown And Diamond-Rich Areas Near The Renowned Lucara Diamond Mine.

Falcon holds three prospecting licenses for diamonds within the prolific Orapa kimberlite field in central Botswana:

- **PL0180/2024:** Covering 1.10 km2, this license encompasses two identified kimberlite targets.
- **PL0181/2024:** Spanning 1.56 km2, this license includes a portion of the known Orapa BK55 kimberlite lobe.
- **PL0345/2024:** Covering 0.65 km2, this license encompasses half of the known Orapa BK32 kimberlite and two additional targets.

The Orapa kimberlite field is renowned for its diamond potential, with four out of five mines already in full production.

At the behest of Kago Stimela, Chairman of Falcon Metal Resources Botswana (PTY) LTD, this report focuses on identifying potential kimberlite pipes (or lamproites) within the PL180/2024 and PL181/2024 properties that could host commercially diamond deposits.

To achieve this objective, the study integrated satellite geophysical data (2x2 degree and 1x1 degree gravity: Vertical Gravity Gradient; Free Air, Bouguer, and Isostasy) with satellite imagery (Landsat TM 1990 and 2000, and Google Earth images from 1985). The findings were subsequently compared with magnetometry data sourced from the report by Dr. Khumo Leseane.



HIGHLIGHTS

This report initially examines the positioning of the PL1801/2024 and PL181/2024 properties within the context of Vertical Gravity Gradient (VGG) "highlines." Notably, all diamond deposits containing Karowe-type diamonds and/or fancy color diamonds are known to reside within these VGG "highlines." Analysis reveals that the Falcon properties are situated within a VGG "highline" shared with the Karowe mine, strongly suggesting the potential presence of large Karowe-type diamonds within any kimberlites discovered on the Falcon properties.

Subsequently, three gravimetric profiles (modified gravimetries) were generated along a NW-SE orientation at 1-kilometer intervals across each Falcon property. This analysis indicated potential kimberlite pipe intrusions within both properties. Specifically, it identified a zone of high potential for kimberlite pipes on PL181/2024 (A) and two other zones with lower potential between PL181/2024 (B) and PL180/2024 (C). To validate these findings, similar profiles were generated for the AK6 (Karowe Mine), BK11, AK10, and BK54_BK55 pipes.

The potential kimberlite intrusion points were further investigated and delineated using Landsat satellite imagery and Google Earth images. This analysis revealed the following:

1.A significant potential pipe exceeding 50 hectares was identified in the promising area of the PL181/2024 property (west side). This probable pipe exhibits approximately 7 interdigitated internal lobes. This anomaly has been provisionally designated as Falcon Kimberlite 181-1 (FK181-1). Importantly, FK181-1 is situated within a circular mega-structure (as defined by satellite imagery), displaying strong resemblance to another smaller circular structure observed around the AK6 pipe (Karowe Mine).

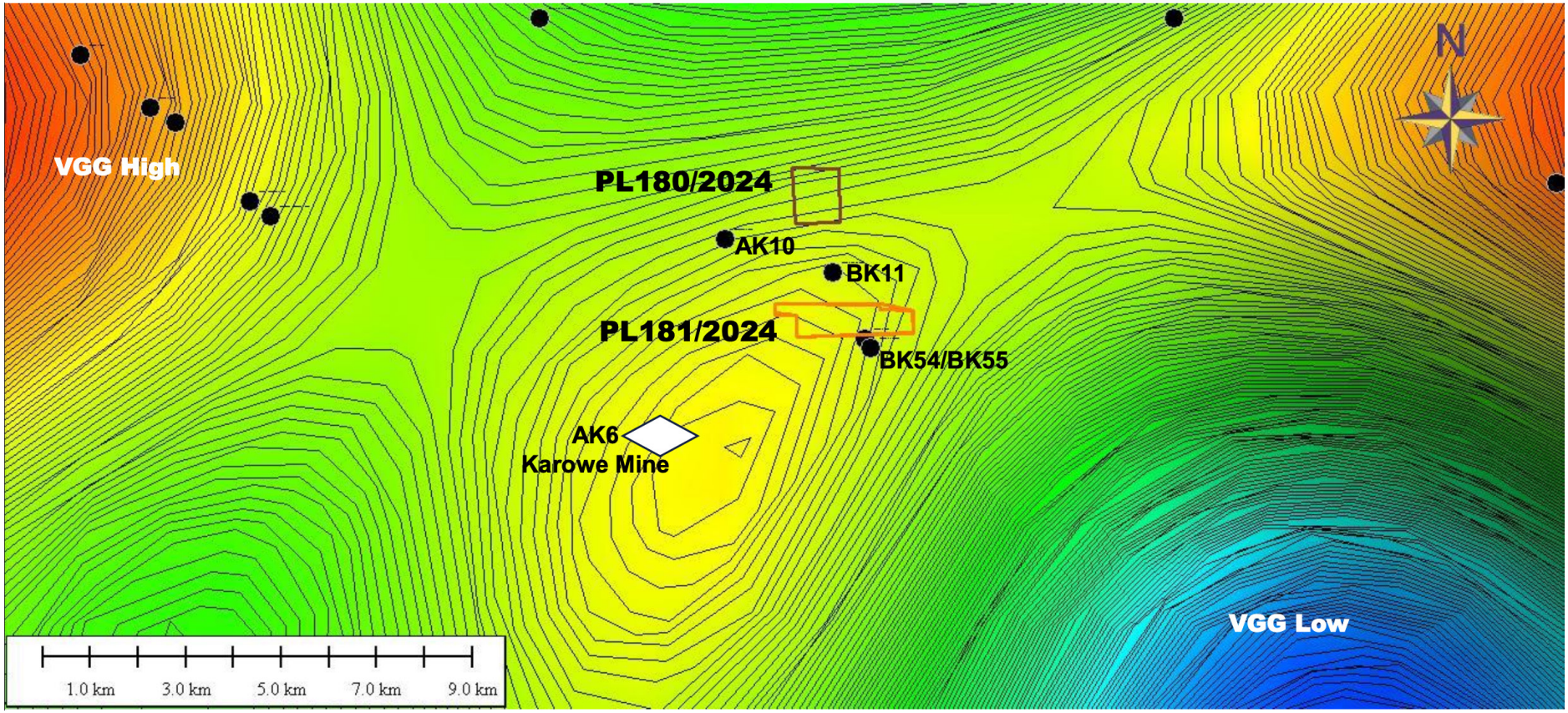
2.Additional potential pipes were identified east of FK181-1 (FK181-2) and adjacent to the PL180/2024 property (FK180-1 and FK180-2). These potential pipes also exhibit considerable dimensions.
Previous magnetometric data offer partial support for some of the delineated potential pipe lobes.

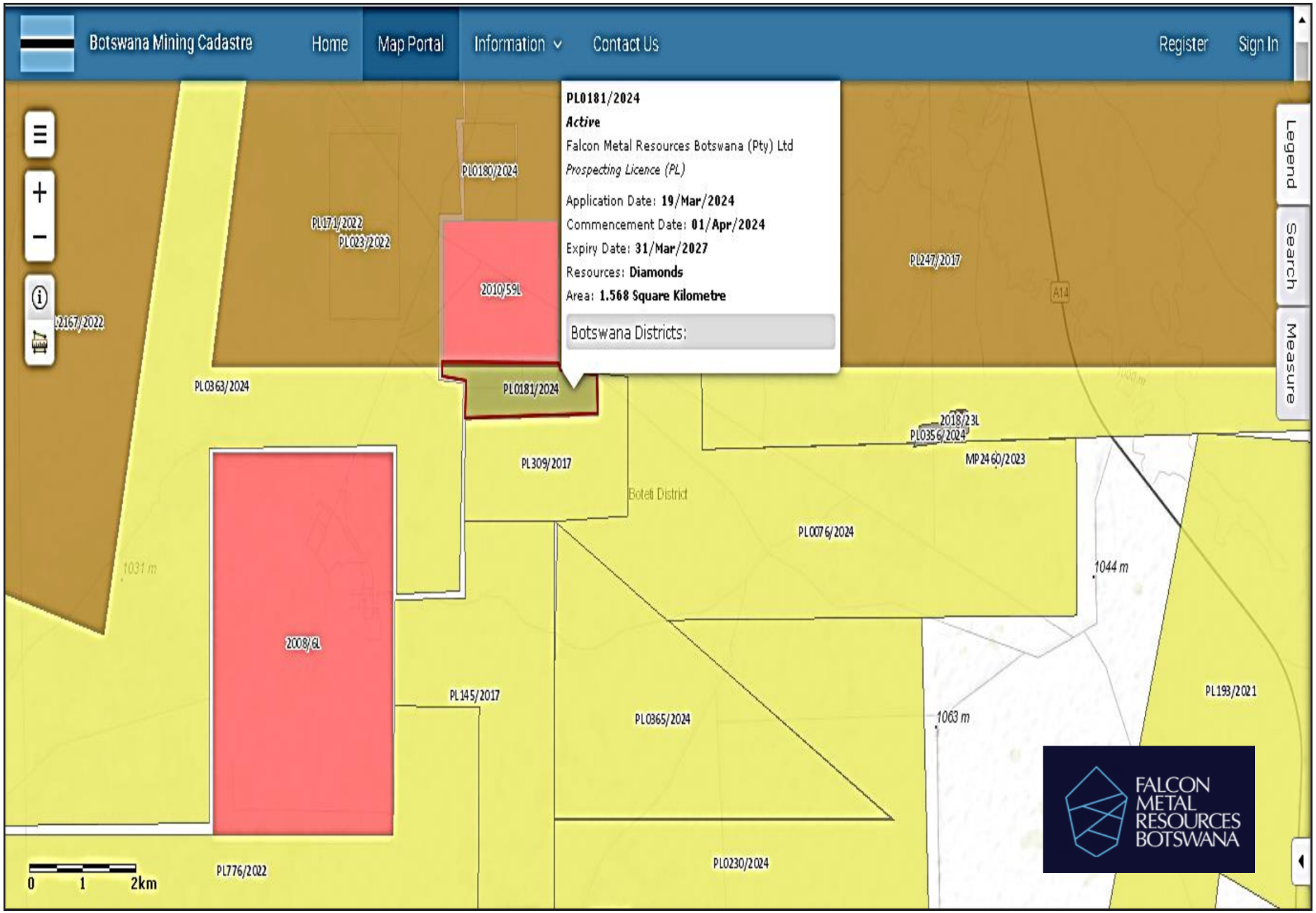
Based on the analyzed data (gravimetric profiles and satellite image) **the potential kimberlite pipe FK181-1** is predicted to possess a higher diamond grade than the AK10 and BK11 pipes. Its grade may be comparable to or slightly higher than the AK6 pipe (Karowe Mine) but is expected to be lower than that of the DK1/DK2 mines (28-33 cpht). **The data strongly suggest that FK181-1 represents a promising target for a potential primary diamond deposit, potentially containing fancy color diamonds and Karowe-type diamonds.**


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AK6 KIMBERLITE

VGG UNVEILING KAROWE-TYPE DIAMONDS

The database of occurrences of kimberlites with giant Karowe-type (or Cullinan) diamonds shows that when they are mapped on a Vertical Gravity Gradient (VGG), unlike those kimberlites with medium to small diamonds, they are located on prominent VGG highs. The example for the Orapa area is the first figure to follow, which shows the Karowe mine on a high and in its vicinity the BK11, BK54, BK55 and somewhat less AK10 kimberlites. The Falcon properties are a few kilometres from Karowe; therefore, it could be expected, at least on the PL181/2024 property, that any kimberlites there would be recipients of Karowe-type diamonds (giant diamonds and fancy color diamonds).




Botswana Mining Cadastre
Home
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PL0181/2024
Active
Falcon Metal Resources Botswana (Pty) Ltd
Prospecting Licence (PL)
Application Date: 19/Mar/2024
Commencement Date: 01/Apr/2024
Expiry Date: 31/Mar/2027
Resources: Diamonds
Area: 1.568 Square Kilometre
Botswana Districts:
PL0180/2024
PL171/2022
PL023/2022
2010/59L
PL247/2017
A14
PL2167/2022
PL0363/2024
PL0181/2024
2018/23L
PL0356/2024
MP2460/2023
PL309/2017
Boteti District
PL0076/2024
1031 m
1044 m
2008/6L
PL145/2017
PL0365/2024
1063 m
PL193/2021
PL776/2022
PL0230/2024
0 1 2km
Legend
Search
Measure
FALCON METAL RESOURCES BOTSWANA

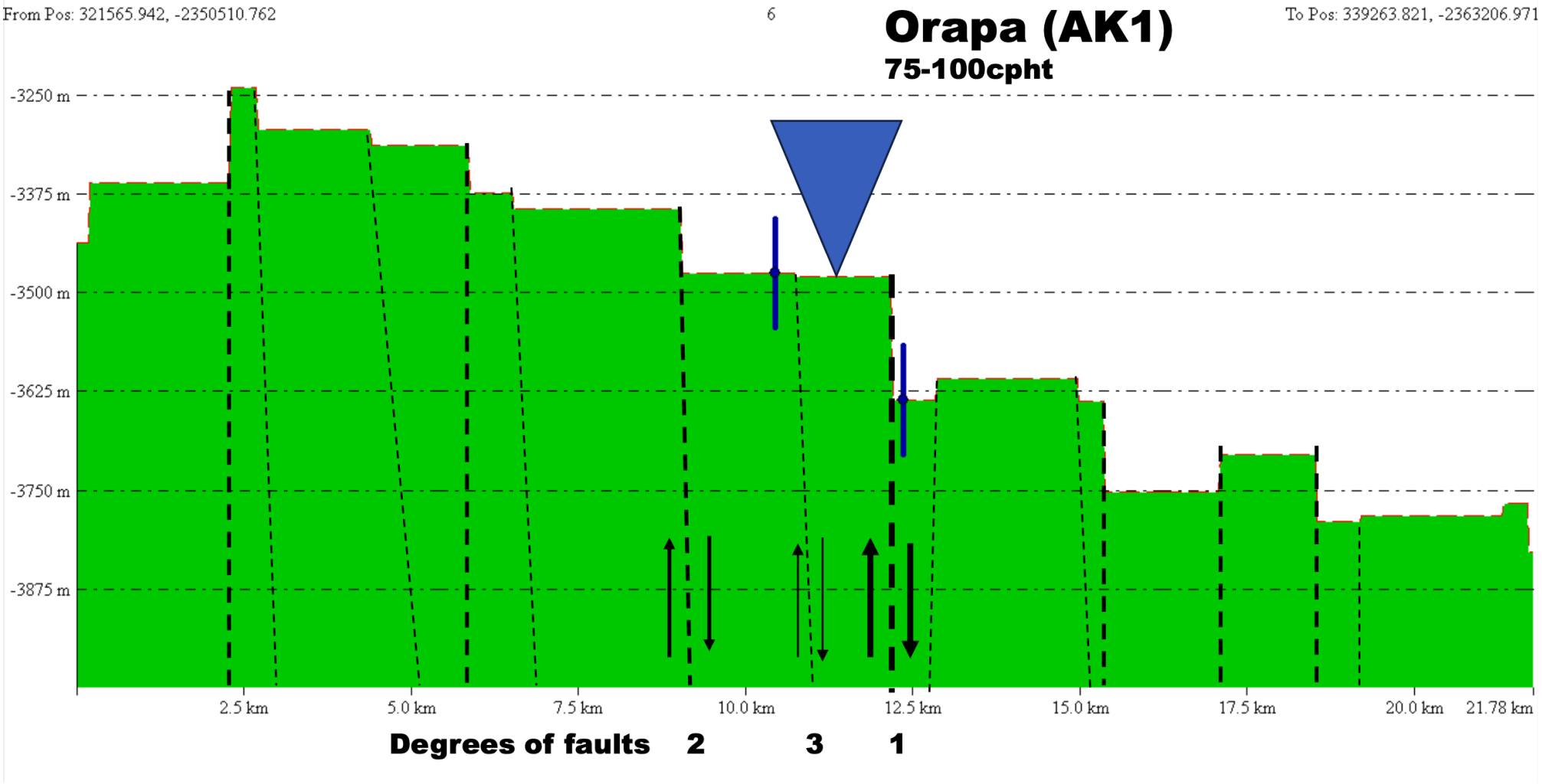
IMPORTANCE OF DENSE CRYSTALLINE BASEMENT FAULTS

The fault system of the dense crystalline basement (DCB) or the architecture of the faults in the DCB are the conduits through which kimberlites (and similar rocks) rise. By mapping the architecture of this DCB using a GIS system, based on gravity information (satellite information of 1 degree at a time), potential faults are intercepted. These fault points are taken as potential kimberlite intrusion points. This made it possible to identify some points with potential kimberlite pipes on the Falcon PL180/2024 and PL181/2024 properties. These points of potential kimberlite intrusion are then verified in satellite images (for example Landsat TM); where the pipe (pipe system or simple pipes) can mostly be recognized.

Kimberlites linked to powerful faults (Grade 1 faults) in the DCB condition the rapid rise and consequently they carry kimberlites with high diamond grade. While weak faults (Grade 3 faults) are not very efficient in facilitating the rise of kimberlites and consequently they carry low diamond grade. Much worse if instead of grade 3 faults only kimberlites were linked to fractures ("Type 4 faults"). In the Orapa kimberlite field, the AK1 kimberlite (Orapa mine) would be the reference for the highest diamond grade. In AK1 the faults that allowed the rise of this high diamond grade pipe would be a powerful fault (Grade 1) and even in between a smaller one (Grade 3). While the lower diamond grade kimberlite in the vicinity of the PL180/2024 and PL181/2024 properties corresponds to the BK54/BK55 pipes. While the AK6 pipe (Karowe mine) is located between two narrow medium-strength faults (grade 2) and the intrusion probably occurred through fractures between the two faults mentioned. Profile Figures 1 to 6.

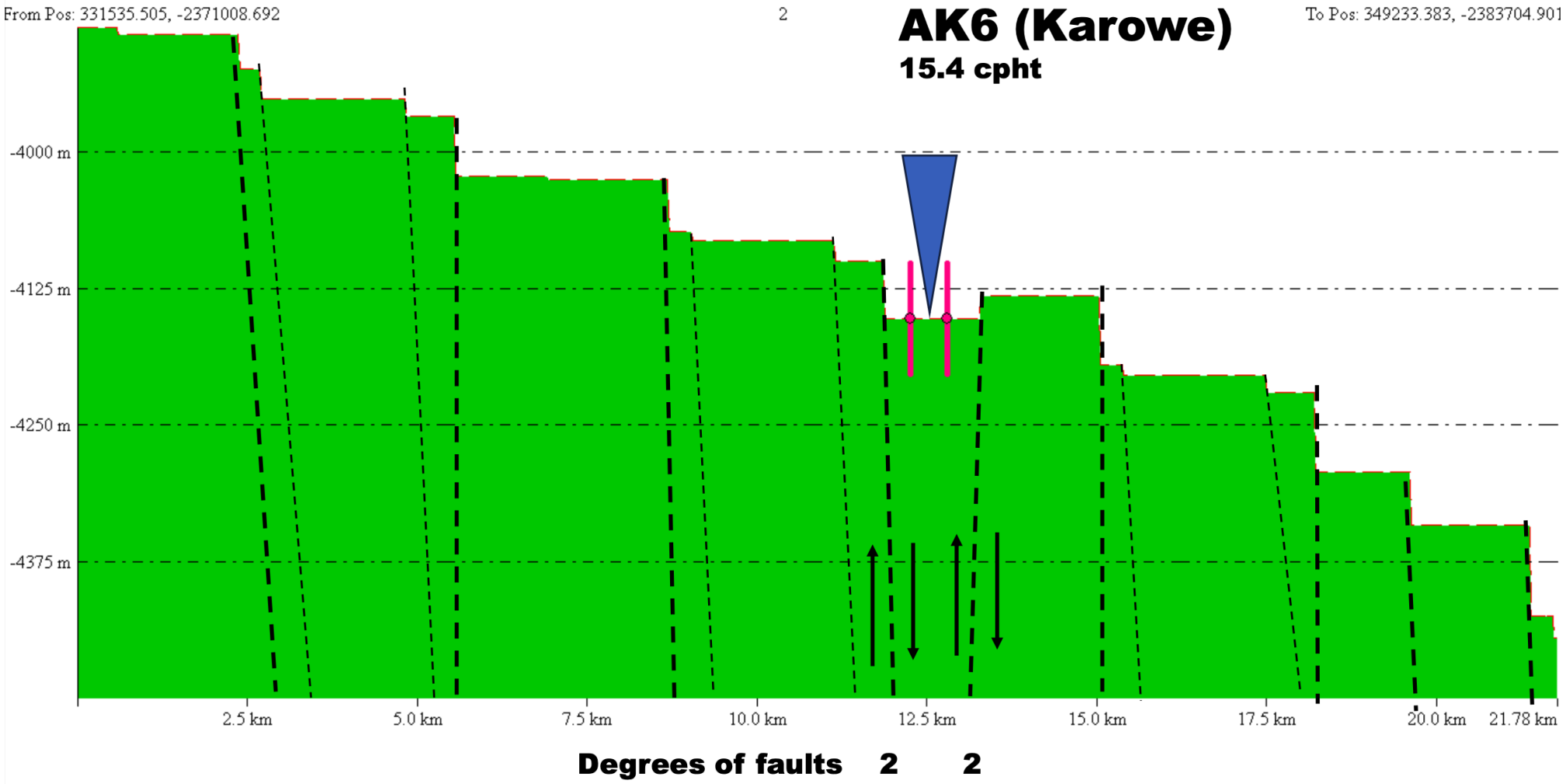
Intercomparisons between kimberlites from a field with different diamond grades usually show that high diamond grade kimberlites are also carriers of high concentrations of garnets (peridotitic and eclogitic) with inferred origin from deep within the diamond stability field. They are also rich in very high Cr chromites, while low diamond grade kimberlites are poor in the above-mentioned indicator minerals. It is understood that this is nothing other than the consequence of intrusion through different degrees of faults (or fractures) in the DCB. Using the fault degree parameter and by comparison with the conditions observed in diamond mines from a field of productive and non-productive kimberlites (or low diamond grade) one can also lower the diamond grade potential of a new kimberlite to be prospected. This has been applied with great approximation to the Olie-2 and DG-58 lamproite pipes in South Africa (both with high diamond grade) and has been inferred from two new kimberlites previously studied by the author at
Orapa North.

Profiles Figure 1.

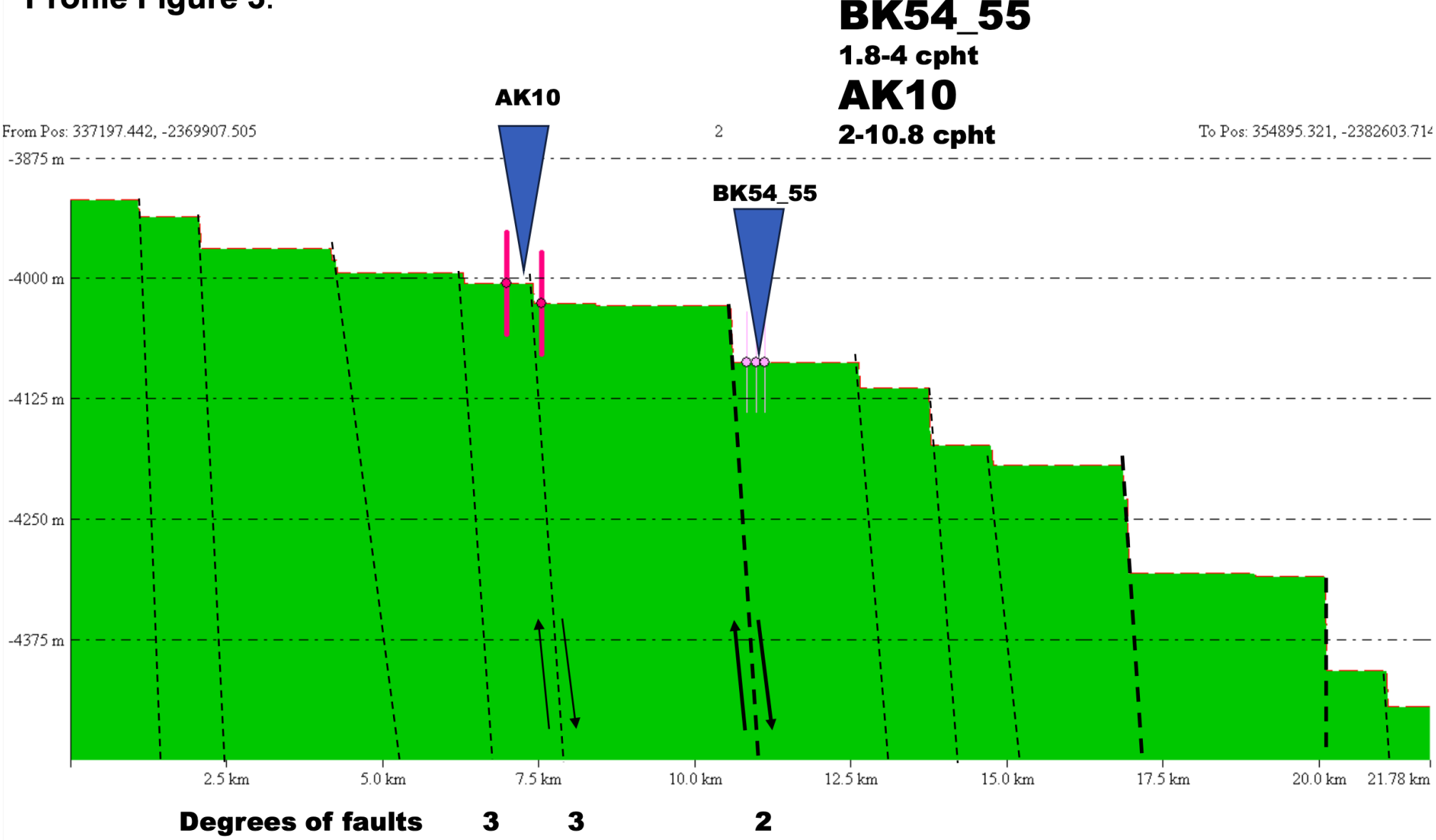


Profile Figure 2

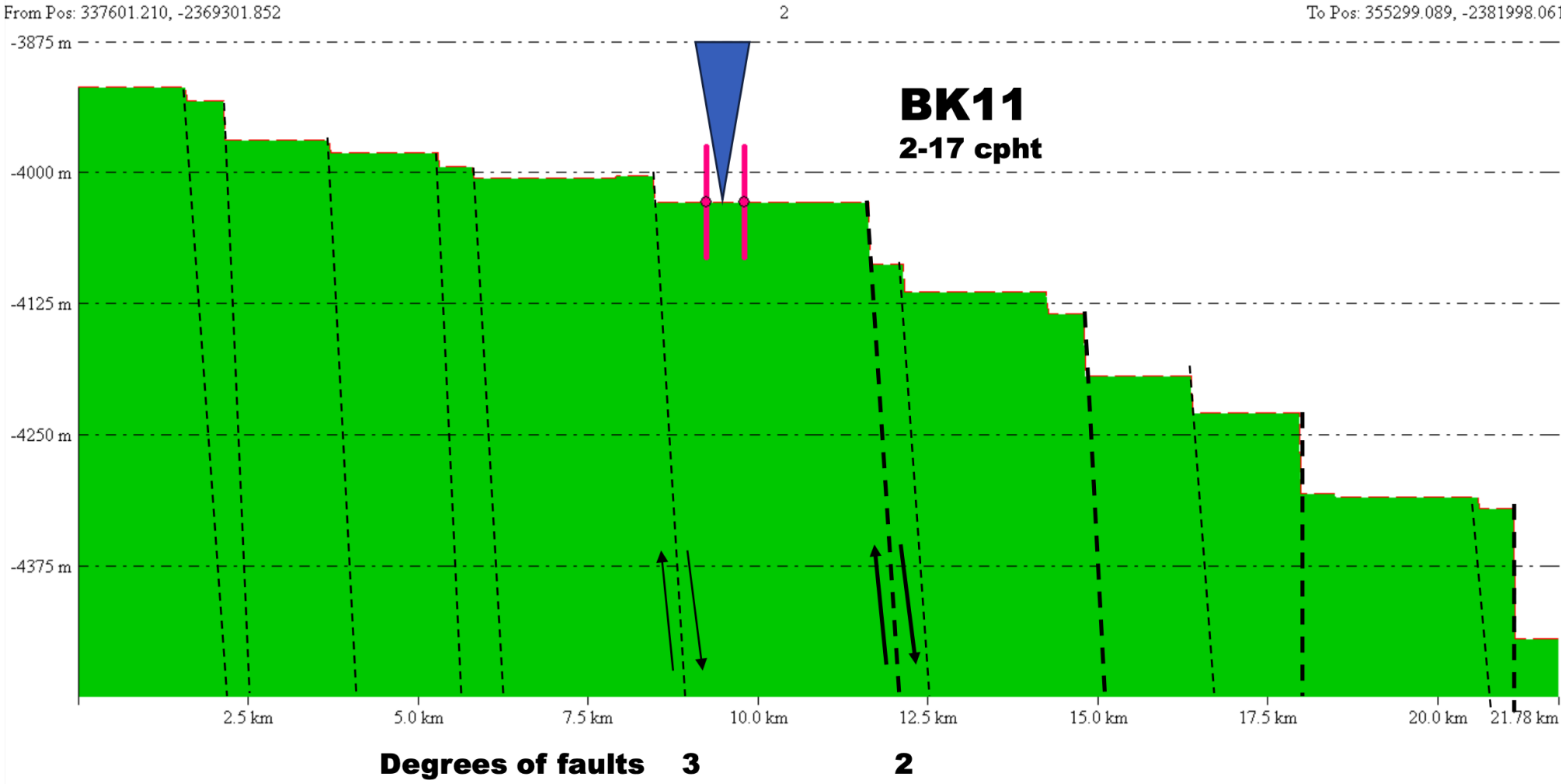
.



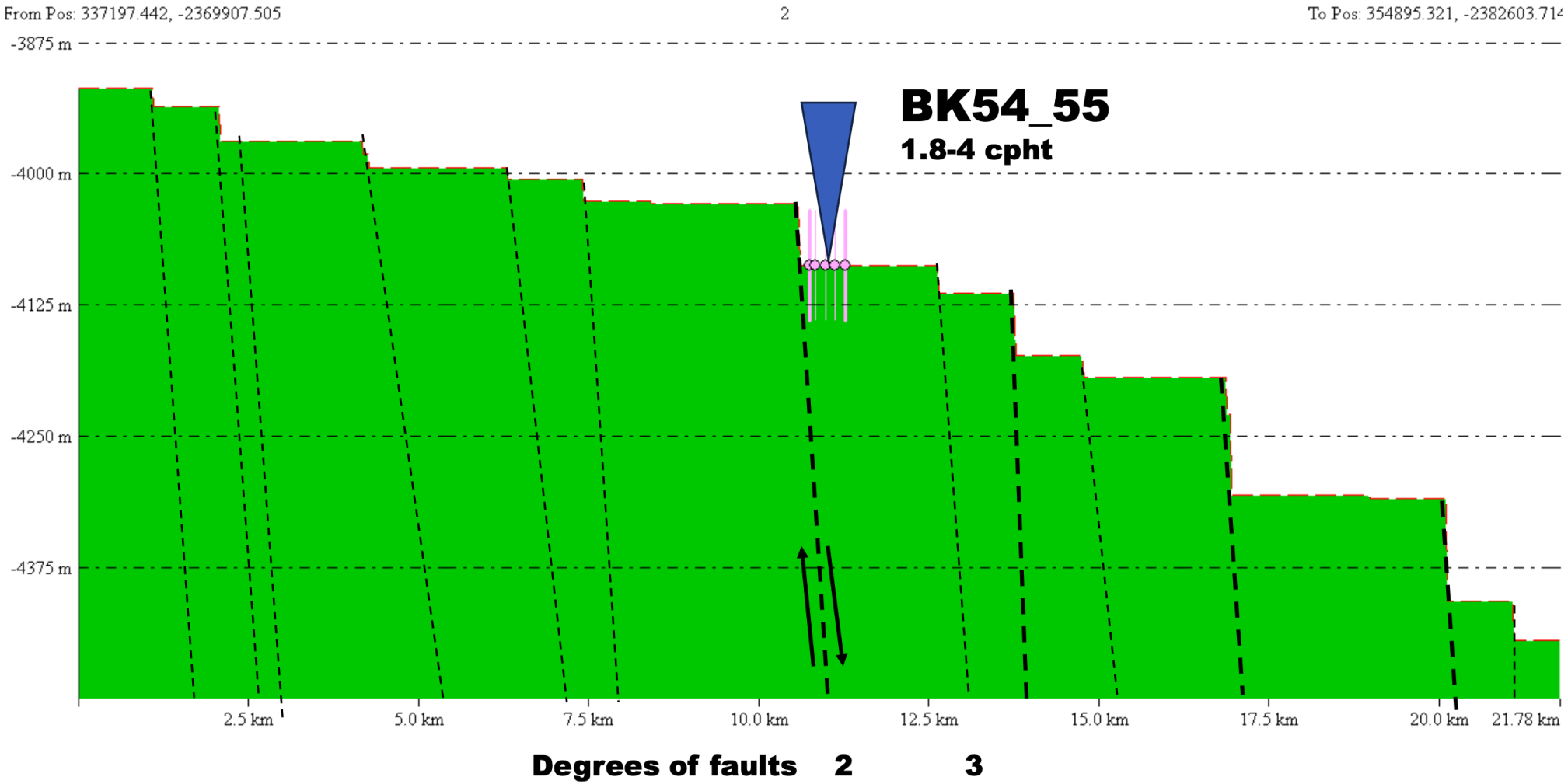
Profile Figure 3.



Profile Figure 4.



Profile Figure 5.

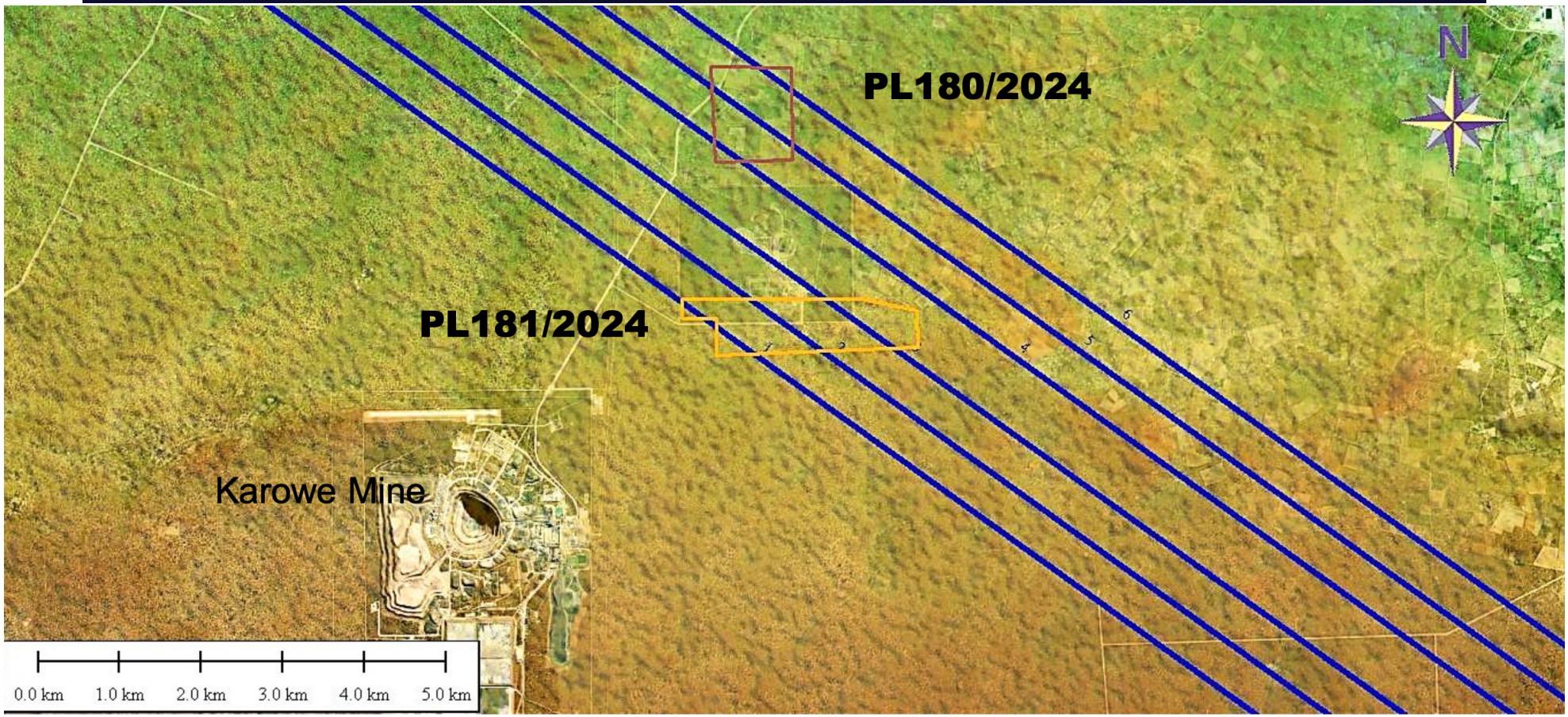


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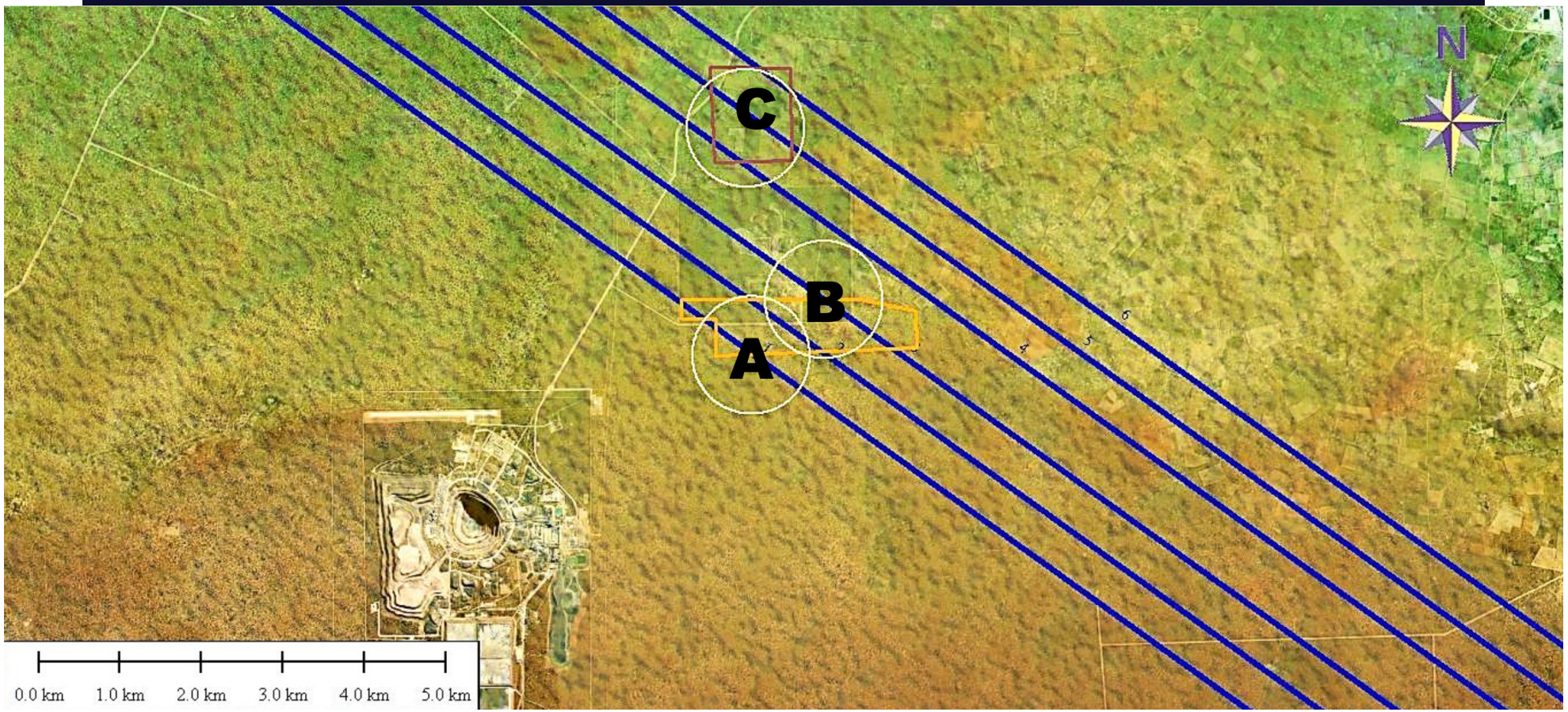
On the Falcon PL180/2024 and PL181/2024 properties, 6 profile lines were made with a NW-SE heading (separation of 1 in 1 km), Profile Figure 6.

The preliminary vision led to the recognition of an area of better potential (for the occurrence of pipes with considerable diamond grade) in PL181/2024 (A, Profile Figure 7) and another of lower potential: B in Profile Figure 7. Already in the PL180/2024 property the profile lines indicated an area of low potential (C in Profile Figure 7).

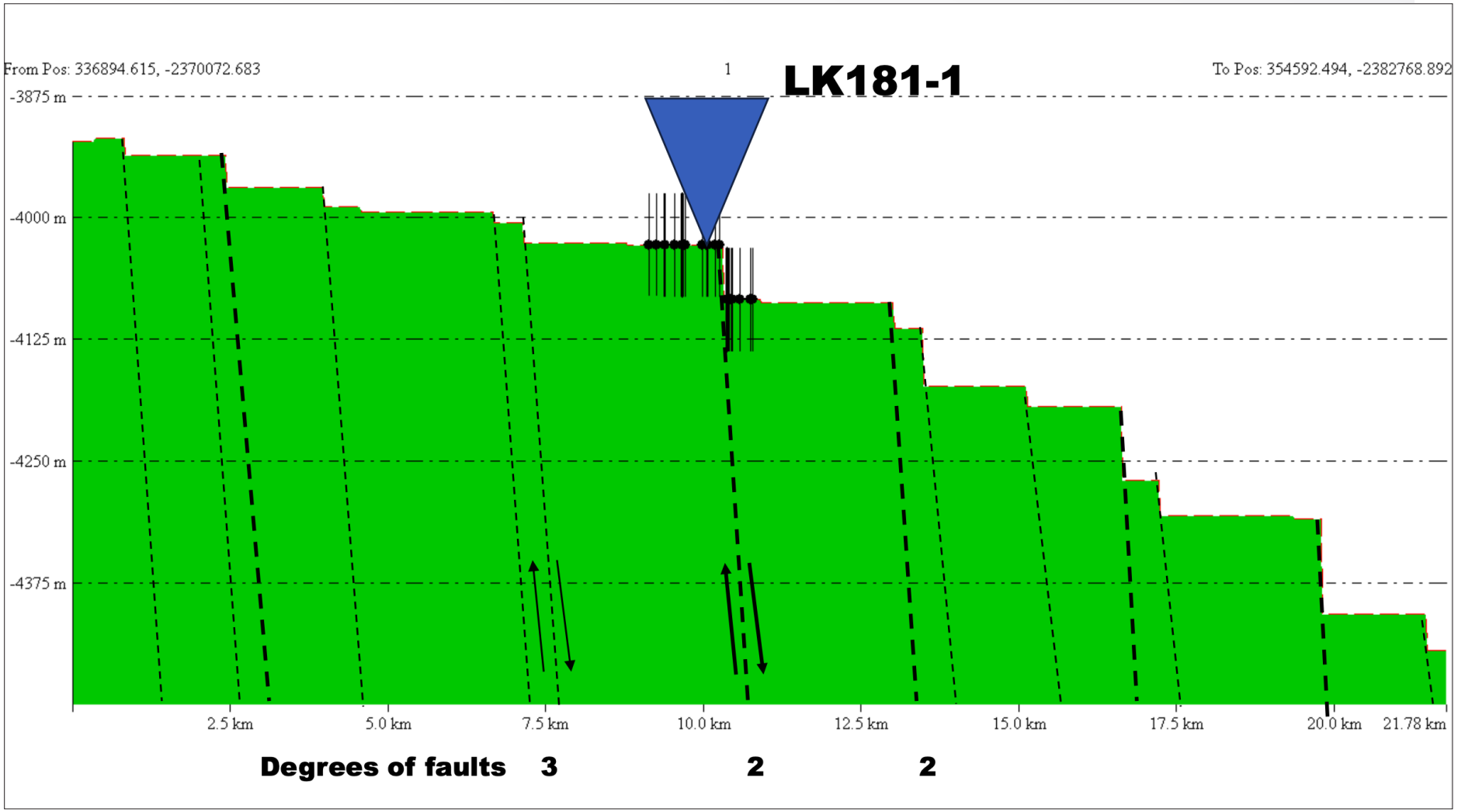
Profile Figure 6. The 6 Profile Lines With A Nw-Se Direction Made Above The Areas Pl180/2024 And Pl181/2024.



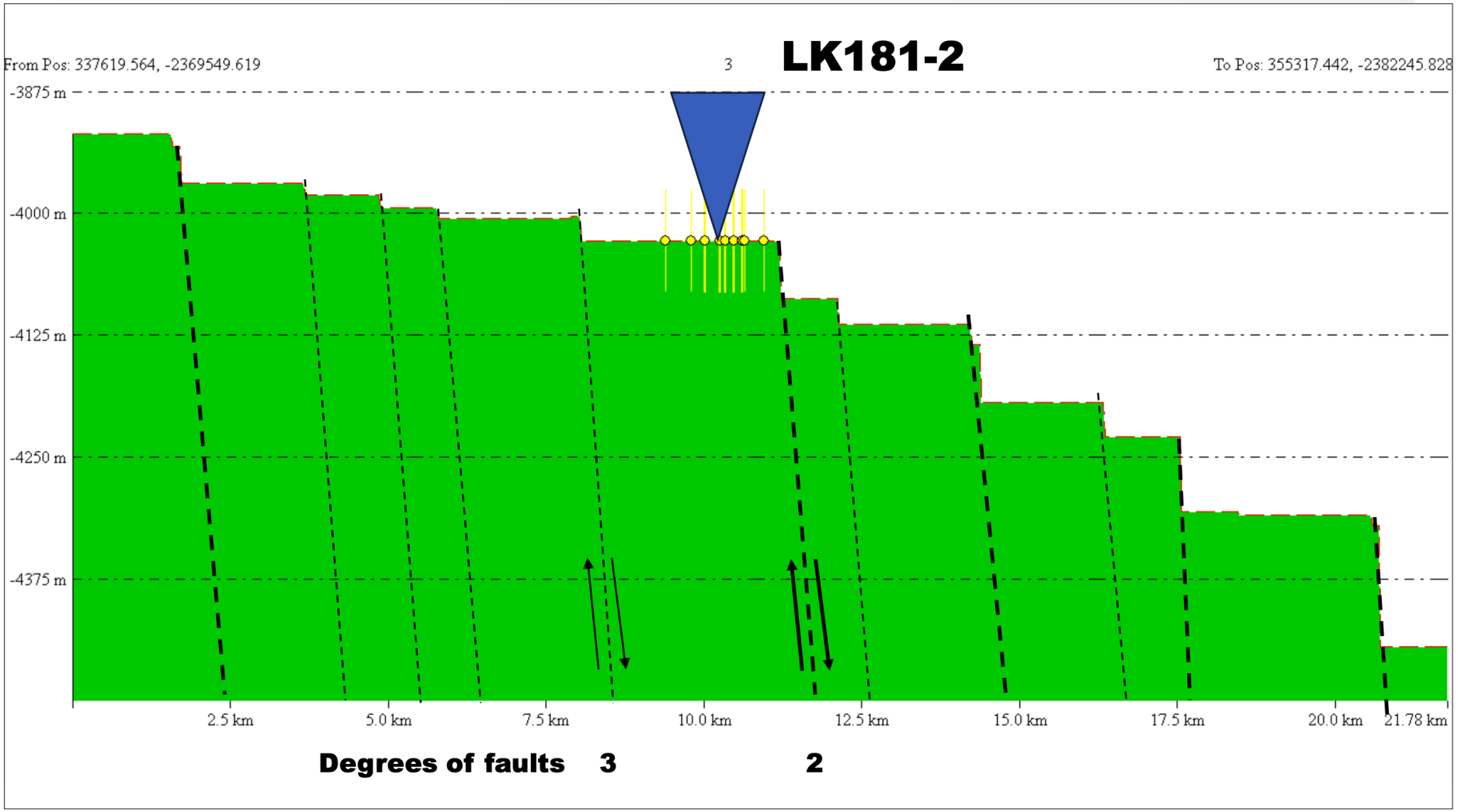
Profile Figure 7. Selected areas (A, B and C) to be viewed in greater detail on Falcon properties.



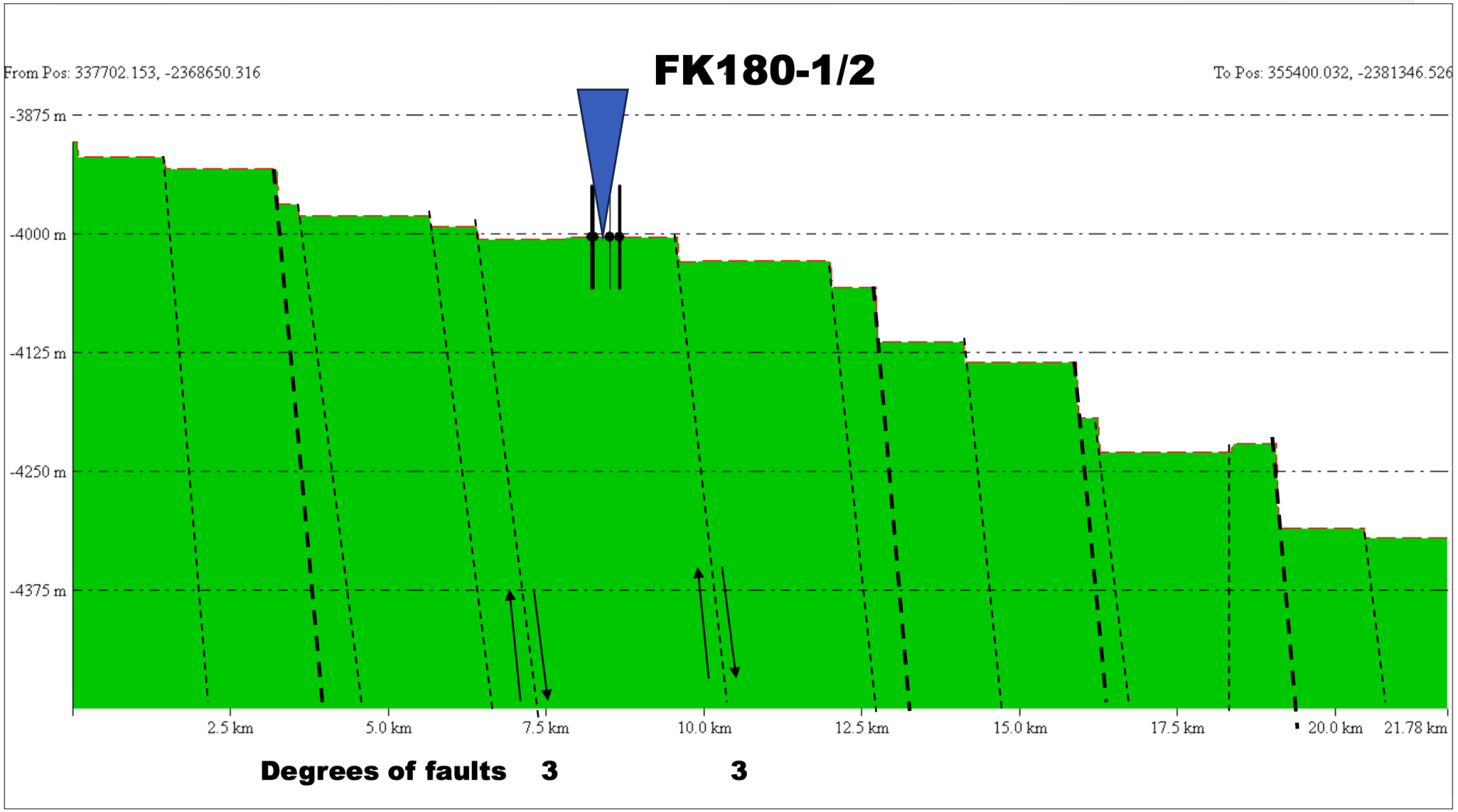
Profile Figure 8. LK181-1 Kimberlite pipe ANOMALY.

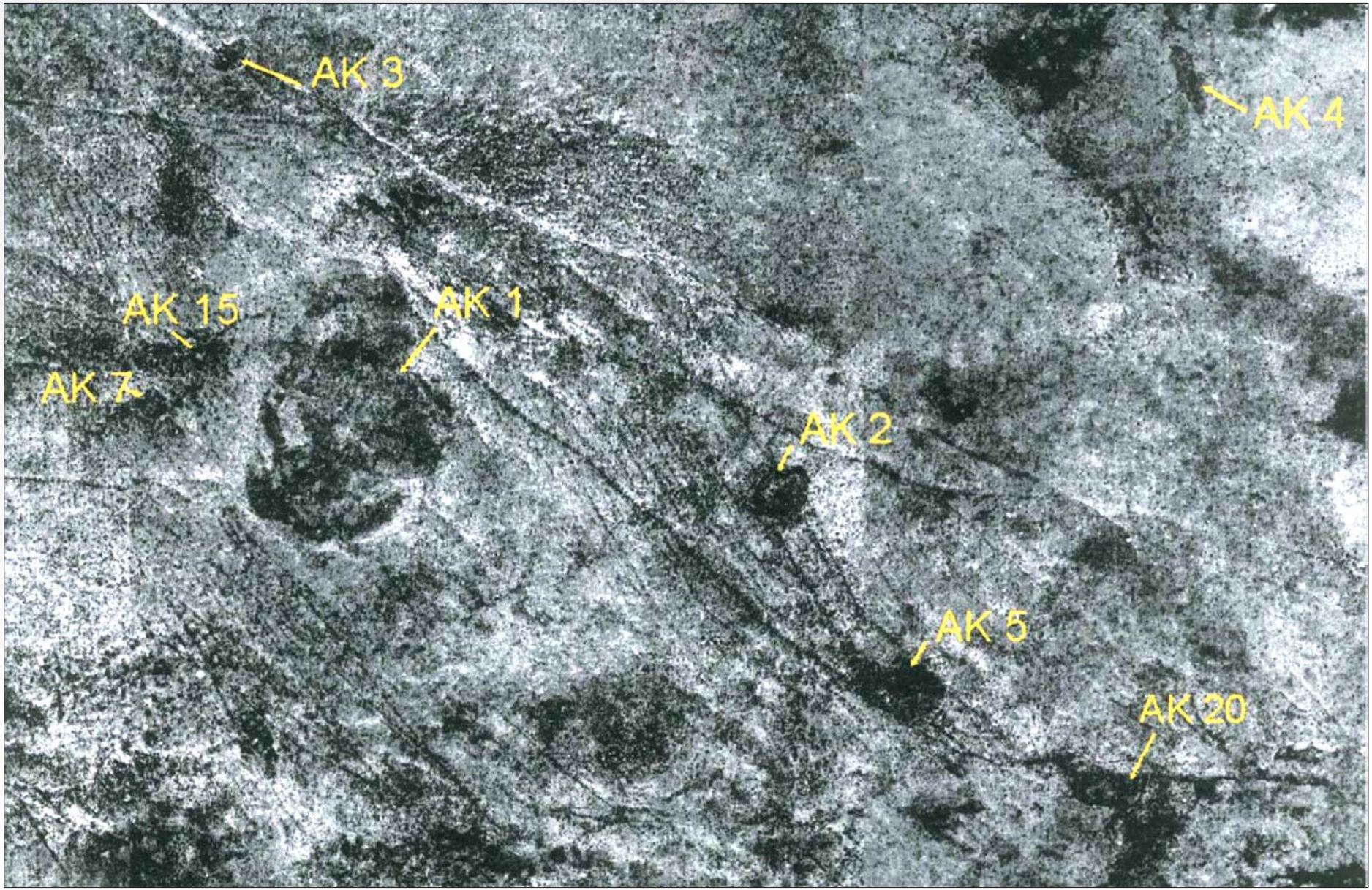


Profile Figure 9. LK181-2 Kimberlite pipe ANOMALY.



Profile Figure 10. FK180-1/2 Kimberlite pipe ANOMALY.




AK 3
AK 4
AK 15
AK 1
AK 7
AK 2
AK 5
AK 20

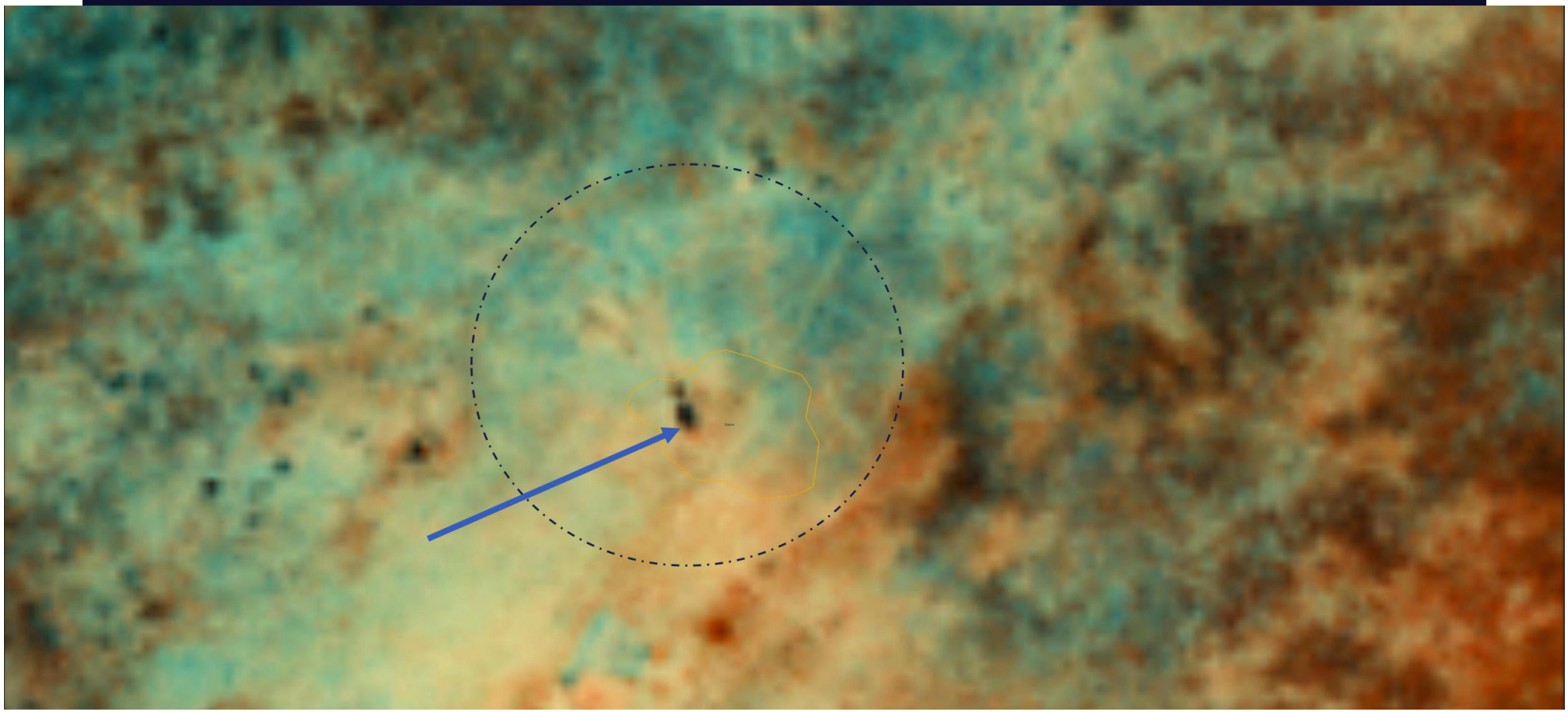
Satellite imaging as a tool for detecting kimberlite pipes

Reading old files on the discovery of kimberlites in the Orapa area: "Interpretation of the aerial photography and geophysical data to compile the structural and geological interpretation resulted in a number of anomalies that were captured and prioritized, and should be considered in terms of potential discovery drilling. These consisted of approximately 60 aerial photography anomalies and 20 high priority AM anomalies. The 1957 aerial photos of AK1 and adjacent kimberlites show prominent lineaments several hundred meters long trending in a general WNW-ESE direction across the current well position, bisecting the midpoint between the southern and northern lobes of AK1. This structure extends for at least 9 km and can be interpreted as a demagnetized fault; other structures of similar orientations have been exploited for dolerite or kimberlite dikes or are simply magnetized".
The cover figure (Attributed to a De Beers report) shows the distinctive features in the aerial photograph of the AK1 body and other kimberlites in the surrounding area. Since 1988 the author of this report has been studying and perfecting the detection with aerial photography and satellite imagery of primary diamond structures (lamprophyres, lamproites and kimberlites) starting with the discovery (in 1989) of the diamond-bearing pipe Ymi-1 (picritic calc-alkaline lamprophyre) in Paraguay. This was followed by numerous other lamproite pipes and in more recent years by the Olie-2 and Olie-1 pipes (lamproitic) in the Loxtondal area (in 2014) and much more recently the DG-58 diamond-bearing lamproitic pipe in Windsorton (in 2021/2022); both in South Africa. As well as two other pipes of diamond bearing lamproite/kimberlite in Orapa North (FAW-2 and FAW-25), Botswana (in 2021/2024). This type of study is also applied, as will be seen below, in the Falcon properties.

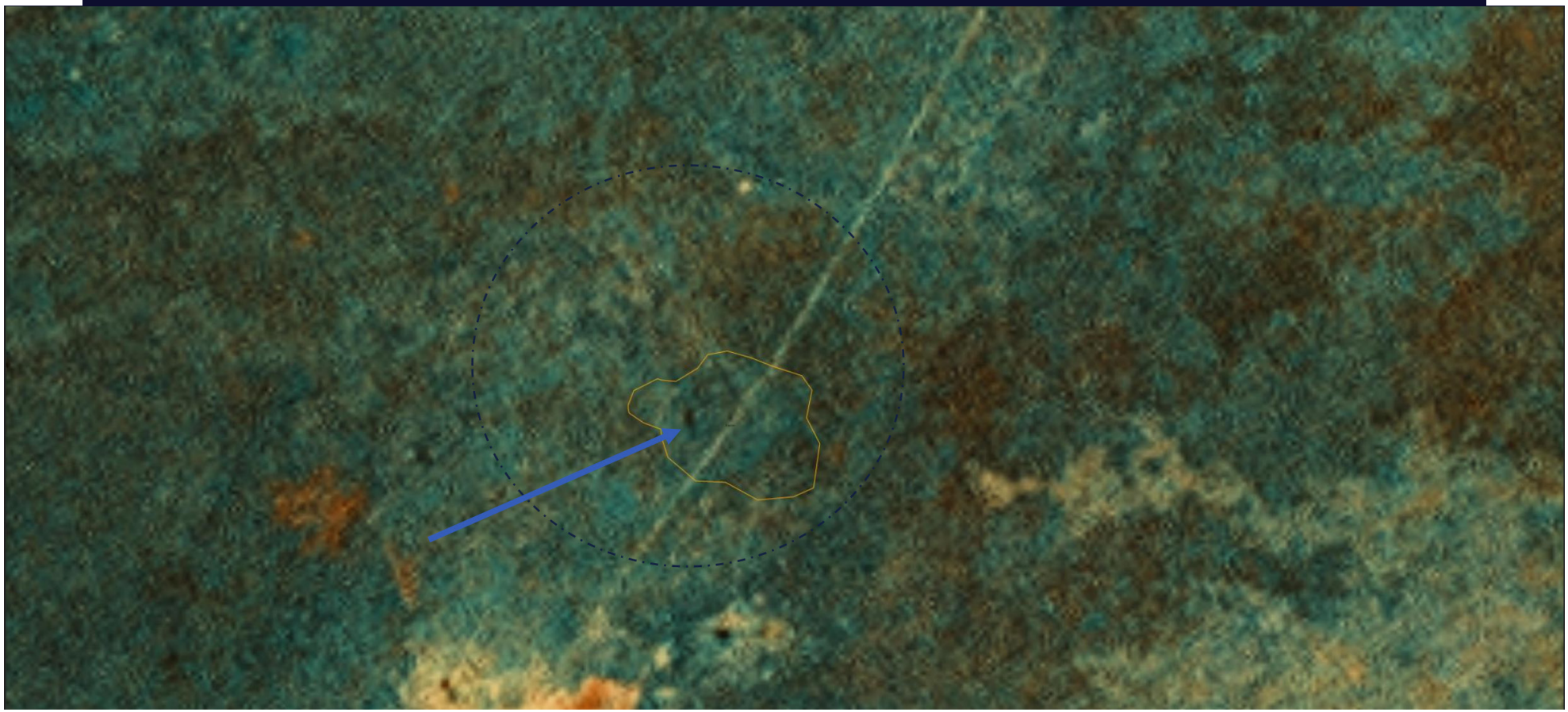
For comparison purposes, the AK6, AK10, DK11 and DK54_55 pipes are initially shown in Satellite image (SI).



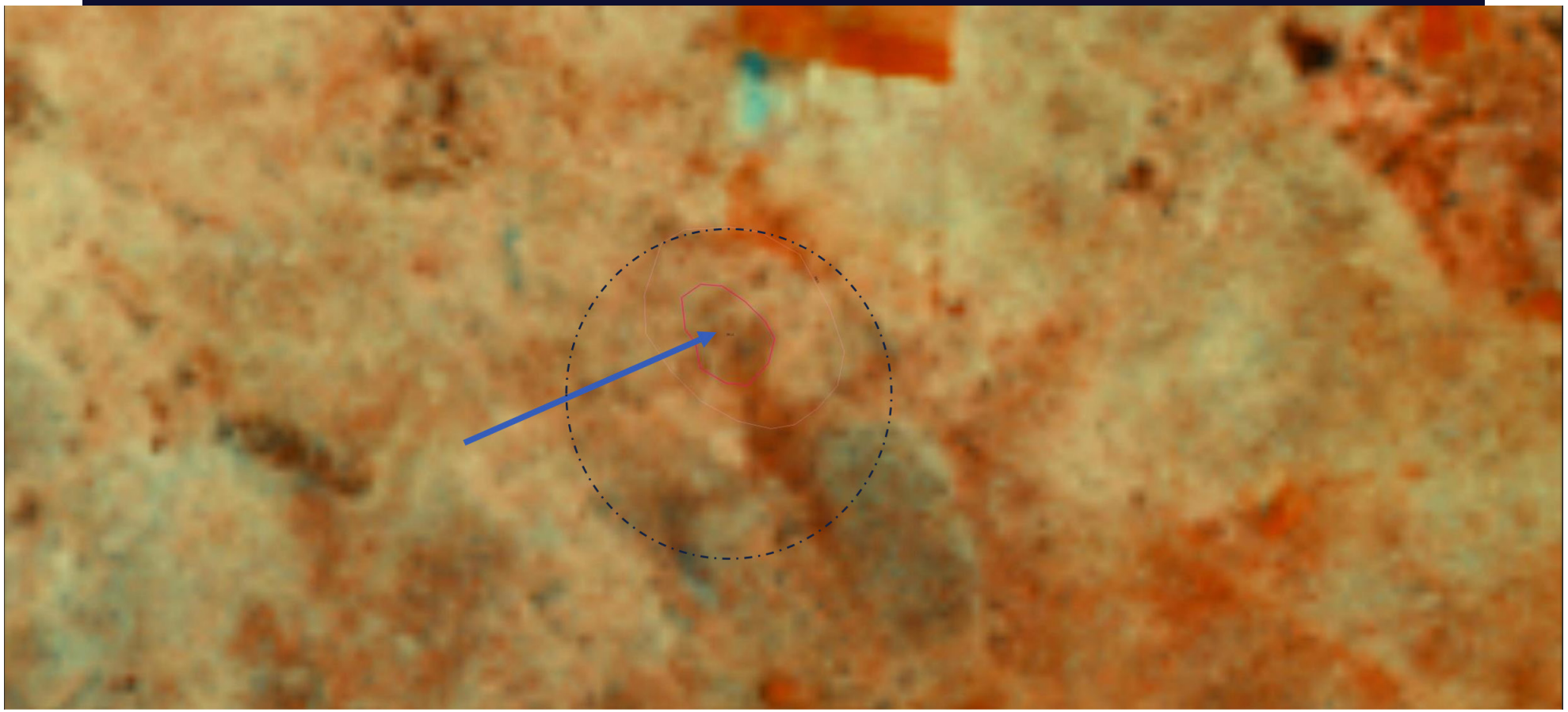
SI-1. Karowe, Landsat TM, 1990.
Pipe AK6 is located in the middle of a prominent circular structure clearly visible in the satellite image. The pipe, indicated by the arrow, is indicated by a thin orange line (within the open pit site). Other anomalies similar to AK6 are also visible within the circle (which in turn is interpenetrated to the E by another smaller circular structure). For a correct visualization and differentiation of the anomalies of other pipes, it is suggested to zoom in on the image.



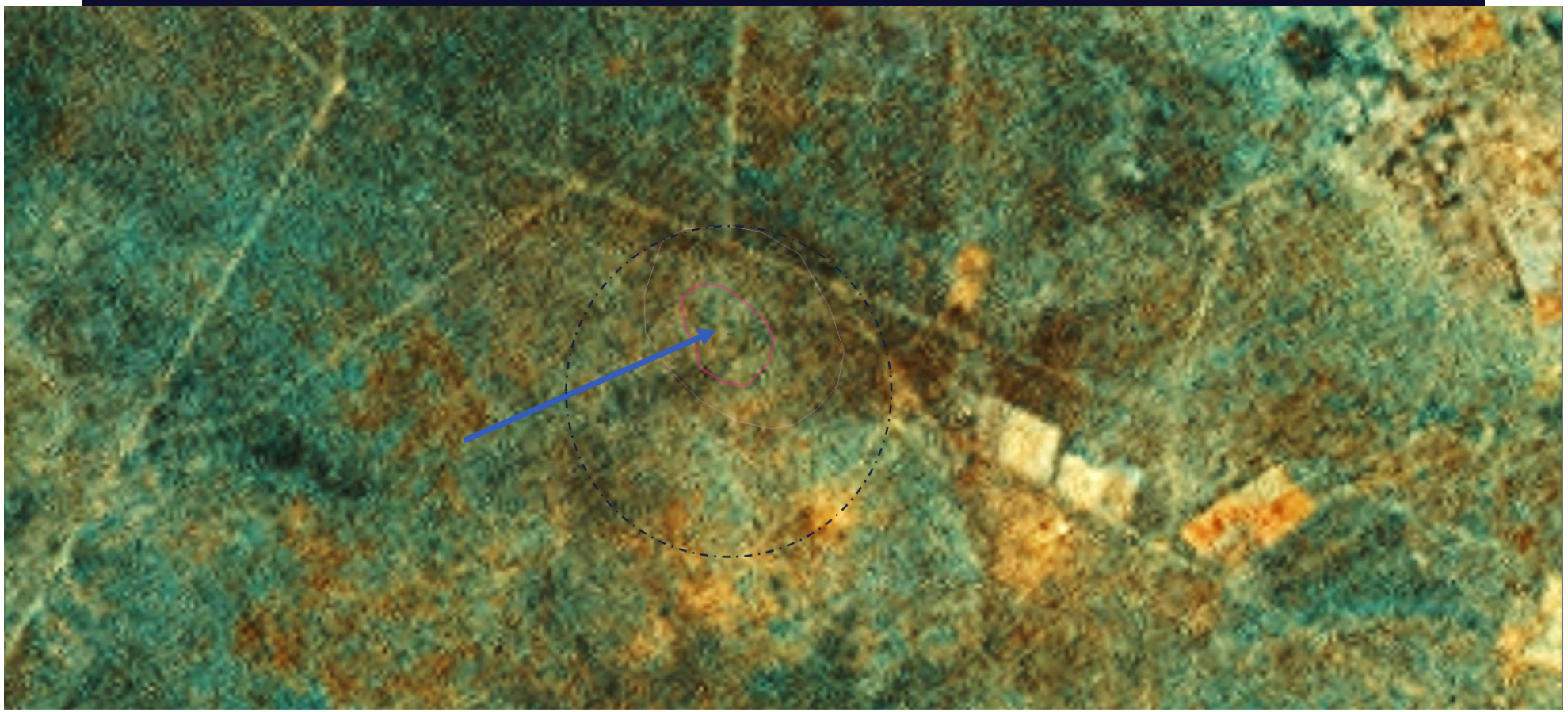
SI-2. Karowe, Landsat TM, 2000.
This type of Landsat image helps to visualize with contrasts the shapes of the lobes of AK6 and other similar ones in its surroundings; as discussed in the previous figure.



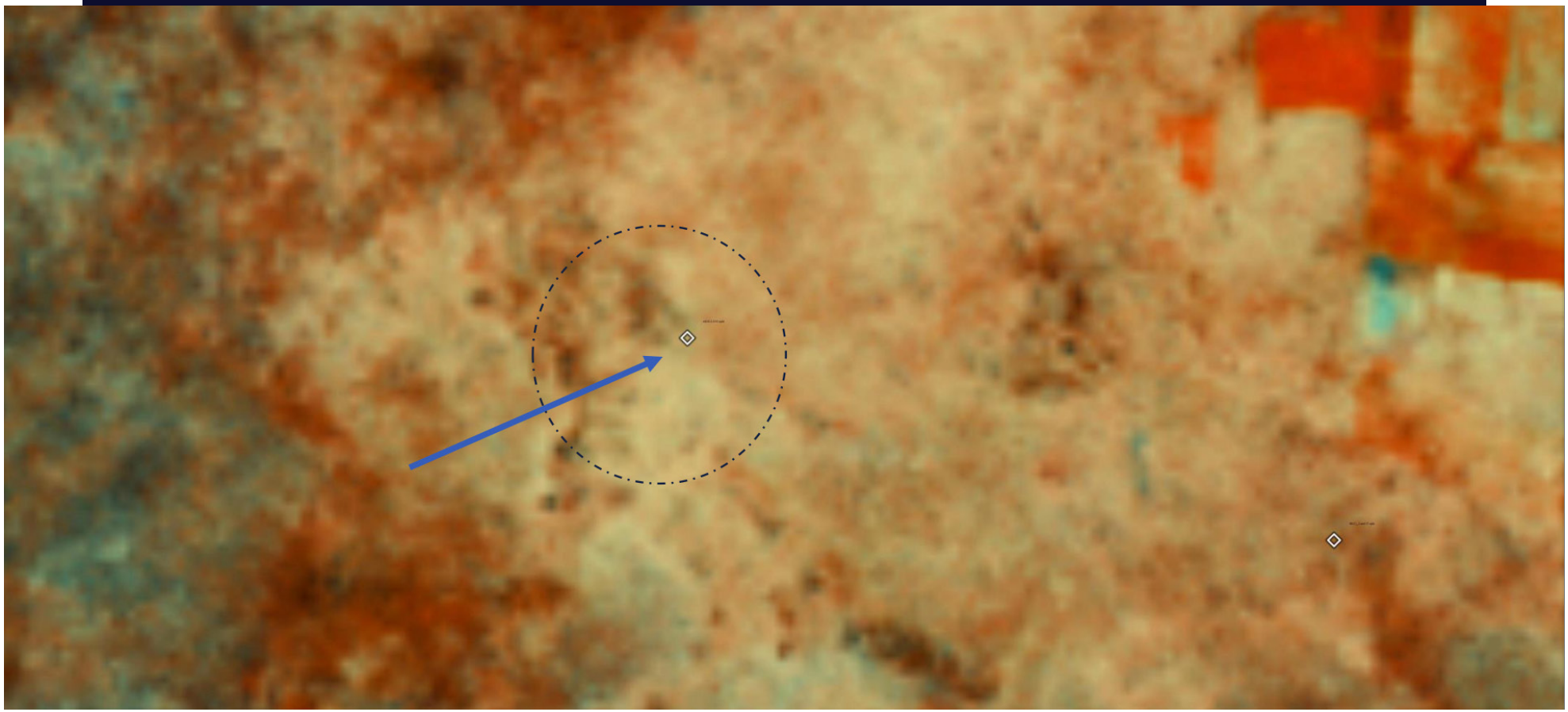
SI-2. Karowe, Landsat TM, 2000.
This type of Landsat image helps to visualize with contrasts the shapes of the lobes of AK6 and other similar ones in its surroundings; as discussed in the previous figure.



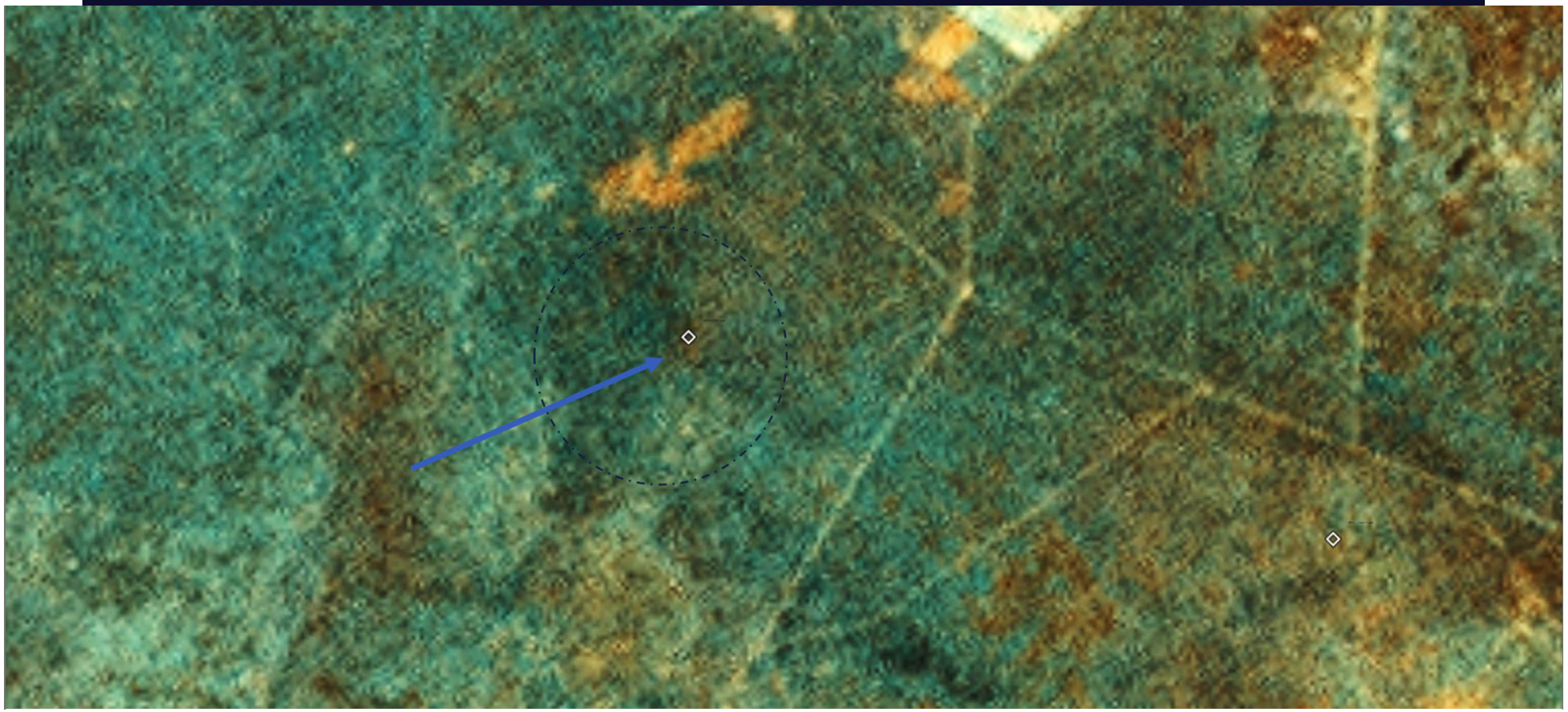
SI-4. BK11, Landsat TM, 2000
The same comments made about Karowe (SI-2) apply here as well.



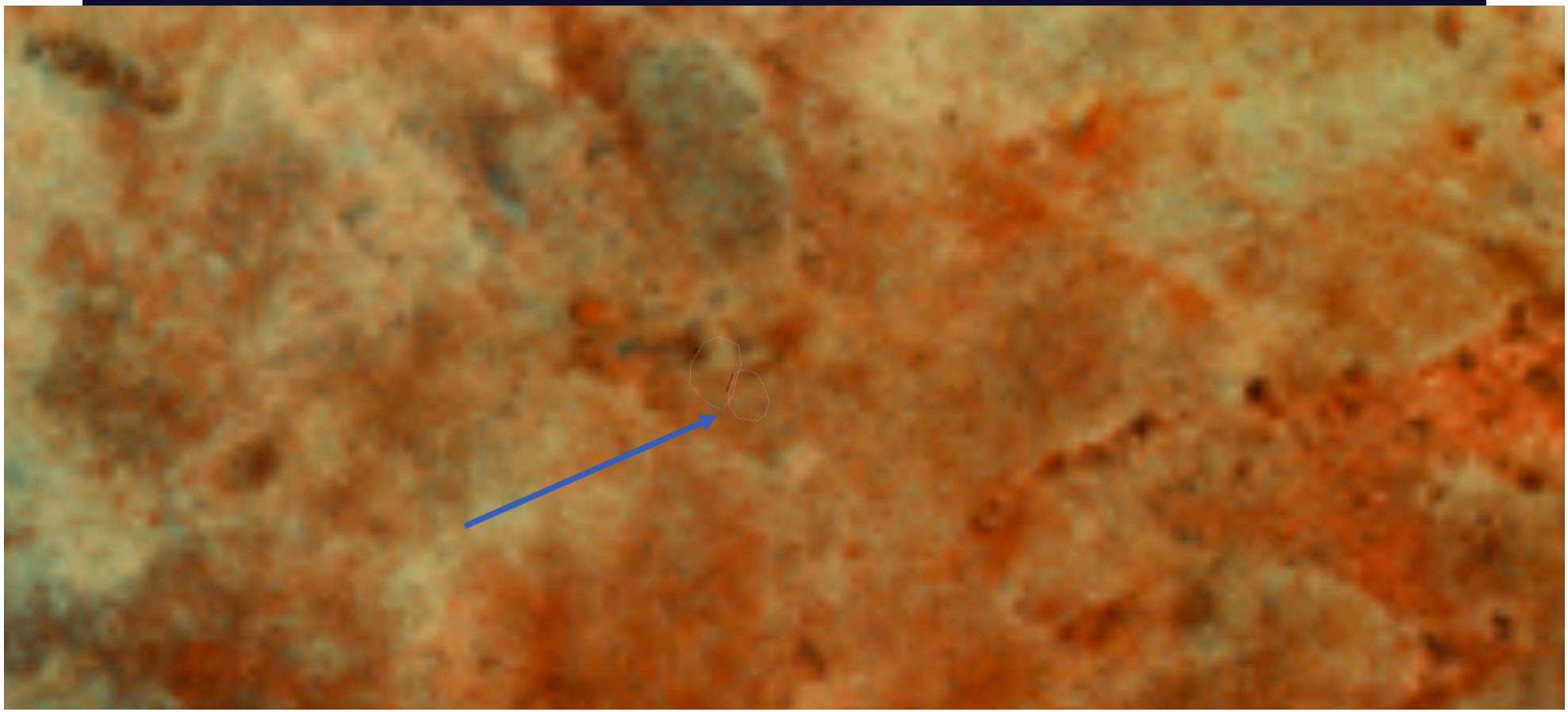
SI-5- AK10, Landsat TM, 1990.
In this pipe, the silhouette shown in the satellite image is very subtle, the arrow indicates the center coordinate of the pipe. The following figure better defines this pipe.



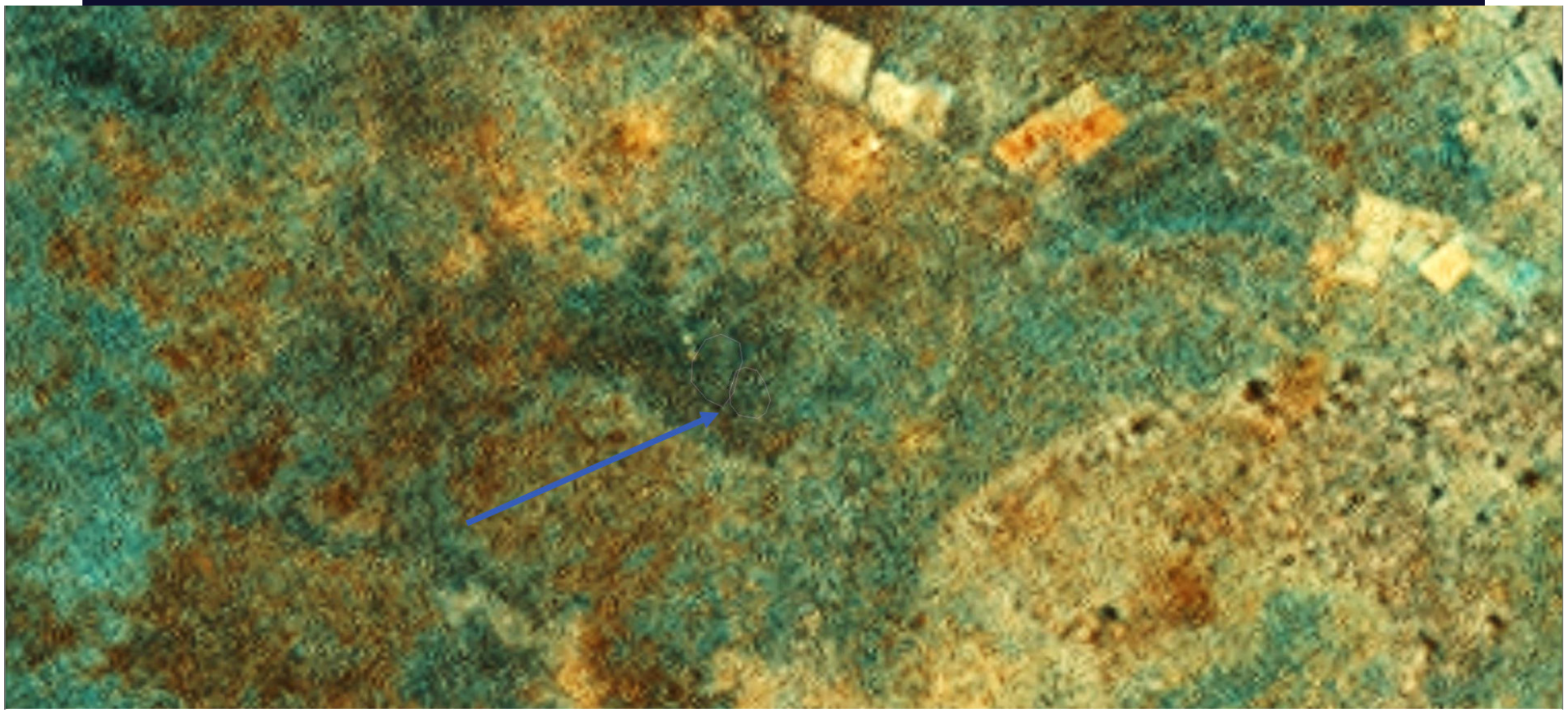
SI-6- AK10, Landsat TM, 2000.
In this image the center (plug) of the pipe is somewhat more visible and the circular anomaly that includes it is subtly visible.



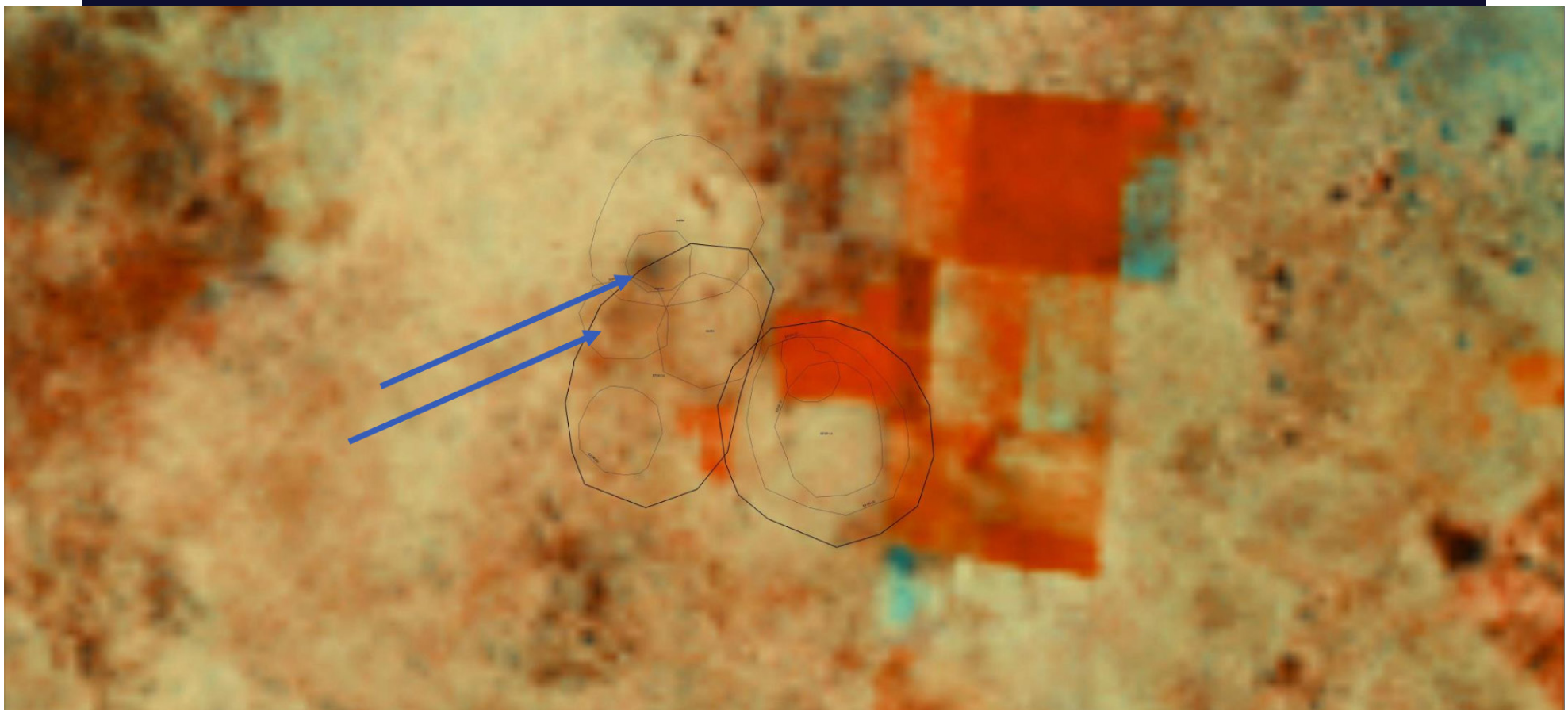
SI-7. BK54_55, Landsat TM, 1990.
BK54 and BK55 (outlined by fine line) are indicated and in the image they form a subtle definition (more marked by a difference in tones).



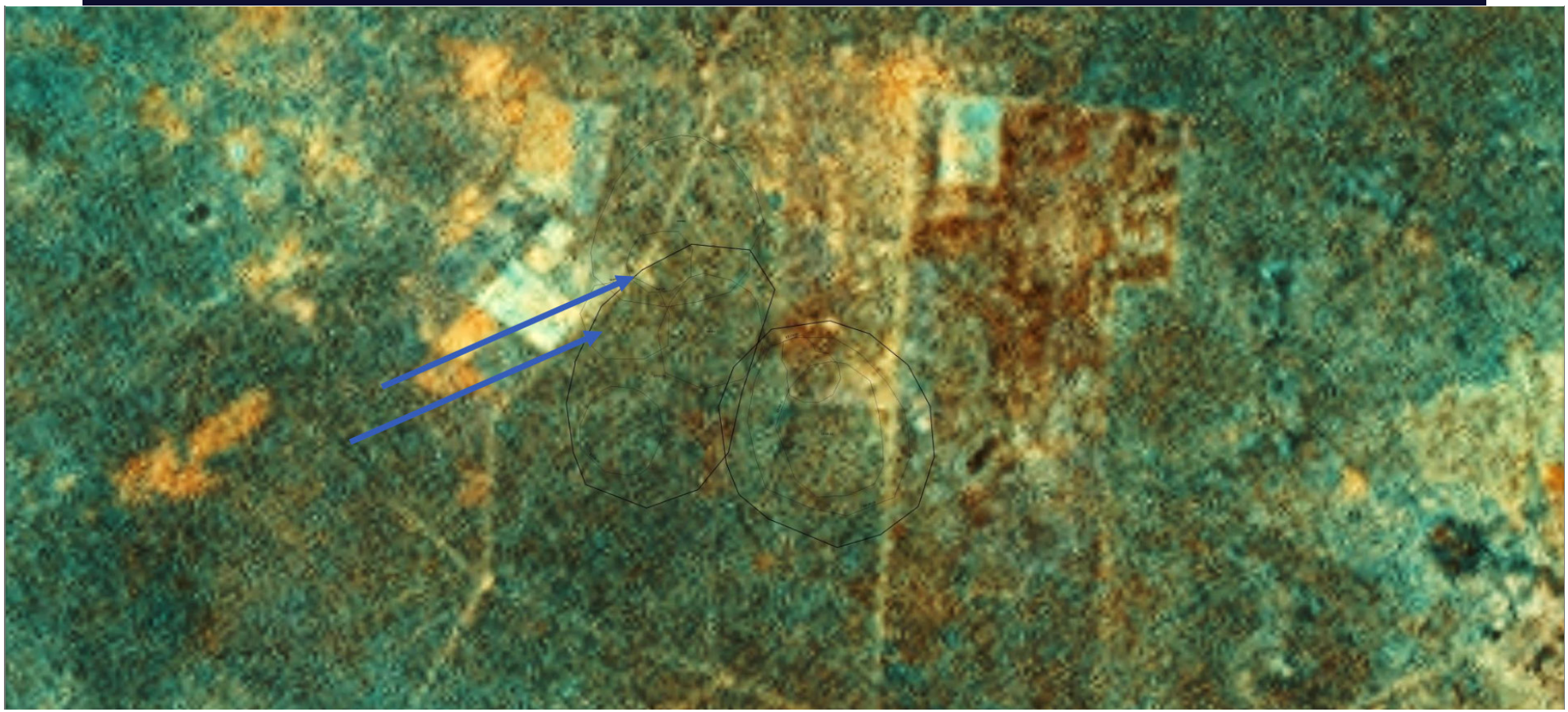
SI-8. BK54_55, Landsat TM, 2000.
In this image the pipe outlined by a fine line is subtle.



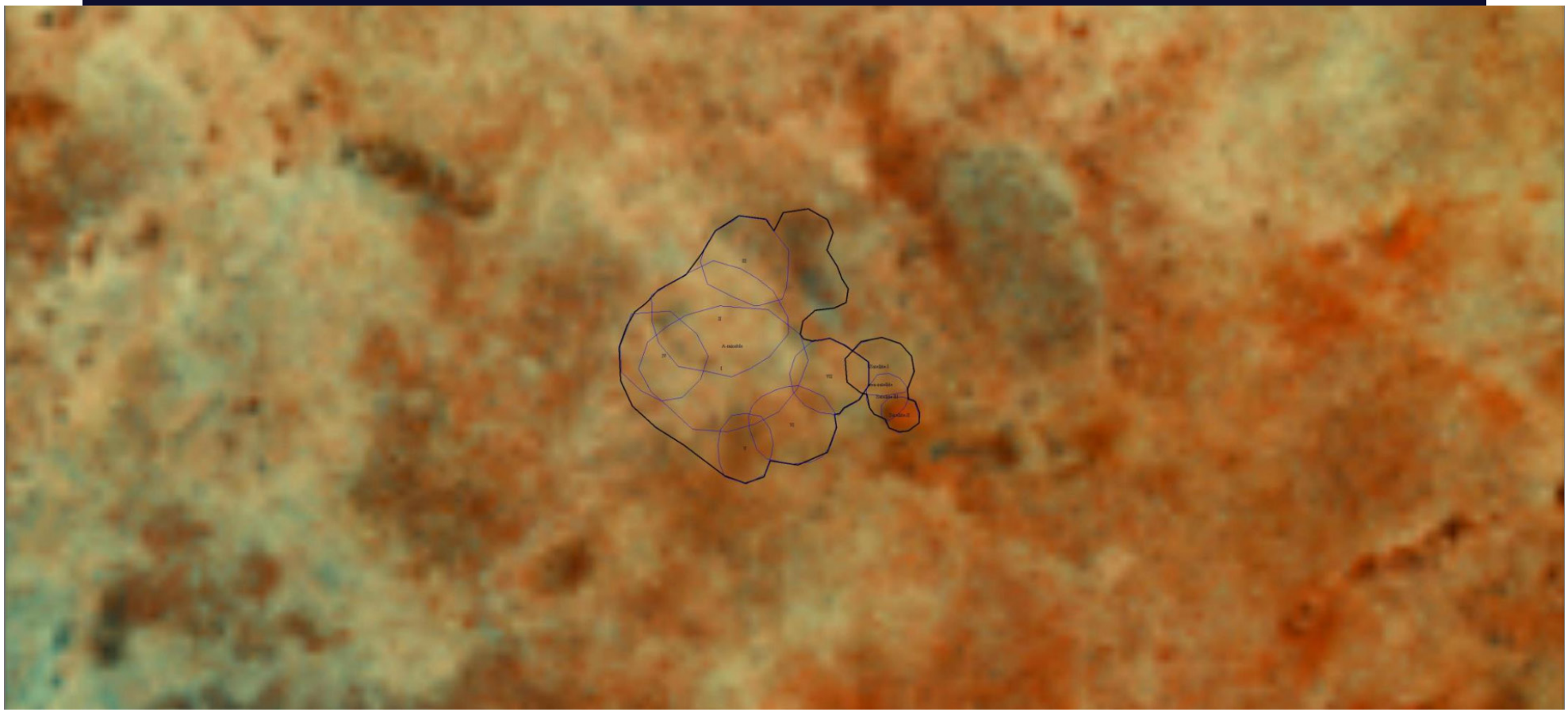
SI-9. FK-180-1/2, Landsat TM, 1990.
The DCB architecture studies on the PL180/2024 property pointed to 2 objectives (Table 2 of the previous Item). In the satellite image, 2 large interpenetrating (circular-oval) structures were outlined (FK180-1 and FK180-2) and within them well-defined structures (potential plugs) of smaller size were observed, as indicated by the arrows.



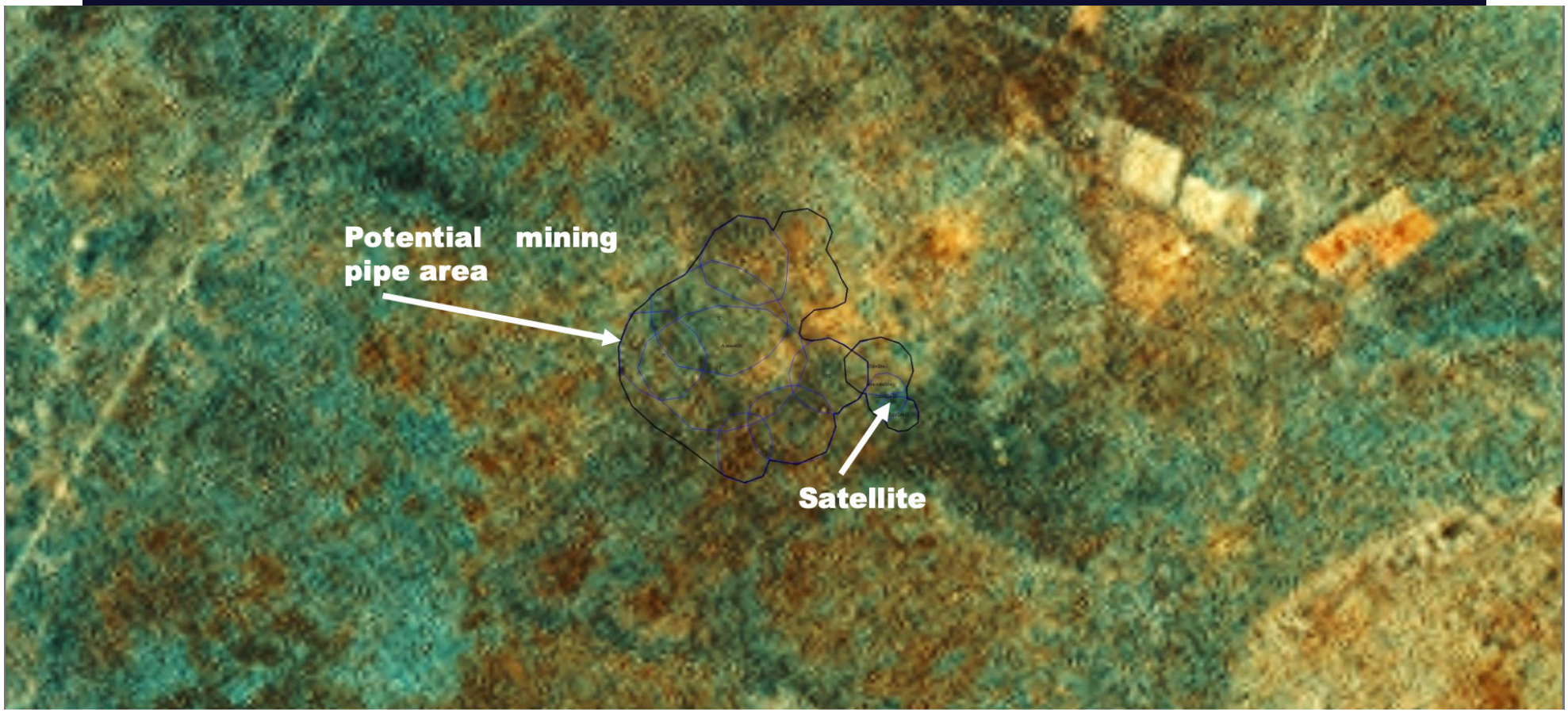
SI-10. FK-180-I/II, Landsat TM, 2000
In this image the larger circular-oval structures are better visible than in the previous figure.



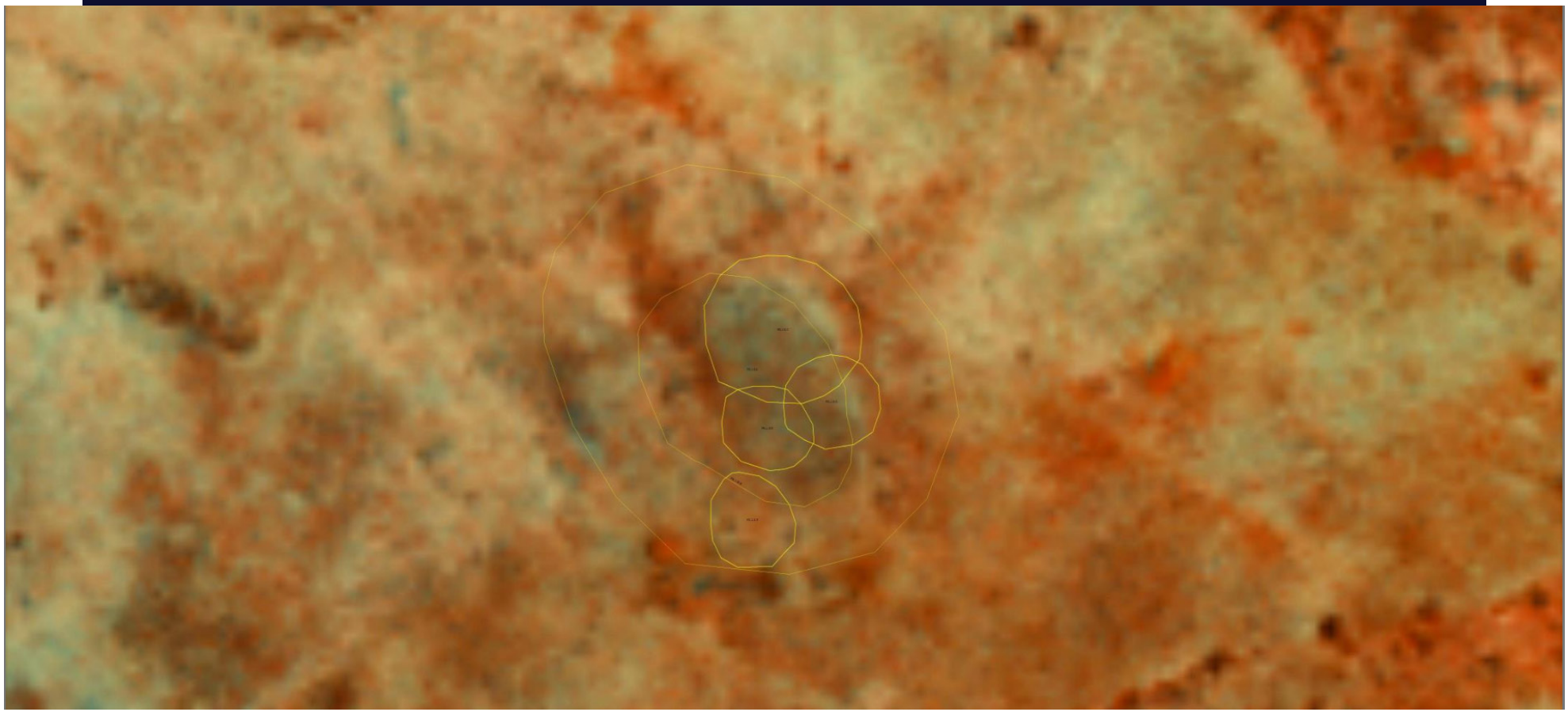
SI-11. FK-181-1, Landsat TM, 1990.
This very probable pipe was the focus of detailed attention as it is probably the largest potential for a commercial diamond deposit. The satellite image at first glance showed a very large circular area (shown and discussed below) and within it an irregular silhouette (blue-black lines) enclosing a series of interpenetrating circular-oval structures (blue lines).



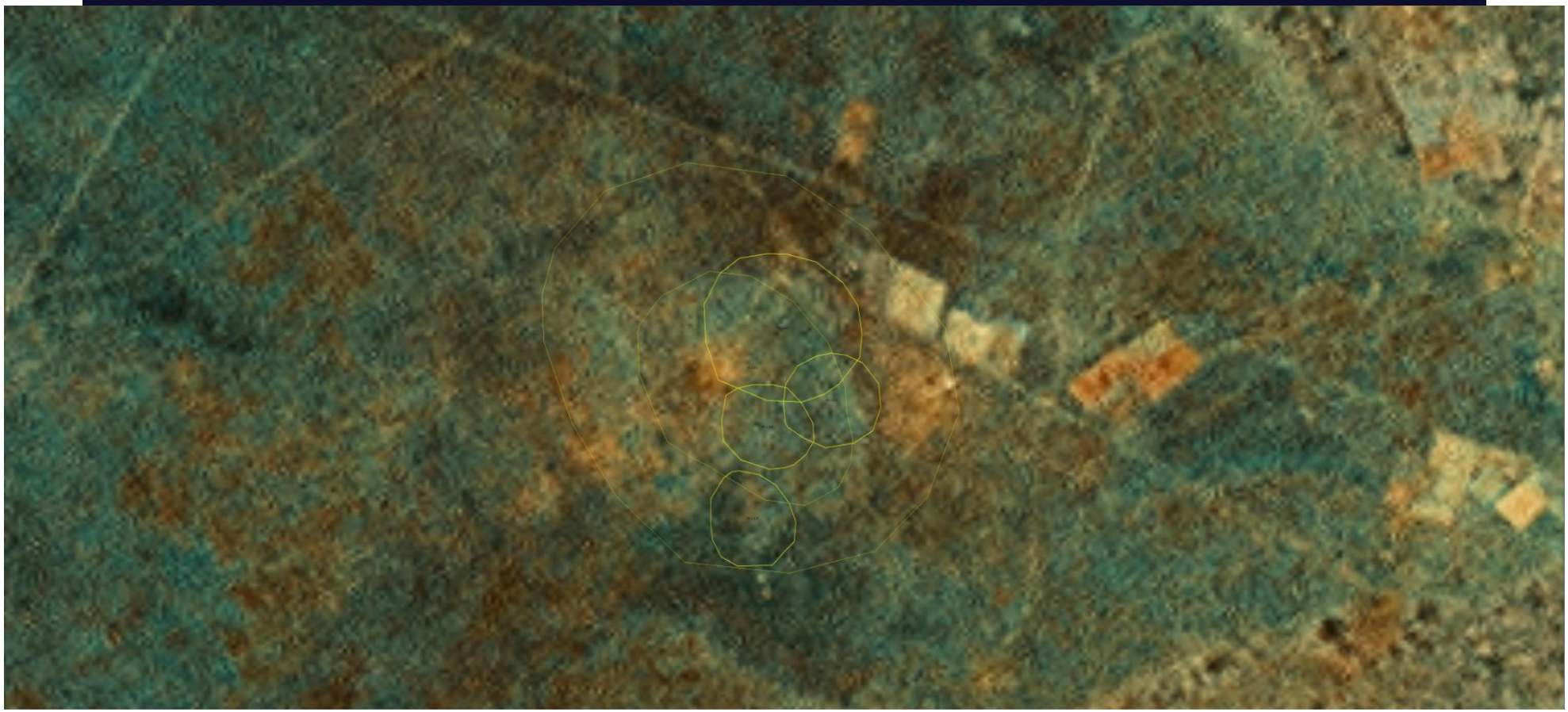
SI-12. FK-181-I, Landsat TM, 2000.
This image clearly shows what was indicated in the previous image. As a first step, a potential mining pipe area of 54.1 hectares was defined; within which 7 interconnected and interpenetrating lobes can be redefined. In addition to that, to the east, a 3-lobed satellite pipe representing 5.5 hectares.



SI-13. FK-181-2, Landsat TM, 1990
This anomaly zone, a potential oval pipe, is well defined and is cut by other (circular to oval) smaller ones that could be satellite pipes; they are indicated by a thin yellow line.



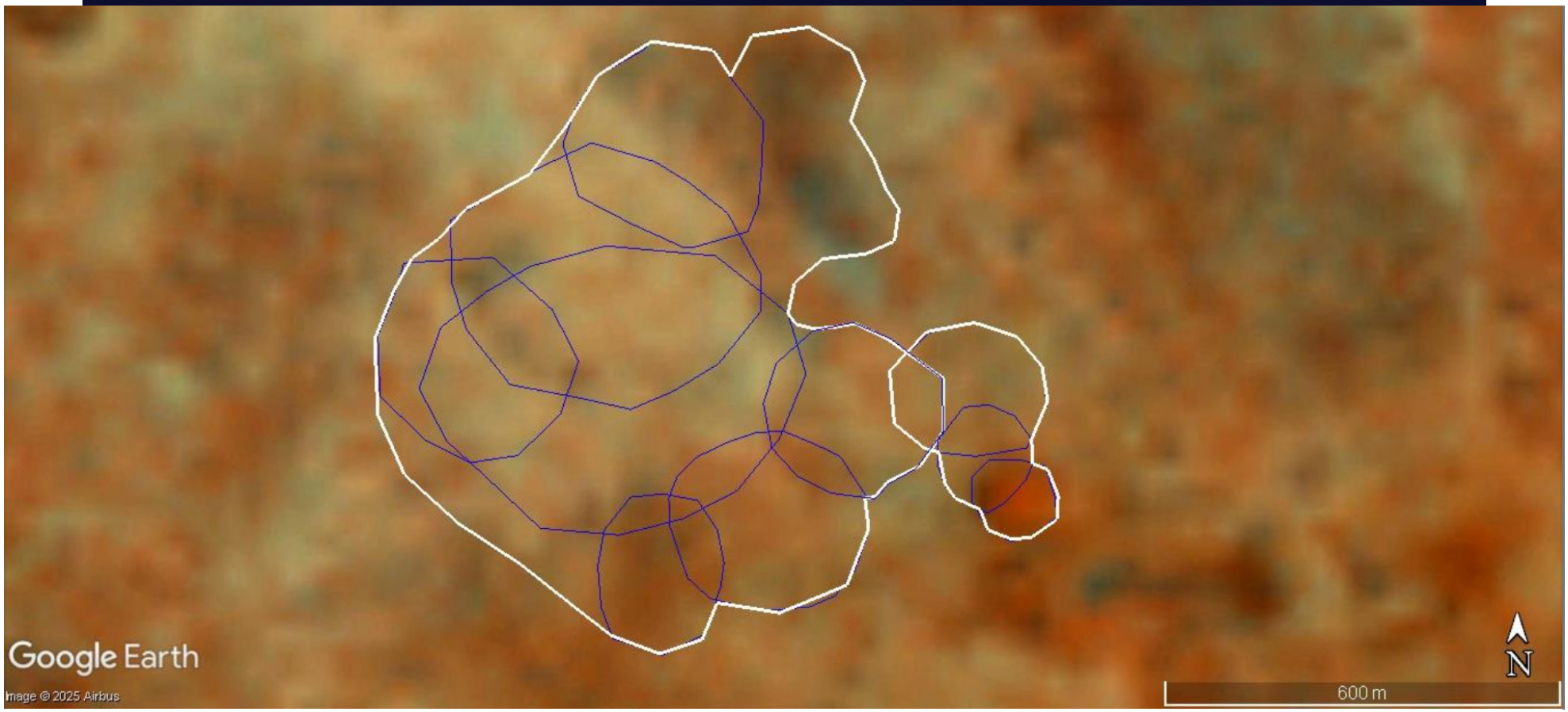
SI-14. FK-181-,2 Landsat TM, 2000
This image also helps to contrast the silhouette of FK-181-2 as discussed in the previous figure.



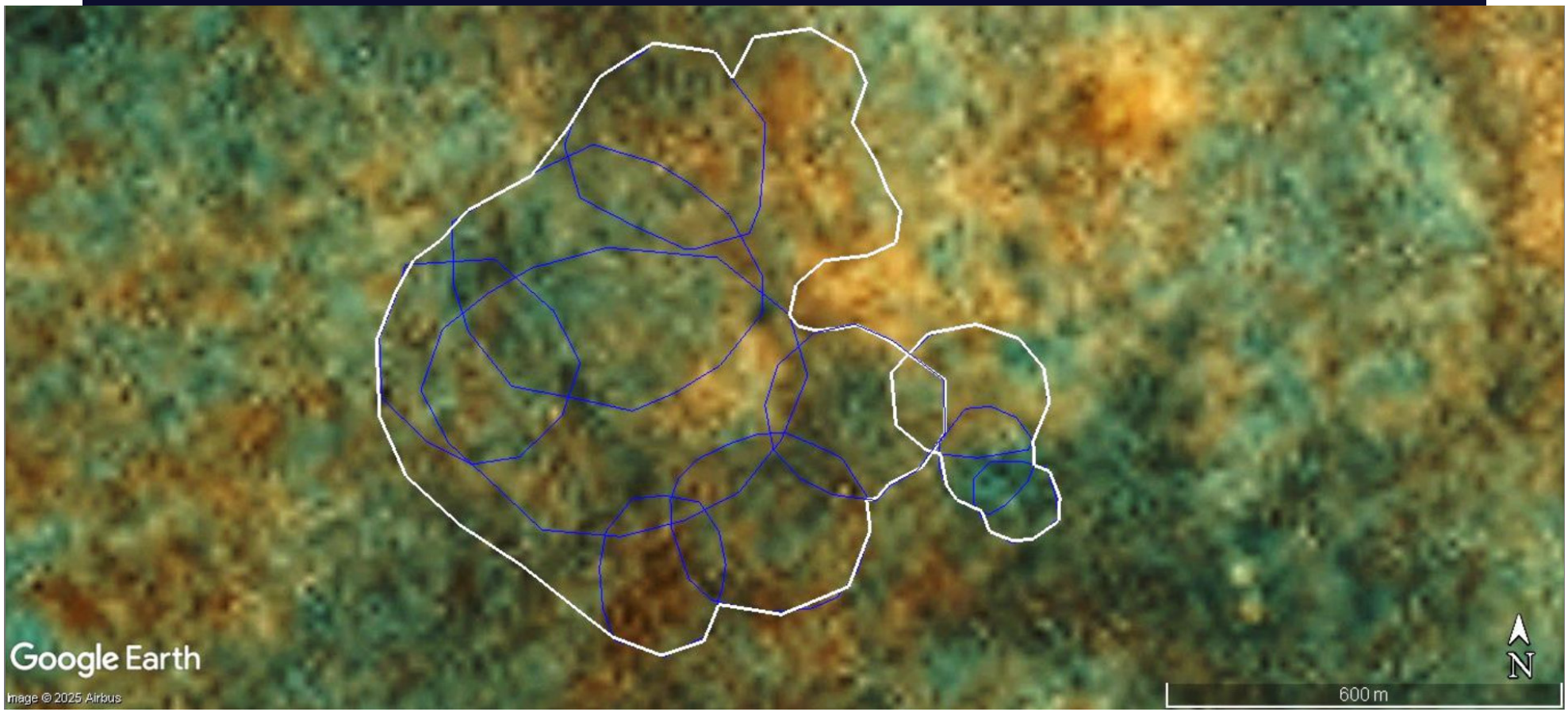
SI-15. In this Google E. image from 1985, the prominent circular structure stands out very well. Within, in white lines and in a position almost at its center, the one that should be the focus of Falcon studies: FK-181-1 (with white lines highlighted). See also the figures SI-11 and SI-12.



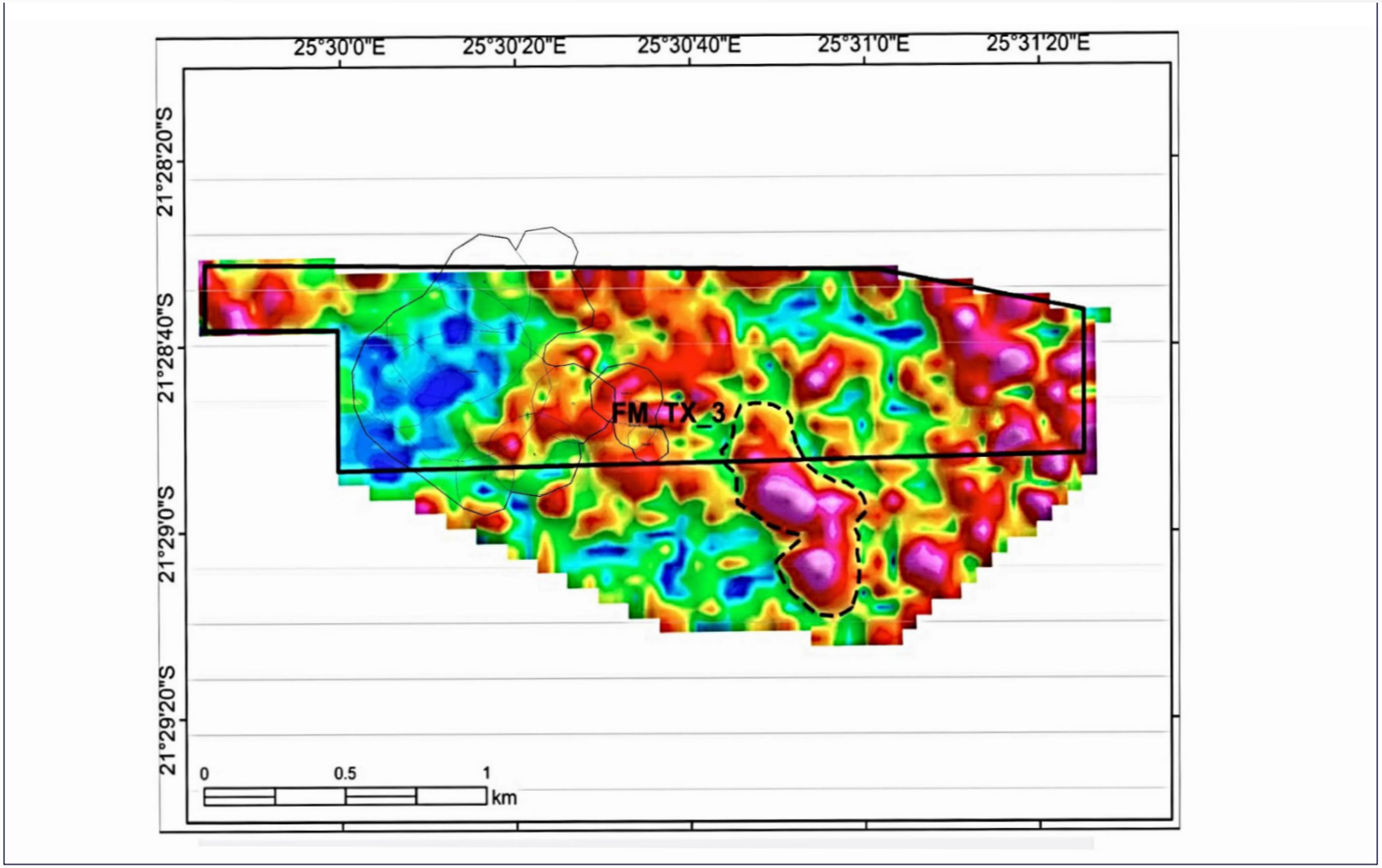
SI-16. Landsat TM, 1990
Zoom in on what would be the neck (potential mining area) of FK-181-1 and its lobes (blue lines). You can see how in the satellite pipe one of the lobes presents a very good tone highlight.



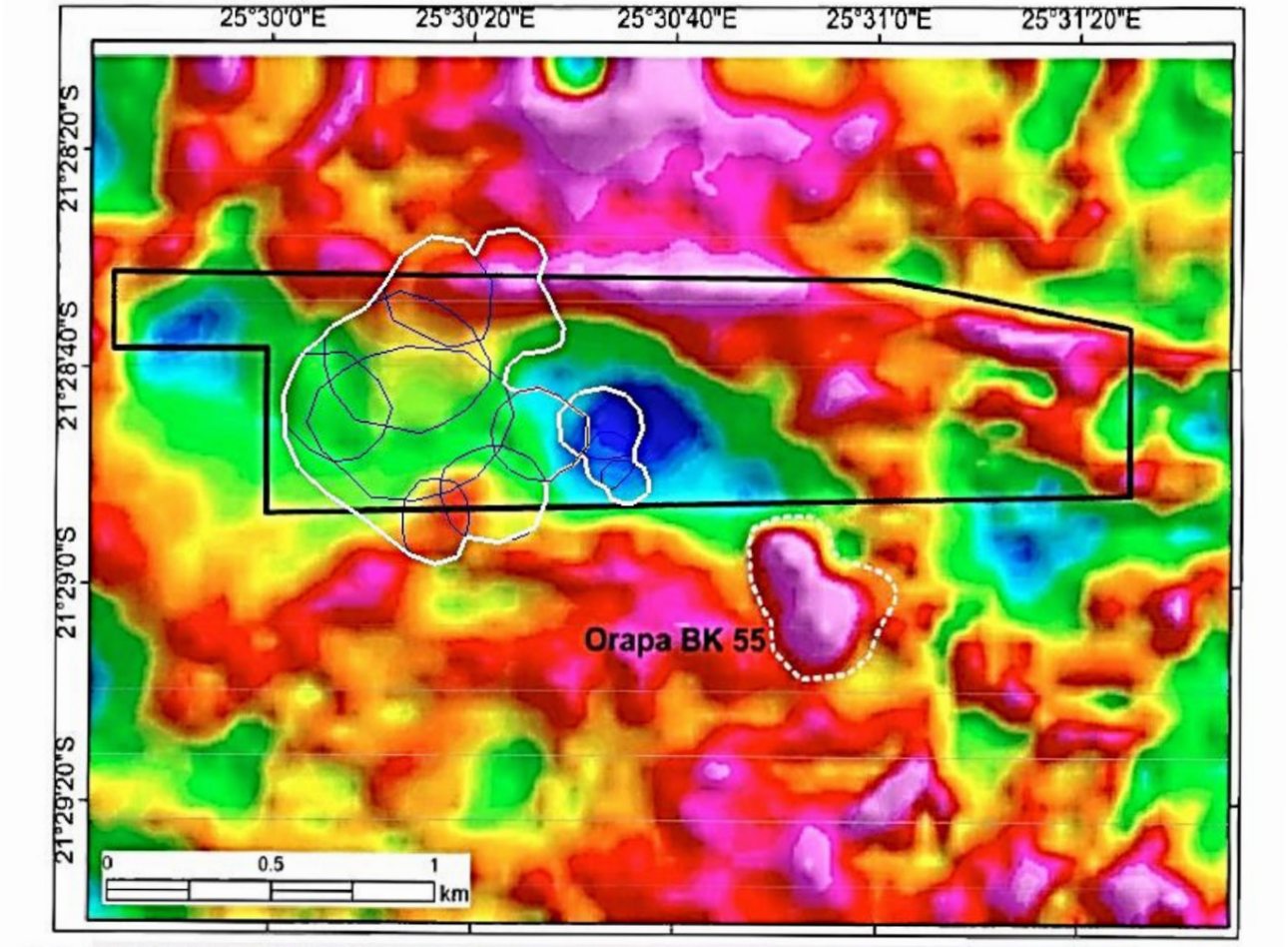
SI-17. Landsat TM, 2000
The same as the previous figure, here the different lobes are highlighted in definition of their shapes..



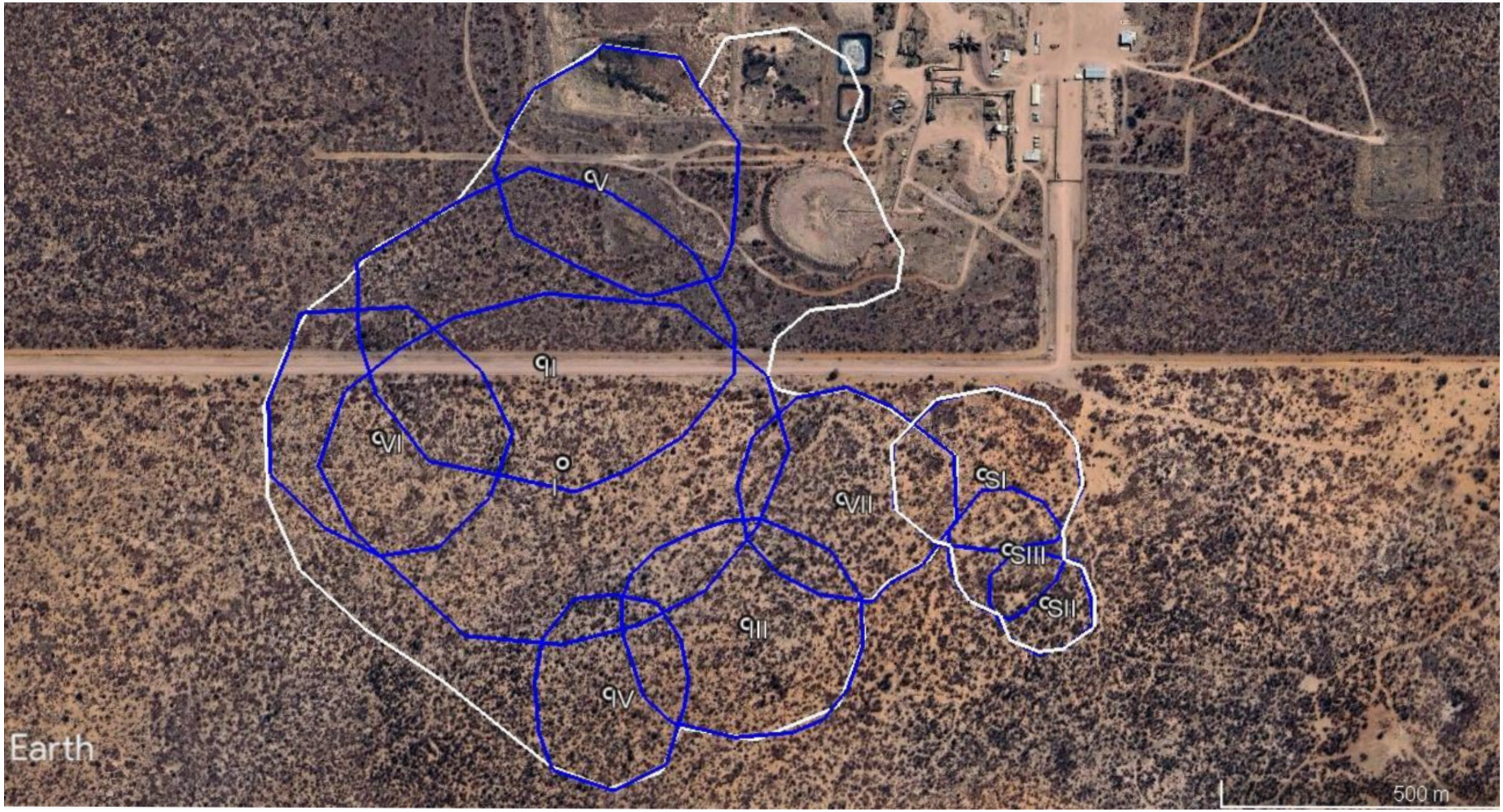
SI-18. Analytical Signal image image of aeromagnetic data (Khumo Leseane work in PL181/2024) in the FK-181-1. showing that some lobes coincide with high to medium-high magnetic (interpreted as coherent kimberlite or coherent kimberlite breccia at low depth).



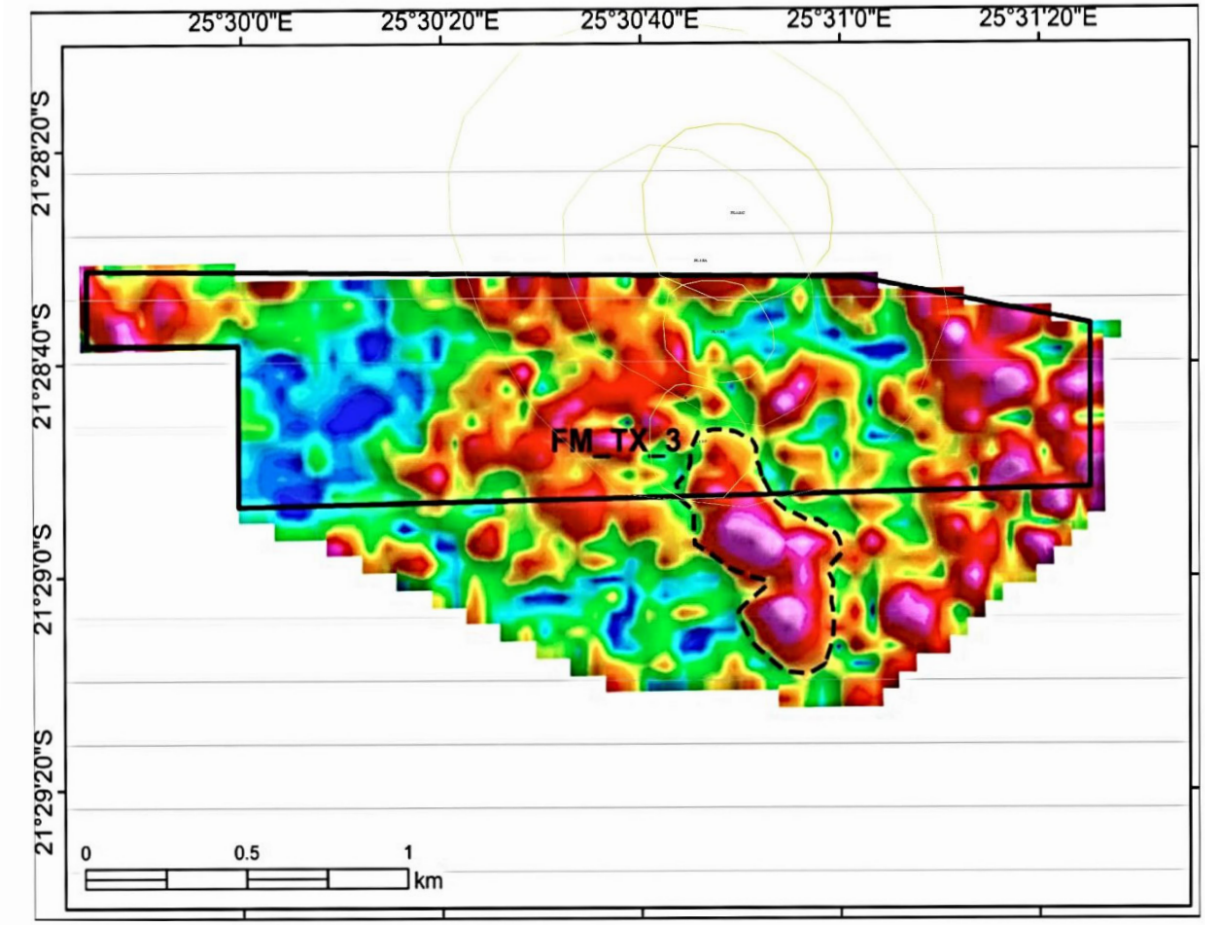
SI-19. Reduced To Pole image of aeromagnetic data (Khumo Leseane work in PL181/2024) in the FK-181-1. showing that some lobes coincide with high to medium-high magnetic (interpreted as coherent kimberlite or coherent kimberlite breccia at low depth). The satellite pipe coincides with a circular zone of low magnetic (which could be due to the presence of thick crater fill sediments in it).



SI-20. The FK-181-1in a current Google-E image showing the ease of access to the pipe and where the ID of each lobe has been placed in its center and that this could serve for a first KIM sampling in soil (8 to 10 points). ID point of the lobes that are commented in the Table below. The NNE edge has been intentionally omitted since it coincides with the administrative center of the BK11 mine.



SI-21. Analytical Signal image image of aeromagnetic data (Khumo Leseane work in PL181/2024) in the FK-180-2; as in SI-18 (fine lines of yellow) showing that some lobes coincide with high to medium-high magnetic (interpreted as coherent kimberlite or coherent kimberlite breccia at low depth). Partly being interpenetrated by the BK55/BK54 kimberlite pipe.



SI-22. Reduced To Pole image of aeromagnetic data (Khumo Leseane work in PL181/2024) in the FK-181-2. showing that some lobes coincide with high to medium-high magnetic (interpreted as coherent kimberlite or coherent kimberlite breccia at low depth). One of the lobes (south) zone with low magnetic (which could be due to the presence of thick crater fill sediments in it).

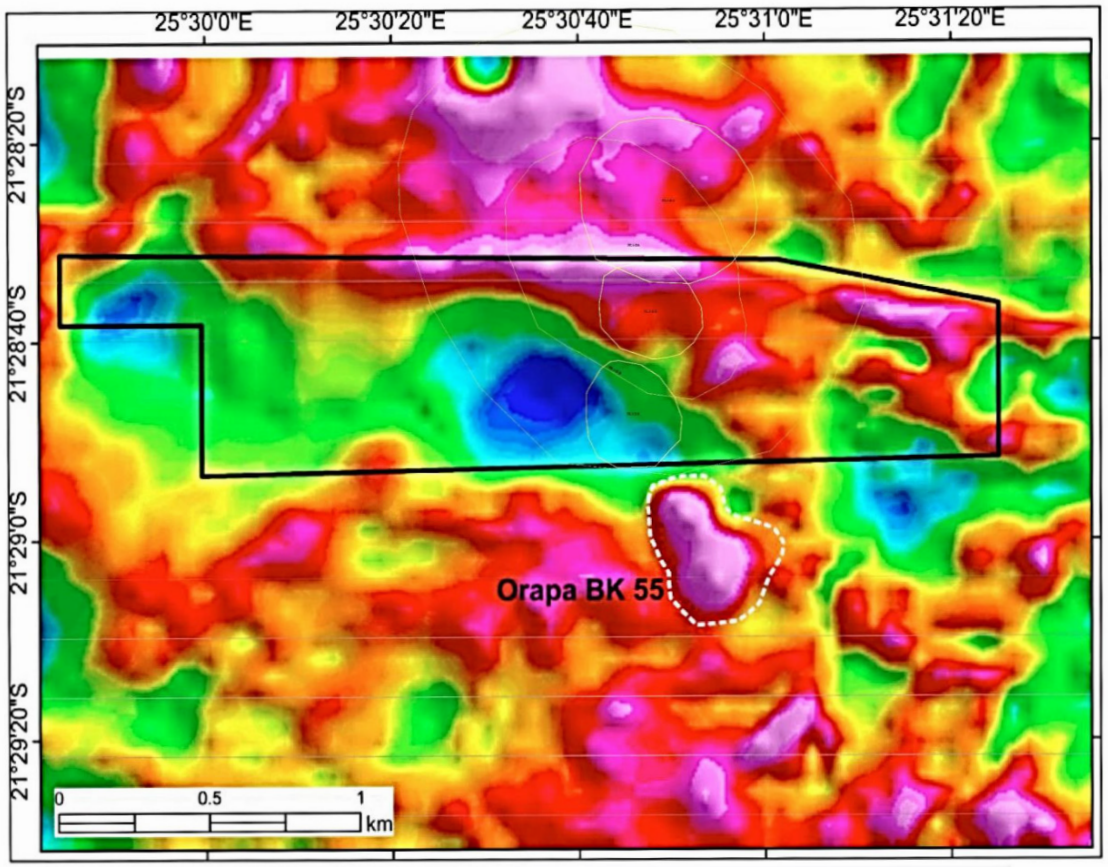
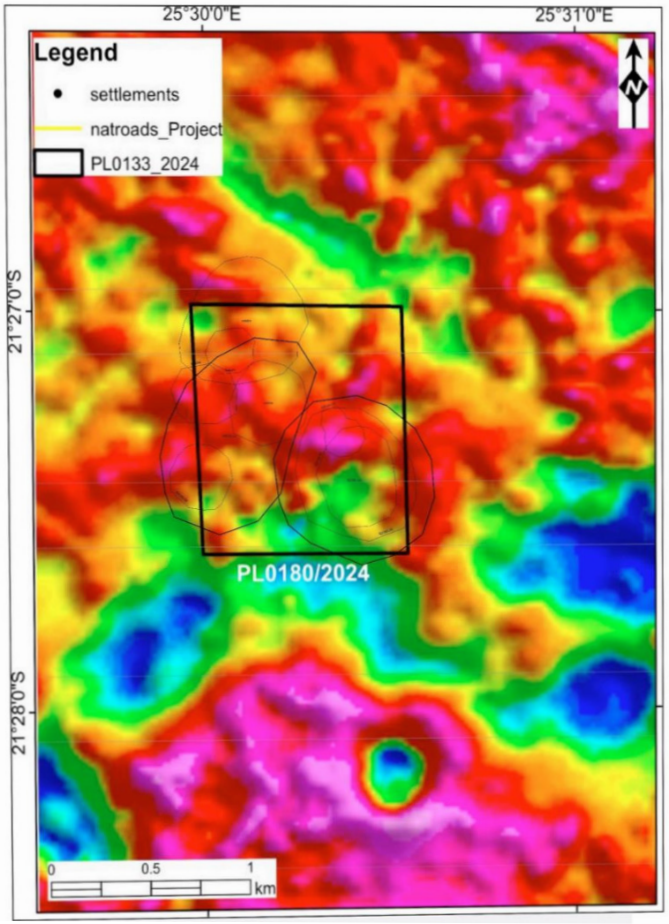


Figure 6: *A Reduced To Pole image of aeromagnetic data showing the distribution*

SI-23. To conclude: Reduced To Pole image of aeromagnetic data (Khumo Leseane work in PL181/2024) in the FK-180-1/2 showing that some lobes coincide with high to medium-high magnetic (interpreted as coherent kimberlite or coherent kimberlite breccia at low depth). It should also be said that high magnetic pipes are more typical of kimberlites with low diamond grade.



IN CONCLUSIÓN

Based on the analyzed data (gravimetric profiles and satellite image) the potential kimberlite pipe of about 50 hectares FK181-1 (Western portion of Falcon property PL181/2024) is predicted to possess a higher potential diamond grade than the AK10 and BK11 pipes. Its grade may be comparable to or slightly higher than the AK6 pipe (Karowe Mine) but is expected to be lower than that of the DK1/DK2 mines (28-33 cpht). The data strongly suggest that FK181-1 represents a promising target for a potential primary diamond deposit, potentially containing fancy color diamonds and Karowe-type diamonds.

Files of pipe anomalies and their lobes or necks will be available if required.

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