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NEGRI RIVER CORPORATION LIMITED

EXPLORATION LICENCES 3457, 3458, 3459

EXPLORATION REPORT

FOR THE YEAR ENDING JANUARY 11TH, 1984

BY

MR A J LOHAN
ABSTRACT

This report details exploration activities in E.L.'s 3457, 3458 and 3459 by Negri River Corporation Limited from January 1983 to March 1984. Field work extended into the adjacent E.L.'s 2092 and 2093 also held by Negri. The exploration work entailed site investigations for bulk sample tests for diamonds, sampling and treatment operations carried out on-site, and final treatment of mineral concentrates in Sydney.

Analysis of the concentrates obtained during the 1983 field season did not reveal any diamonds or kimberlitic indicators. As such no further work is warranted in the licence areas.
LIST OF CONTENTS

1. INTRODUCTION 4
2. PREVIOUS WORK 4
3. THE 1983 PROGRAMME 8
4. THE 1983 PROGRAMME RESULTS 10
5. SUMMARY AND CONCLUSIONS 10

APPENDICES

I  Amdel Geochemical Analysis
II  NR-25
III  NR-45
IV  Proposed Sites for Bulk Testing
V  Bulk Testing Results
VI  List of Reports
1. **INTRODUCTION**

The original Exploration Licences 2092 and 2093 comprised 2,452 square kilometres of the Northern Territory of Australia (Figure 1). Half the total area was relinquished in September 1981. This relinquished ground was reapplied for and granted as E.L.'s 3457, 3458 and 3459, together making 1,261 square kilometres (Figure 2).

The reduction of the licence area in terms of Section 26 of the Mining Act fell due on January 11th, 1984. The Titles Registration Branch has been notified of this reduction.

Theoretically, the present Annual Report should deal with exploration activities in E.L.'s 3457, 3458 and 3459. However, exploration was carried out over E.L.'s 3457, 3458, 3459 and the adjacent E.L.'s 2092 and 2093. Therefore, the results of exploration are not detailed for each licence area separately but licence boundaries can be readily imposed on drainage-sample maps. The exploration programme over E.L.'s 2092 and 2093 was outlined in NR-51.

2. **PREVIOUS WORK**

Aspects of the 1982 exploration programme that were outstanding as of January 1983 are briefly presented.

The results of tributary sample processing was previously detailed in reports NR-34 and NR-51. Three sites within the licence areas which yielded kimberlitic indicators warranted further investigation. This was implemented during the 1983 exploration season.
Processing of bulk samples was completed in April 1983 by Diamond Laboratory Services Proprietary Limited, Sydney. Details of the bulk sampling programme are contained in NR-34. Report NR-51 contains detailed results of the bulk sampling but a summary is presented as Table 1.

**TABLE 1**

**SUMMARY OF BULK SAMPLE RESULTS**

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<th>Mesh Size</th>
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Stream-sediment geochemical samples were completed and the results obtained from Amel in January 1983. There were no anomalous samples and the results are included as Appendix I.

Remote sensing techniques over the area were analysed by M J Longman and Associates of Perth and also by the SWA Group of Boston, Massachusetts. The report by Longman and Associates was previously commented on and evaluated in NR-27, NR-34 and NR-41.
The SWA Group report was received in February 1983 and is included as Appendix II. Their report was evaluated in NR-41. In essence, twenty-seven anomalous zones were nominated; twenty-one of these were previously identified. Three of the remainder listed as high priority were in the vicinity of existing tributary samples. Nevertheless, further investigation was considered necessary.

3. **THE 1983 PROGRAMME**

The exploration proposals for 1983 are included as Appendix III. Of the three proposals only the bulk sampling and testing programme was implemented. Seven sites for bulk testing were chosen by Negri in July 1983 (Appendix IV). A map in the inside back pocket shows the chosen sites. The programme was conducted on a contract basis by Kratos Uranium N.L., for Negri. On-site operations were carried out by Stellar Mining with the author as Negri's representative.

At each test site, basal river gravels were sampled by front-end loader and transferred to a rear-dump truck, then transported to a heavy-media separation plant. Access to each site was planned so that environmental alteration was minimal. Each site and access truck was rehabilitated when sampling was completed.

The material from the heavy-media plant was passed over a vibrating table and grease trap. Material trapped by the grease was sent to Diamond Laboratory Services for analysis.
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<th>Sample No.</th>
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<th>Sample Composition</th>
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1. H.M.S: Heavy Media Separation plant
2. Table: Grease table used to secure diamonds during final sample processing.
Table 2 is a summary of the bulk testing programme carried out. Sampling commenced in October 1983 and was completed the following December. Treatment of the concentrates was completed in Sydney.

4. **THE 1983 PROGRAMME RESULTS**

Results of the samples sent for analysis were received in April 1984.

In short, no kimberlitic grains were identified. A single grain in sample ST-5 was retained for further analysis. The results from Diamond Laboratory Services are included as Appendix V.

5. **SUMMARY AND CONCLUSIONS**

Since January 1983, the outstanding results of the 1982 field season came to hand, the 1983 exploration proposals were implemented, and the results of the 1983 field programme have been received.

The results fail to establish the persistence of kimberlitic indicators previously found in E.L.'s 3457, 3458 and 3459.

In conclusion, based on the results summarised above, no further work is warranted in E.L.'s 3457, 3458 and 3459.
NATA CERTIFICATE

Dr. P. A. Wing,
General Manager,
Insearch Ltd.,
P.O. Box 123,
BROADWAY, N.S.W. 2007

REPORT AC 2804/83

YOUR REFERENCE: 82/PW/0569

IDENTIFICATION: As listed

DATE RECEIVED: 9 November 1982

D. K. Rowley
Manager
Analytical Chemistry Division

for Norton Jackson
Managing Director

cjw
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APPENDIX

II
Dr. Brian Marshall  
Negri River Corporation  
P.O. Box 400  
Potts Point, NSW 2011  
Australia

Dear Dr. Marshall:

SWA Group is pleased to submit the final report and exhibits concerning the Negri River Kimberlite investigation under contract. We believe that the zones of highest probability have been identified including some that are new. We do not know if anomalies previously identified have been investigated on the ground - they still remain priorities. However, the six new areas have been separately discussed for evaluation for further field study. SWA Group is especially anxious to have areas 12, 18, and 22 explored; many favorable clues have resulted from this analysis.

It is hard to fairly present the depth of knowledge gained from this study remotely in report form. In addition sending materials rolled does not facilitate highest graphic standards. The photo mosaic should be dry mounted to a hard surface for proper display and use of overlays.

I suggest that you review all materials submitted and evaluate the priority zones along with latest patterns of sediment sampling. I will call you to verify arrival of materials - we can also discuss any additional need for a working meeting. It is unfortunate that imagery from the new Landsat TM is not available for this zone facilitating multispectral and more detailed spatial analysis.

Regards,

Dr. Douglas S. Way

EXHIBITS IN A SEPARATE PACKAGE

NR 25
NEGRI RIVER CORPORATION

Final Report: Negri River Exploration Zone
Northern Territory of Australia

January 1983
Dr. Douglas S. Way - SWA Group
EXHIBITS

A. Aerial Photo Mosaic 1:85,000
B. Overlay - Geologic Map of License Areas 1:85,000
C. Overlay - Major Lineaments in and Peripheral to License Area 1:85,000
D. Overlay - Air Photo Interpretation 1:85,000
E. Landsat Image: Geopic 1:250,000
F. Landsat Image: TDCS 1:250,000
G. Overlay - Negri Lease Area and Enlargement Zone 1:250,000
H. Landsat Image: Geopic 1:85,000
I. Landsat Image: TDCS 1:85,000
J. Overlay - Lineament Pattern and Priority Zones 1:85,000
INTRODUCTION

SWA Group was contracted to investigate the multispectral attributes of Landsat imagery and aerial photography for potential kimberlite features in the Negri River region of Australia. Techniques of digital image processing were incorporated to display and extract features, structure, and anomalies that may be associated with kimberlite injections. As a result, several promising zones have been identified that merit immediate field confirmation - investigation.

DATA COLLECTION

All relevant data concerning the lease area was assembled including high and low altitude aerial photography, satellite images and reports. The maps prepared by Insearch Limited were of particular value providing a valuable preliminary overview.

Aerial Photography

Aerial photography (black and white) at a scale of 1:85,000 was provided to SWA Group by Negri Corp. Additional aerial photographs were utilized in final comparative site evaluation as were 1:20,000 of the Ord River Catchment by Aerial Surveys of Australia 31-7-70 (See figure 1.0). A few of these photos were available in color.

Satellite Imagery

Imagery files from NASA and the EROS Data Center were reviewed to select potential images best suited for digital processing and subsequent interpretation. All imagery including that held by Australian stations were reviewed choosing MSS scene 10034-00515; path 113, row 72 - center point S17° 27' 00" - E129° 41' 00", August 26, 1972. An older Landsat scene was purposely selected: those data tapes released by NASA (Goddard) after Feb. 1978 are prepared through their MDP (Master Data Processing) algorithm which builds in certain noise factors that cannot be effectively removed. Because of this, SWA Group always recommends pre 78' imagery to provide the highest level of enhancement and subsequent image quality.
Figure 1.0 Line index of aerial photographs of Ord River catchment, 1:20,000, 31-7-79. Aerial Surveys Australia.
ANALYSIS

The study completed by SWA Group was organized into several phases: (1) an overview reconnaissance reviewing previous studies and designated high priority zones; (2) custom designed digital image processing for structural enhancement, tonal anomalies, and drainage delineation; and (3) medium and low altitude aerial photographic interpretation of priority zones identified upon satellite images.

Review of Previous Studies

The work completed by Insearch Limited was carefully reviewed along with the 1:85,000 scaled aerial photographs. A photo mosaic was prepared from the photos supplied by Negri (exhibit A). All mosaics are a graphic portrayal of the earth's land surfaces and cannot be used as a controlled map. However, in order to visualize previously collected data, overlays were prepared and spatially distorted to conform to the mosaic. These included: geologic map of license areas (exhibit B), major lineaments in and peripheral to license area (exhibit C), and air photo interpretation (exhibit D). These can be placed over the photo mosaic for quick reference to land features and facilitate comparisons. It is also noted that the photo mosaic delineates the six high priority zones.
Satellite Image Processing

It was decided to invest in a custom digital image processed product to maximize visually the data available from the Landsat system. Even the "enhanced" products from the EROS Data Center do not suitably refine the data in such a way that sufficient detail can be interpreted. Note the Negri area shown in figure 2.

![Image](image.png)

Figure 2.0 1:250,000 EROS Data Center EDIPS "enhanced" image July 13, 1979, scene 21633-00394. Overall "haze" is attributed to MDP characteristic.
A copy of the computer tape (CCT) was obtained from the EROS Data Center and sent to Earth Satellite Corporation for evaluation and digital processing. Several products were specified:

- a standard Geopic image (series O) 1:250,000
- a Geopic image enlargement of lease region 1:85,000
- a band ratio with two dimensional contrast stretch (TDCS) 1:250,000
- TDCS enlarged to 1:85,000

Characteristics of Geopic Processing

All GEOPIC images are corrected to reduce or eliminate the effects of geometric and radiometric distortions in the satellite data; unless otherwise specified these corrections include:

**Edge Enhancement**

Edge enhancement increases contrast of color density along boundaries within an image. This process improves the analyst's ability to rapidly identify linear and border features such as agricultural field boundaries, land use interfaces, geologic faults, marked relief or structural changes, water body limits, soil type boundaries, lithologic changes, etc.

**Gray Scale Adjustment**

EarthSat's contrast enhancement algorithm stretches the range of reflectance values to maximize image information content. Gray scale adjustments can also be used to highlight areas of interest.

**Scan Line Suppression**

This algorithm suppresses regularly spaced scale line patterns (or "striping") in an image caused by repetitive malfunctions of the satellite's multispectral scanner detectors. The process improves image quality, eliminates processing of erroneous data, and greatly increases image interpretability. EarthSat's method does not use a smoothing algorithm, consequently, maximum information is preserved.
Geometric Corrections

A series of algorithms are used to produce geometric accuracy in GEOPIC images. Systematic correction parameters include: satellite pitch rate, roll, yaw, heading, and altitude variations; image skew caused by both earth rotation (by latitude) and finite scan time; spectral band offsets; mirror scan amplitude and velocity; and panoramic corrections for the earth's curvature. Scale accuracy is maximized in all directions for use with maps and charts using the Universal Transverse Mercator projection.

Geographic Tick Marks

30-minute latitude and longitude tick marks provide GEOPIC image users with approximate coordinates for convenient cartographic reference. These tick marks are located using the ephemeris data supplied by NASA on the computer tapes of each image.

Custom Products and Services

A wide variety of custom GEOPIC products and services are available. Color match images, photo and digital mosaics, photomaps, RBV/MSS merged images, and imagery scaled to maps are some of the custom products offered. EarthSat's image interpretation and analysis services for resource exploration, development, and management have been employed in projects throughout the world.

False Color Infrared GEOPIC Prints

EarthSat's standard GEOPIC product is an enhanced color composite of computer processed Landsat bands 4 (green), 5 (red), and 7 (near-infrared), displayed as blue, green, and red, respectively. These images include geometric and radiometric corrections, thereby producing a superior quality, general purpose, false-color infrared image. This image product is excellent for multiple analysis applications, mosaics, and display.
Color TDCS (Structural Enhancement) Images

The main application of the GEOPIC Two-Dimensional Contrast Stretch (TDCS) images is for the enhancement of subtle lineaments. The Landsat data are processed by considering three separate sets of two-band combinations. For each two-band combination, the pixels are sampled separately in a large number of albedo (or brightness) slices. The pixels within each individual albedo slice are contrast stretched independently from those pixels within the surrounding albedo slices. The resulting image maximizes the contrast between the subtle spectral information lying on either side of a faint linear feature, and thus more clearly displays the presence of the feature.

The 1:85,000 scale was selected due to scale compatibility with aerial photography and previous studies.

Exhibit E is the 1:250,000 scale Geopic Color Infrared and Exhibit F is the TDCS (supressing topographic elements and enhancing structural elements). Exhibit G is an acetate overlay that is 1:250,000 scale delineating the Negri lease area and the area enlarged from the satellite image to the 1:85,000 display.

Exhibit H and I are the 1:85,000 enlargements of the Geopic and TDCS images. Note that the individual pixels can be observed at this scale.

All data was carefully examined and interpreted including aerial photographs to identify those priority zones for ground investigation. Some of these zones have been previously identified by Insearch, however, several are new and may never have been investigated. SWA Group is not aware of ground sampling sites so that Negri will have to determine final priorities. Exhibit J summarizes the "relevant" lineament pattern and identifies anomaly zones 1 through 27 and assigns a high priority to six of them.

Aerial Photographic Interpretation

The twenty seven anomaly areas were viewed in stereo and evaluated in more detail utilizing lower altitude aerials. Six of these zones exhibit high significance of local structural features and spectral anomalies to warrant onsite investigation.
SUMMARY

A thorough investigation of available data, multiscaled aerial photography and enhanced satellite imagery has resulted in the identification of twenty seven anomaly areas, six of which were previously unidentified and thus have a high priority. If any kimberlites are found in the lease area, SWA Group is confident that there is a high probability of their location in one of these 27 zones. The following summarizes the previously unknown six high priority zones (12, 14, 15, 16, 18, 22).
Anomaly 12. photo no. 6977. This zone appears in a high faulting vicinity and seems to be more rapidly exploited by local weathering-erosion forces.
Anomaly 14, photo no. 7306. Two patches of ground that seasonally change in spectral signature but not associated with vegetation. Some of the vegetation aligns in circular pattern. Signs here are very faint but worth checking.
Anomaly 15, photo no. 6980. Associated with some minor faulting (not shown on Exhibit J) a tonal anomaly shows as a very subtle depression that is on top of a small hill.
Anomaly 17. photo no. 6906. Near major lineament intersection zone with many secondary features not shown on Exhibit J. Several smaller lineaments pass directly through this zone.
Anomaly 18. Color photo no. 7037. Major structural lineaments are in close proximity along with others structural and tonal anomalies. This zone is ranked by SWA Group as highest priority for ground investigation and deep drilling.
Anomaly 22. photo no 7042. Major lineament, tonal, and topographic patterns coincide to give this area high priority for onsite investigation.
NEC XI RIVER CORPORATION LIMITED

EXPLORATION PROPOSALS

FOR

E.L.'s 3457, 3458, 3459

27 MAY 1983

Dr B. MARSHALL
INSEARCH LIMITED

NR + 45
1. INTRODUCTION

Exploration Licences 3457, 3458 and 3459 together with E.'s 2092 and 2093, comprise an area that is being explored for diamond. Following an orientation investigation in late 1980, a program of regional geochemistry and stream gravel sampling was implemented in 1981. The results of the 1981 program merited more detailed follow-up in certain parts of the area and this plus additional bulk sampling was implemented in 1982.

The field concentrates from the 1982 program amounted to nearly 1.75 tonnes of material. Each grain has needed laboratory investigation and microprobe determination where appropriate. The procedure is extremely time consuming and has taken over 6 months to complete. A full evaluation of the results is still in progress and therefore the ensuing program is of a provisional nature.
2. RESULTS SUMMARY

The distribution of all samples and details of results have been presented in separate reports and will not be repeated here. It is sufficient to indicate the extent to which exploration has proceeded in locating sub areas of interest, and the work that should probably be undertaken to further detail these target zones in the upcoming season. In essence, 3 zones of interest have yielded sufficient numbers of indicator minerals or anomalous results to require further expenditure. These are:

(a) A tract of the Negri, its river terraces and its tributaries in E.L. 2092 and the adjacent E.L. 3459. This tract is of principal interest in that it has yielded specific kimberlitic indicator minerals.

(b) A tract north of Mistake Creek in and east of E.L. 2093 which has yielded kimberlitic garnet.

(c) A tract in and to the east of E.L. 2093 that has yielded an anomalous mineral shedding from a high priority Landsat Imagery target.
3. EXPLORATION PROGRAM

The program will comprise 3 main components.

(a) Very closely spaced heavy mineral samples along selected portions of the tributary systems within the tracts of interest in (a) and (b) above. This will be helicopter supported and will possibly lead to trench sampling of delimited targets.

(b) Bulk (say 20 tonne) sampling of main Negri drainage and associated older alluvial terraces to test specifically for diamonds as opposed to kimberlitic indicators.

(c) Possible trench sampling, of specific physiographic targets.

Only portions of the programs will be effected in E.L.'s 3457, 3458 and 3459 since most of the principal tracts of interest lie in E.L.'s 2092 and 2093.
4. EXPENDITURE

The overall program is expected to cost about $100,000; an additional amount of $20,000 will be allowed for contingencies. Thus, based on the relatively small proportions of the program that will be implemented in the three subject E.L.'s expenditure is estimated as:

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Total estimate $35,000

[Signature]

Dr. B. MARSHALL
APPENDIX

IV
30th August, 1983
CB:VT:464

The Secretary,
Department of Mines
and Energy,
Minerals House,
Esplanade,
DARWIN, N.T. 5790

Dear Sir,

E.L.'S 2092, 2093, 3457, 3458, 3459

In previous correspondence (25th July, 1983) reference was made to a program of large tonnage (up to 50 t each sample) bulk sampling during the 1983 season. Following a recent inspection of the appropriate drainages by Mr. J. Hickling of Stellar and Dr. Marshall of Negri, a series of sites were chosen. The ensuing information on the sites to be tested and the nature of the base camp are provided in accordance with Sections 24 (e) and (f) of the Mining Act (refer Annexure 1).

At the time of inspection, all testing sites had sufficient water and were sufficiently accessible for the treatment to be done at site. For the larger samples, Stellar anticipate using their large mobile plant; the small mobile plant will be used for the smaller samples.

The base camp will be located on a large limestone platform at 062 123. Waste will be conveyed to Mistake Creek Station and dumped with the station rubbish. The toilet facility will be dug well away from the creek. The camp will comprise about four people for a period of four weeks.

Subject to your approval, it is hoped to commence work about September 10, 1983, once the plant has been moved across from Lissadel Station in W.A.

Yours faithfully,
For and on behalf of
NEGRI RIVER CORPORATION LIMITED

[Signature]

Dr. B. Marshall,
Technical Director.
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<th>SITE NO/TONNAGE</th>
<th>REMARKS ON THE SITE</th>
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<td>ST-1/20</td>
<td>Large tributary of Mistake Ck; several kimberlitic indicators have been recovered; the sites comprise gravel banks; access is good via a NNE trending track from the Mistake Ck crossing at 061 123; gravel will be treated at the sites since water is abundant.</td>
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<td>ST-2/20</td>
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<td>ST-3/50+</td>
<td>Site of B2 and B2(82) samples on Negri River; good kimberlitic indicators recovered previously; comprises gravel bank associated with sandstone rock bar; easy access from track at 036 128.</td>
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<td>ST-4/50-</td>
<td>Site of B4 and B4(82); on Negri River between Mistake Ck and Stirling Ck confluences; gravel bank and rock bar; access from track at 094 034</td>
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<td>082 031</td>
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<td>ST-5/30</td>
<td>Site of B11; good indicators; on Negri River above the Stirling confluence; large point bar; access from highway at 095 953; minor earthwork needed to enter river channel.</td>
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<tr>
<td>ST-6/30</td>
<td>Site of B6 and B6(82); Negri River upstream of all kimberlitic garnets; gravel bar over extensive tertiary gravels; existing graded track from highway (062 854) to the yards near site.</td>
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HEAVY MINERAL CONCENTRATE ANALYSIS.

EXAMINATION FOR KIMBERLITIC MINERAL INDICATOR GRAINS.

CONSIGNMENT (Lab. Ref. No.): AA 15480
CLIENT: DR. B. MARSHALL
SAMPLE NUMBER (Clients Ref.): ST 1, ST 2, ST 5, ST 5A.
TOTAL NUMBER OF SAMPLES: FOUR.
DATE SAMPLES RECEIVED: 1.12.83.
DATE SAMPLES COMPLETED: 5.12.83.

The above consignment has been sorted and checked and the results are tabulated on the accompanying sheets.

Key to symbols used in the reports:

- Etched
- Lightly abraded
- Abraded
- Remnant of original surface.
- Remnant of kelyphitic surface.
- Diamond
- Non-kimberlitic
- Angular

..............................12/12/83
Laboratory Supervisor. Date.

NR 53
NR - 53
METHOD OF EXAMINATION.

The four samples numbered ST 1, 2, 5, 5A were received for inspection at the Sydney premises of Diamond Laboratory Services Ltd. The samples had been concentrated prior to the arrival at the laboratory, however the grains had a grease residue on them and required additional cleaning to make them ready for visual observation.

Each sample was weighed and recorded after final preparation and the inspection of the concentrate was carried out by qualified sorters for traces of kimberlitic indicator minerals.

Any grains considered to have morphological characteristics consistent with kimberlitic indicator minerals were isolated and further confirmatory analysis recommended.

Other grains recognised by our sorters are listed in "other grains" column and may include the following:

Moissanite, haematite, fluorite, pyroxene, olivine, zircon, tourmaline, kyanite, corundum, rutile, magnetite, cassiterite, mica, pyrites, gold, etc.
RESULTS.

No grains considered to be kimberlitic were found in these samples.
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<th>Mesh Size</th>
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Samples received in lab: 1/2/83
Samples separated: 1/12/83
Samples unpacked and checked: 1/2/83
Slides checked: 5/4/83
HEAVY MINERAL CONCENTRATE ANALYSIS

EXAMINATION FOR KIMBERLITIC MINERAL INDICATOR GRAINS

CONSIGNMENT (Lab. Ref. No.): AA15485
CLIENT: DR. B. MARSHALL
SAMPLE NUMBER (Clients Ref.): ST1, ST4A
TOTAL NUMBER OF SAMPLES: TWO
DATE SAMPLES RECEIVED: 12.12.83
DATE SAMPLES COMPLETED: 13.12.83

The above consignment has been sorted and checked and the results tabulated on the accompanying sheets.

Key to symbols used in the report:
- Etched
- L.abr. Lightly abraded
- abr. Abraded
- R.O.S. Remnant of original surface
- R.O.K. Remnant of kelyphitic surface
- Diamond
- N.K. Non-kimberlitic
- Angular

NR - 54
NR 54

Laboratory Supervisor Date 22.12.83
The two samples numbered ST 3 and ST 4A were received for inspection at the Sydney premises of Diamond Laboratory Services Pty. Ltd. The samples had been concentrated prior to their arrival at the laboratory, however, the grains had a grease residue to them and required additional cleaning to make them ready for visual observation.

Each sample was weighed and recorded after final preparation and the inspection of the concentrate was carried out by qualified sorters for traces of kimberlitic indicator minerals.

Any grains considered to have morphological characteristics consistent with kimberlitic indicator minerals were isolated and further confirmatory analysis recommended.

Other grains recognised by our sorters are listed in 'other grains' column and may include the following:

Moissanite, haematite, fluorite, pyroxene, olivine, zircon, tourmaline, kyanite, corundum, rutile, magnetite, cassiterite, mica, gold etc.

22.12.83
RESULTS

No grains considered to be kimberlitic were found in these samples.

22.12.83
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<th>Sample No.</th>
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SAMPLES RECEIVED IN LAB ........ 15.4.84 ........ SAMPLES SEPARATED ........ 16.4.84 ........
SAMPLES UNPACKED AND CHECKED ........ 17.4.84 ........ SLIDES CHECKED ........ 13.4.84 ........
HEAVY MINERAL CONCENTRATE ANALYSIS

EXAMINATION FOR KIMBERLITIC MINERAL INDICATOR GRAINS

CONSIGNMENT (Lab. Ref. No.): AA15629
CLIENT: DR. B. MARSHALL / A. LOGAN
SAMPLE NUMBER (Client’s Ref.): ST4, ST5, ST4 & 5 (Spillage)
TOTAL NUMBER OF SAMPLES: THREE
DATE SAMPLES RECEIVED: 13.3.84
DATE SAMPLES COMPLETED: 20.3.84

The above consignment has been sorted and checked and the results tabulated on the accompanying sheets.

Key to symbols used in the report:

+: Etched
l.abr.: Lightly abraded
abr.: Abraded
R.O.S.: Remnant of original surface
R.O.K.: Remnant of kelyphitic surface
\n: Diamond
N.K.: Non-kimberlitic
\n: Angular

........................................................
Laboratory Supervisor
2.4.84
...........
Date
Two samples, numbered ST4 and ST5 and a sample marked ST4 & 5 (spillage) were received for inspection at the Sydney premises of Diamond Laboratory Services Pty. Ltd. The samples had been concentrated prior to their arrival at the laboratory on a grease belt and therefore, had a grease residue on them.

In addition, removal of the grease residue had been attempted using petrol, resulting in an extremely unwieldy, smelly, messy mass of grains which, in addition to being difficult to clean, was extremely hazardous due to the heavy petrol fumes.

This resulted in a much lengthier time for each sample in the preparation stage as normal cleaning and drying techniques had to be discarded in order to get rid of the petrol and grease from the grains to make them ready for visual inspection.

Each sample was weighed and recorded after final preparation and the inspection of the concentrate was carried out by qualified sorters for traces of kimberlitic indicator minerals.

Any grains considered to have morphological characteristics consistent with kimberlitic indicator minerals were isolated and further confirmatory analysis recommended.

Other grains recognised by our sorters are listed in 'other grains' column and may include the following:

Moissanite, haematite, fluorite, pyroxene, olivine, zircon, tourmaline, kyanite, corundum, rutile, magnetite, cassiterite, mica, gold etc.

2.4.84
Sample ST4 & 5 (Spillage)

No grains whose characteristics indicate possible kimberlitic origin were observed. A number of metallic grains were observed. Chemical analysis of these grains showed Zn and Cu content suggesting that they were shavings that came from a metallic piece of equipment.

Sample ST4

No grains considered to be of kimberlitic origin were observed.

Sample ST5

Two non-kimberlitic garnets, eight zircons and grains of haematite and pyroxene were observed. None of these was considered to be of kimberlitic origin.

One black grain was observed and isolated whose characteristics indicate possible kimberlitic origin. It has been sent for further analysis by electron microprobe.

2.4.84
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<th>Mesh Size</th>
<th>Garnet</th>
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Samples received in Lab...........
Samples separated...........
Samples unpacked and checked...........
Slides checked...........

(Notes: Garnet, Ilmenite, Chrome Diopside, Spinel, Other Grains, Remarks)
NR-0 Report on the testing for kimberlitic indicator minerals of portion of exploration licences 2092 and 2093, Northern Territory of Australia. (Colchester and Marshall, February 1981)


NR-B Mineralogical investigation of alluvial sand samples, portion of exploration licences 2092 and 2093, Northern Territory of Australia. (Franklin, May, 1981)

NR-1 Report on stream-sediment geochemical analyses from portion of exploration licences 2092 and 2093, Northern Territory of Australia. (Marshall, June, 1981)


NR-4A Heavy mineral concentrate analysis examination for kimberlitic indicator grains. (Afrique, July, 1981 - Diamond Laboratory Services)

NR-4B Mineralogical investigation of alluvial sand samples. (Franklin, July, 1981 - Diamond Laboratory Services)


NR-7 Evaluation of the main channel samples, E.L's 2092, 2093, 1981 Exploration Program. (Marshall, May, 1982)

NR-8 Heavy mineral concentrate analysis examination for kimberlitic mineral indicator grains. (Afrique, September, 1981 - Diamond Laboratory Services)

NR-9 Heavy mineral concentrate analysis examination for kimberlitic mineral indicator grains - consignment AAl1905. (Afrique, September, 1981 - Diamond Laboratory Services)

NR-10 Microprobe analysis of garnet grains - samples 182, 203 and 263. (Sechos, September, 1981 - Diamond Laboratory Services)
NR-11 Progress report on exploration activities.
(Marshall, November, 1981)

NR-12 Progress report on exploration of E.L.'s 2092 and 2093, Northern Territory.
(Orridge, October, 1981)

NR-13 Heavy mineral concentrate analysis, Sample 1 - 8, Coarse and Medium frations.

NR-14 Microprobe analysis of grains from samples B2, B3, B4.
(Sechos, December, 1981 - D.L.S.)

NR-15 Heavy mineral concentrate analysis, samples B1 and B2 Fine fraction.
(Sechos, December, 1981 - D.L.S.)

NR-16 Heavy mineral concentrate analysis, samples B3 and B7 Fine fraction.
(Sechos, January, 1981 - D.L.S.)

NR-17 Microprobe analysis of grains from samples B3 to B7 Fine fraction.
(Sechos, February, 1981 - D.L.S.)

NR-18 Heavy mineral concentrate analysis, Samples 350 to 360 inclusive.
(Sechos, February, 1981 - D.L.S.)

NR-19 Progress report on exploration activities.
(Marshall, February, 1982)

NR-20 Microprobe analysis of grains form samples 350 to 360.
(Sechos, March, 1982 - D.L.S.)

NR-21 Final report on exploration of E.L.'s 2092, 2093 Northern Territory.
(Orridge, January, 1982)

(Marshall, February, 1982)

(Hickling, May, 1982)

(Longman & Associates, June, 1982)

(Way, January, 1983 - SWA Group)

NR-26 E.L.'s 2092, 2093, 3457, 3458, 3459 - Exploration details, 1982 field program.
(Marshall, November, 1982)
(Marshall, September, 1982)

NR-28  Heavy mineral concentrate analysis and microprobe report. Samples 363 to 390.  
(Sechos, October, 1982 - D.L.S.)

NR-29  Heavy mineral concentrate analysis and microprobe report. Samples 391 to 415.  
(Sechos, November, 1982 - D.L.S.)

NR-30  Heavy mineral concentrate analysis and microprobe report. Samples 416 to 446.  
(Sechos, November, 1982 - D.L.S.)

NR-31  Heavy mineral concentrate analysis and microprobe report. Samples 448 to 482 and ML1 to ML4.  
(Sechos, December, 1982 - D.L.S.)

NR-32  Heavy mineral concentrate analysis and microprobe report. Bulk sample B11.  
(Sechos, December, 1982 - D.L.S.)

NR-33  Heavy mineral concentrate analysis. Bulk sample B5.  
(Sechos, December, 1982 - D.L.S.)

(Marshall, January, 1983)

NR-35  E.L. Applications 1A, 1B, 2A, 2B.  
(Marshall, February, 1983)

(Sechos, January, 1983 - D.L.S.)

(Sechos, February, 1983 - D.L.S.)

NR-38  Heavy mineral concentrate analysis. Bulk samples B8, B9, B13.  
(Sechos, March, 1983 - D.L.S.)

(Sechos, March, 1983 - D.L.S.)

NR-40  Heavy mineral concentrate analysis. Bulk sample B12.  
(Sechos, March, 1983 - D.L.S.)

NR-41  Progress report on exploration work, Mistake Creek district E.L.'s 2092, 2093, 3457, 3458, 3459.  
(Marshall, March, 1983)
NR-42  Heavy mineral concentrate analysis. Bulk samples B3 and B4.
       (Sechos, April, 1983 - D.L.S.).

NR-43  Electron microprobe results for grains from bulk samples B3, B8 and B13.
       (Sechos, April, 1983 - D.L.S.)

NR-44  Exploration activities and sacred sites. E.L.'s 2092, 2093, 3457, 3458, 3459.
       (Marshall, April, 1983)

NR-45  Exploration proposals for E.L.'s 3457, 3458, 3459.
       (Marshall, May, 1983)

NR-46  Report on diamond exploration programme of Negri River Corporation Limited.
       (Hickling, June, 1983)

NR-47  Mineral sample from an unknown locality.
       (Williams, June, 1983)

NR-48  Progress report on exploration work, Mistake Creek district.
       (Marshall, June, 1983)

NR-49  Report on the examination of three sand samples for specific mineralogical identification.
       (Franklin, August, 1983)

NR-50  Examination for kimberlite mineral indicators.
       (Sechos, October, 1983 - D.L.S.)
NR-51  E.L.'s 2092 and 2093. Exploration Report for the year ended 9th September, 1983
       (Lohan, September, 1983)

NR-52  Report on bulk sample diamond testing program for E.L.'s 2092 and 2093.

NR-53  Heavy mineral concentrate analysis. Bulk test samples ST-1, ST-2, ST-5, ST-5A.
       (Sechos, December, 1983 - D.L.S.)

NR-54  Heavy mineral concentrate analysis. Bulk test samples ST-3, ST-4A
       (Sechos, December, 1983 - D.L.S.)

NR-55  Heavy mineral concentrate analysis. Bulk test samples ST-4, ST-5, ST-4 and 5 (Spillage).
       (Sechos, April, 1984 - D.L.S.)

NR-56  The present report. 