CRA Exploration Pty. Ltd.

EL 4166 KARNS CREEK, N.T.

FINAL REPORT

(Period to 24 October 1986)

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Map Reference

SE 53-4 Robinson River

Report number

130704

CONTENTS

1.0 SUMMARY

In the first year of tenure of Karns Creek EL 4166, reconnaissance density drainage gravel sampling was completed over the area and samples processed for detection of kimberlitic indicator minerals.
One diamond was reported in a sample from the Calvert River.
One diamond and three microdiamonds (<0.4mm) were reported in samples from the Karns Creek system.
No other kimberlitic indicator minerals were observed.

A detailed, low-level airborne magnetic and radiometric survey was flown over the EL area in June 1983. 25 magnetic features (designated RC 1 - RC 25) were ground recovered for investigation as possible kimberlitic diatreme responses.
Eight of the aeromagnetic features and six selected photogeological features were loam sampled. No kimberlitic indicator minerals or microdiamonds were detected in these samples.

Scout drill testing of aeromagnetic anomaly RC 14 in tenure year two gave an intersection of terrigenous material with relatively high magnetic susceptibility, apparently accumulated in a sinkhole in (Karns) dolomite.
Drill cuttings samples were reported negative for kimberlitic indicator minerals and microdiamonds.

Collection of an additional 70 drainage gravel samples in tenure year two (field season 1984) increased sampling density in the EL area to about 1 per 9 square km overall.
Concurrently, 13 airphoto tone/topographic features were ground recovered for investigation as possible diatreme outcrop expressions. Reconnaissance sampling was undertaken also of palaeodrainage courses identified from airphoto studies.

Two diamonds, one chromite and five microdiamonds were reported in drainage gravel samples; all other samples of the series were reported negative for kimberlitic indicator minerals and microdiamonds.

Sites of two samples yielding single diamonds and two samples with reported microdiamonds, cluster in the Running Creek headwaters catchment area.

The drainage sample with a reported chromite grain (subsequently re-identified as a low-chrome spinel) was from a creek draining photofeatures designated KAR K and KAR L.

Two microdiamonds were detected in a drainage sample from a creek draining the KAR Q, R, S cluster of photofeatures, close to the Calvert River.

One microdiamond was reported in relative isolation.

Major component silicate and selected trace element analysis of outcrop grab samples from photofeatures KAR G and KAR H gave no results suggestive of kimberlitic lithologies.

A bottom-hole cuttings sample, from a Gemcodrill auger hole sunk to 9.5m on photofeature KAR P, was reported negative for kimberlitic indicator minerals and microdiamonds. Geochemical analysis of a cuttings sample split gave no results suggestive of kimberlitic lithology.

All palaeodrainage reconnaissance samples taken in the EL area were reported negative for kimberlitic indicators and microdiamonds.

Investigation of anomalous radiometric responses, selected from data of the 1983 airborne geophysical survey, showed a cluster of U-channel anomalies in the Running Creek headwaters area to correlate with outcrops of flaggy grey-white kaolinitic and phosphatic (uraniferous) silty sandstones.

An airborne multispectral scanner survey was flown over the area by the National Safety Council of Australia (Victorian Branch) using the DAEDALUS DS-1268 scanner system.
No processed imagery of the EL 4166 area has been generated from this survey data.

In the third and fourth years of tenure (field seasons 1985 and 1986), locally detailed programs of follow-up drainage sampling, photofeature and geomorphological investigation were concentrated in the upper Running Creek catchment area. One chromite grain was reported in a loamed residual soil sample. No other kimberlitic indicator minerals or microdiamonds were detected by these programs; which included check sampling of sites of previously reported diamonds.

2.0 ASSESSMENT

Locally intensive follow-up exploration has failed to identify kimberlitic diatreme lithologies, to target a diamond source, or to repeat previously reported diamonds.

These results, and a virtual absence of kimberlitic indicators other than diamonds, are suggestive of a secondary detrital host shedding diamonds of remote primary provenance. Such a host could be represented by channel gravel remnants of an older drainage system, or by remnant patches of the basal gravels of a former blanket of the Cretaceous transgressive marine succession.
Reconnaissance sampling, aimed at identification of a detrital diamond host, gave no positive result.

Investigations of anomalous radiometric features, selected from airborne survey data, resulted in identification of intercalations within the Masterton Formation of a lithofacies association of kaolinitic and phosphatic (uraniferous) silty sandstones. Occurrence patterns suggest these intercalations to represent a single stratigraphic interval.
The uranium is considered to be "scavenged" by the phosphate from groundwater freely circulating in the very permeable Masterton sandstone.
The phosphatic sandstone gives uranium analyses much too low to be prospective in itself. The prospects of roll-front uranium concentrations are downgraded by the absence locally of either a reactive lithology to support establishment of a redox front, or of an impermeable caprock to confine pregnant groundwater movement.

3.0 INTRODUCTION

Karns Creek EL application 4166 was lodged on 29 November 1982 for an area of 415 blocks (about 1360 square km) and was granted on 7 March 1983.

The area was taken up for exploration for diamondiferous kimberlites by a combination of drainage gravel sampling for detection of kimberlitic indicator minerals and a detailed airborne magnetic and radiometric survey aimed at identification of target diatreme responses.

The EL area is located on the coastal fall of the Wearyan Shelf, covering much of the lower drainage catchment of Karns Creek and the headwaters catchments of Running Creek and Gold Creek.

The Karns Creek catchment basin is embayed from the coastal plain of the Gulf of Carpentaria by a range of hills penetrated by the Calvert River at "Old Punsalina". Within the basin, outcrop is generally poor, on a low-relief topographic surface close to the Proterozoic Masterton Formation - Karns Dolomite contact.

Southwest of Karns Creek, flat lying Masterton Formation sandstone predominates in outcrop and subcrop beneath a relatively superficial, commonly lateritic soil cover. Scattered outcrops of dolomite, stromatolitic chert and calcrete-silcrete represent remnants of an overlying sheet of the Karns Dolomite.

Northeast of Karns Creek, relatively few outcrop rises are emergent from a blanket of Cainozoic sand drifted against the range of hills embaying the Karns Creek basin.

In the eastern sector of the EL area, a high relief topography is developed by dissection of a former plateau surface on Proterozoic Masterton Formation sandstones. Dendritic drainages of the Running Creek and Gold Creek headwaters have deeply incised this surface, exposing inliers of the Gold Creek Volcanics.

Statutory reduction of EL area at the end of tenure year two resulted in retention of an area of 207 blocks (about 678 square km) into tenure year three (plan NTd 3759).
Statutory reduction of EL area at the end of tenure year three resulted in retention of an area of 98 blocks (about 321 square km) into tenure year four (plan NTd 4129).
Recommended relinquishment of title was followed by surrender of EL 4166 effective 24 October 1986.

Exploration programs and results detailed in CRAE report nos. 130418 (tenure year #1), 130587 (tenure year #2) and 130638 (tenure year #3) are summarised herein, with the addition of discussion of tenure year #4 exploration results.

4.0 DRAINAGE GRAVEL SAMPLING PROGRAMS

Collection of drainage gravel samples was undertaken in several successive stages, each helicopter supported. Samples were forwarded to the CRAE Belmont laboratory for processing for kimberlitic indicator mineral observation and detection of microdiamonds (<0.4mm).
Sample locations are shown on plan NTd 3359.
Sampling results are tabulated in Appendix 1 and discussed below.

4.1 Running Creek orientation/follow-up sampling

Samples 766751-762, of -4mm sieved gravel from heavy mineral accumulation (trap) sites in the Running Creek headwaters area, were taken following up a diamond detected in an orientation drainage gravel sample in adjacent EL 4077 (Colliver, 1986a).

No indicator mineral or microdiamonds were detected in samples taken within EL 4166.

4.2 Reconnaissance sampling

Subsequent to the Running Creek orientation/follow-up sampling, a helicopter supported drainage gravel sampling program was carried out over the whole area of EL 4166 and adjacent EL's 4155 and 4077. -2mm sieved drainage sediment samples 966432-450, 966534-723 were collected, from trap sites where available, in a pattern aimed at a sampling density of 1 per 20 sq km.

One diamond was observed in sample 966659, from a rock bar trap in the Calvert River, about 5km downstream from the confluence of Karns Creek. Sample 966673, with one diamond and one microdiamond (<0.4mm), and sample 966684, with one microdiamond, were from sites on Karns Creek tributaries (plan NTd 3359).

4.3 Karns Creek follow-up sampling

Following up positive reconnaissance results, increased density drainage sampling was undertaken in the Karns Creek catchment area. -2mm sieved drainage sediment samples 965501-510, 965640-670, 1081327-341 were collected in a helicopter supported program.

Kimberlitic indicator reports were uniformly negative; one microdiamond was reported in drainage sample 965659.

4.4 Field season 1984 infill/follow-up sampling

In field season 1984, an additional 70 drainage samples (821-, 10842- and 10843-series numbers) were collected over the whole of EL 4166, increasing the sampling density to about 1 per 9 sq km overall. A number of the 10842- and 10843-series trap site drainage gravel samples, plus loamed drainage sediment and soil samples of the 821-series, were collected from sites designed to test residual soils and drainage shed from selected photogeological features KAR G - KAR L, in the eastern sector, and KAR P - KAR S, in the northwestern corner of the EL area (locations shown on plan NTd 3359; discussion in section 6 of this report).

Sites of samples 1084216 and 1084221, yielding single diamonds, sample 1084226, with a reported chromite grain (subsequently re-identified as a low-chrome spinel) and samples 1084222 and 1084230, with reported microdiamonds, form a cluster in the Running Creek headwaters catchment area. (Sample 1084226 was collected from a creek draining photofeatures KAR K and KAR L.)

Two microdiamonds were reported in sample 821985, from a minor creek draining the KAR Q,R,S cluster of photo-features.
One microdiamond was reported in drainage sample 1084312.
All other samples of these series were reported negative for kimberlitic indicator minerals and microdiamonds.

4.5 Field seasons 1985-86 follow-up sampling

Following up positive results of field season 1984 infill sampling and results of exploration in neighbouring EL 4077 (Colliver, 1986a), programs of locally detailed follow-up and check drainage sampling and photofeature investigation were concentrated in field seasons 1985 and 1986 in the Running Creek headwaters catchment area of EL 4166. These programs were helicopter supported, with attention directed also to ground checking for any evidence of younger sediments formerly overlying a dissected plateau palaeosurface developed on the Masterton Formation.
Samples are numbered in the 10847- and 13120-series.

Loam samples 1084787, 1084793 and 1312051 were collected of deflated residual sandy soil from topographically high saddle sites, close to duricrusted mesa remnants of the dissected plateau palaeosurface. Drainage sample 1084797 was collected from a creek draining a small photofeature, being a sandstone-walled, pisolitic sand -floored depression, in a similarly high-level topographic setting.
These samples were taken as a reconnaissance test of the possibility of diamonds being shed from a secondary detrital source, such as remnant patches of the basal gravels of a former blanket of the Cretaceous transgressive marine succession.

Check drainage gravel samples 1084788, 1084789 and 1084792, each bulking over 100kg, were taken to validate results of 1984 samples 1084216 (one diamond), 1084221 (one diamond) and 1084230 (one microdiamond) respectively.
Other samples of the series were collected from sites located to derive follow-up drainage train information or to test individual photofeatures.

One chromite grain was recovered from loam sample 1084787; all other samples of the series were reported negative for kimberlitic indicator minerals and microdiamonds.

5.0 PALAEODRAINAGE INVESTIGATION

From a photogeological/geomorphological study of the Wearyan Shelf area (Murrell, 1984), channel traces of former drainage systems were identified in the Karns Creek basin. Selected palaeodrainage features were ground recovered in field season 1984, for reconnaissance investigation as possible intermediate hosts of diamonds being shed into the present drainage system.

Recovered features were observed to be of two types:
Type 1 are sandy to clayey soil -covered "swale" depressions, representing variably sheet runoff drainage courses, recently abandoned minor drainage channels and interpreted solution collapse features over channelled groundwater flows in the Masterton sandstone and at the Karns Dolomite contact;
Type 2 are well-indurated conglomeratic gravels and cross-bedded sands and grits, being fossil channel deposit remnants of a drainage system of obscure correlation, probably older than or basal to the Bukalara Sandstone, and possibly as old as basal Karns Dolomite.

A total of 11 samples (813-series numbers) were collected from type 2 features (shown on plan NTd 3359) in the south-western sector of the EL 4166 area:
813434, 813437, 813438, 813444, 813445 and 1084292-294 were rock samples of indurated palaeochannel material;
813439 and 813446 were drainage gravel samples taken from active streams cutting palaeochannel features; and
813435 was a loam sample taken from a palaeochannel course.

All samples were reported negative for kimberlitic indicators and microdiamonds.

6.0 PHOTOFEATURE INVESTIGATION

In April 1983, 1:80 000 colour aerial photography with 60% forward overlap was flown over the area by Aerial Surveys Australia Ltd. Studies were made of this and the published RC-9 photography for features which could be surface expressions of subcropping diatremes.

Concurrently with late field season 1983 follow-up drainage sampling, six anomalous topographic / soil tone / vegetation features in the southwestern sector of the EL 4166 area were ground recovered for investigation. Locations of these features, designated KAR A - KAR F, are shown on plan NTd 3359.

Each feature was 'loam' sampled for detection of kimberlitic indicator minerals, by shallowly scraping the surface soil to take advantage of any heavy mineral concentration by soil deflation.
Locations of loam samples 965507, 965652 and 1081616, 641, 688, 689 are shown on Plan NTd 3359.

No kimberlitic indicator minerals or microdiamonds were reported in these samples.

Traverses with a Scintrex MP2 magnetometer showed no significant magnetic response over feature KAR C (previously referred to as photofeature PF-1: Colliver & Jenke, 1984). Ground magnetic survey profiles are included in Appendix 7.

In field season 1984, thirteen photofeatures were ground recovered for investigation. Locations of these features, designated KAR G - KAR T, are shown on Plan NTd 3359.

A cursory magnetic survey was undertaken over each feature. Traverses were surveyed by compass and topofil and readings taken every 10m using a Scintrex MP2 proton precession magnetometer with the sensor at ~2.5m ground clearance. (Surveys of features KAR M and KAR O were completed with a Scintrex MP3 magnetometer.)
Ground magnetic survey profiles are included in Appendix 7.

Descriptions of individual features were reported in Alexander & Colliver (1985). In summary:

KAR G, KAR J, KAR K and KAR L, clustered in the eastern sector of the EL area, are fault-bound collapse features in Hobblechain Rhyolite outcrop windows in the Masterton Formation sandstone sheet.
KAR H is an amphitheatre-like topographic feature in Masterton sandstone, in the same area.
Discrete magnetic responses (amplitudes 60-400nT, source depths <~200m) were observed over each of these features, which are probably expressions of Redbank-type breccia pipes.
No kimberlitic indicator minerals or microdiamonds were detected in loam samples 1084263, 1084264 of residual grey soil from the central part of feature KAR G.
Major component silicate and selected trace element analysis of outcrop grab samples 1084322 ('rhyolite' breccia from KAR G) and 1084334 (ferruginous ?dolomitic siltstone from KAR H) gave no geochemical signature suggestive of kimberlitic lithology (Appendix 5).

KAR M, KAR N, KAR O, and KAR T, clustered on a low-relief, sand drift-obscured, outcrop surface of Masterton sandstone in the south-central part of the EL area, are photo-anomalous soil tone features with subtle or absent topographic expression.
Ground survey profiles show no discrete magnetic features and are typically noisy, probably due to laterite/pisolite accumulations in the sandy soil cover.

KAR P, KAR Q, KAR R, and KAR S, clustered in the northwest corner of the EL area, are photo-tone anomalous features, being soil-covered depressions surrounded by outcrop of flat-lying Masterton sandstone. The features probably represent areas of sagging or collapse of the sandstone sheet surface, due to solution undermining by groundwater flows.
Ground survey profiles show no discrete magnetic features and are typically noisy, probably due to laterite/pisolite accumulations in the sandy soil cover.
Two microdiamonds were detected in "loamed" drainage sediment samples 821984-985, collected in early field season 1984 from a creek draining the KAR Q-R-S cluster.

A number of the (late field season 1984) 10842- and 10843-series drainage gravel samples were collected from sites designed to test drainage shed from photofeatures KAR G - KAR L in the eastern sector and KAR P - KAR S in the northwestern corner of the EL area.
Drainage sample 1084226 (with a reported chromite grain subsequently re-identified as a low-chrome spinel) was from a creek draining photofeatures KAR K and KAR L.
All other samples relating to this investigation (including several samples sited to follow up the report of two microdiamonds in samples 821984-985) were reported negative for kimberlitic indicator minerals and microdiamonds.

In late field season 1984, a scout auger hole was drilled on photoanomaly KAR P, using a Geocodrill HT 7 rig mounted on a Chamberlain Champion Industrial Mark 4 tractor.
The cuttings log (reproduced in Appendix 8) records red sand and clay with chips of laterite, ferruginous sandstone, siltstone and cherty dolomite. The hole bottomed at 9.5m, on fine to medium-grained (kaolinitic) quartz sandstone.

Bottom-hole cuttings sample 824283 was reported negative for kimberlitic indicator minerals and microdiamonds.
Geochemical analysis of cuttings sample split 824283 gave no results suggestive of a kimberlitic lithological component (Appendix 5).

7.0 AIRBORNE MULTISPECTRAL SCANNER SURVEY

In September 1984 (reported in Alexander & Colliver, 1985) an airborne multispectral scanner survey was flown over the EL area, with a "DAEDALUS" DS-1268 system operated by the National Safety Council of Australia (Victorian Branch).

To date, no processed imagery of the EL 4166 area has been produced from this survey data.

8.0 AIRBORNE GEOPHYSICAL SURVEY

A detailed low-level airborne magnetic and radiometric survey was carried out over the area of EL 4166 and contiguous EL 4077 in June-July 1983 by Geoterrex Pty. Ltd.

8.1 Control Photography

Navigation and flight path recovery of the survey were carried out using 1:25 000 black and white enlargements of 1:80 000 color photography acquired for CRA Exploration by Aerial Surveys Australia Pty. Ltd. in April 1983. To establish control, nine photogrammetric control points were plotted on alternate frames by Peter Livings and Associates, Perth, using data supplied by the Department of National Mapping, Canberra.

8.2 Survey Parameters

In summary, the survey parameters were:

Traverse line direction	:	N - S
Nominal line spacing	:	250 and 300 m
Nominal tie line spacing	:	4 km
Tie line direction	:	E - W
Nominal terrain clearance	:	80 m
Nominal flying speed	:	125 knots (~64 m/s)
Magnetometer	:	Cesium Vapour optical absorption sensitivity 0.04 nT
cycling interval	:	0.2 sec
Spectrometer	:	Nuclear Data 256 channel ADC volume 33.1 litres
cycling interval	:	1.0 sec

Full details of survey specification and performance are described in the contractor's logistics report (reproduced in Appendix 1 to CRAE report 130418; Colliver & Jenke, 1984, from CRAE report 12341; Jenke, 1983).
Details of data acquisition and processing are also contained in CRAE report 130418 (Colliver & Jenke, 1984, Appendix 2).

The recovered flight path was compiled onto 1:25 000 plans on an AMG base (plans NTd 3010-3016, CRAE report 130418). Stacked magnetic profiles plans (NTd 3017-3023, report 130418) were produced at the same scale to overlie the flight path maps.
A 1:100 000-scale composite magnetic intensity contour plan was also produced (plan NTd 3281).

8.3 Magnetic features

Common features of the magnetic pattern of the area are medium wavelength responses, often occurring as linears over several flight lines, with amplitudes of several tens of nT. The source of these responses is presumed to be (Gold Creek) volcanics, present at depth beneath non-magnetic Karns Dolomite and Masterton Formation sandstone.
(Anomaly RC 7, selected for ground recovery, is one such response.)

Along the eastern border of the EL 4166 area, responses attributed to the (Gold Creek) volcanics have greater amplitudes and shorter wavelengths, suggesting that the source unit is relatively shallower in this area.
(Anomaly RC 16 was the only response of this type selected for investigation.)

Low-amplitude short-wavelength responses, typical of laterite, can be seen throughout the area.

From the stacked profiles plans and the contour map, 25 magnetic response features suggestive of discrete sources were selected for ground recovery and investigation as possible diatreme responses. Most are of low amplitude (<10nT) and short wavelength, and occur on one to four flight lines.
Parameters of these selected features, designated RC 1-25, are tabulated in Appendix 2;
anomaly centre locations are shown on plan NTd 3873.

8.4 Radiometric features

Analogue records from the airborne survey were reviewed cursorily in September 1983 for responses of interest in the uranium channel (Colliver & Jenke, 1984).
Responses selected for investigation are tabulated in Appendix 3; anomaly centre locations are shown on plan NTd 3873.

In September 1984, analogue records were reviewed in detail with the aim of identifying possible radiometric expressions of kimberlitic diatremes (Anderson, 1984). 28 radiometric features within the area of EL 4166 were selected and classified for investigation.
Selected features are tabulated in Appendix 4;
anomaly centre locations are shown on Plan NTd 3873.

9.0 INVESTIGATION OF AEROMAGNETIC ANOMALIES

From profiled and contoured magnetic data of the Geoterrex 1983 airborne geophysical survey, 25 magnetic response features were selected for ground recovery and investigation as possible diatreme expressions.

Investigations were undertaken in late field season 1983 (reported in Colliver & Jenke, 1984). Ground recovery was helicopter supported, using for navigation 1:25 000 black and white airphoto enlargements marked with estimated anomaly centres. A permatagged steel star picket, assigned local grid origin co-ordinates 1000mE 1000mN, was placed at each of recovered anomaly centres RC 1 - RC 25.
Locations are shown on Plans NTd 3359, 3873.

9.1 Ground magnetic surveys

Over each feature, temporary survey lines were established by topofil and compass and marked by flagging tape at 50 metre intervals. Survey grids were laid out on magnetic N-S/E-W bearings, except for RC 6 and RC 21 on true bearings.

Readings of the total magnetic field were acquired at 10m stations, using a Scintrex MP2 proton precession magnetometer with the sensor at ~2.5m ground clearance. Magnetic data were corrected for diurnal variation, monitored by a base station MP2 magnetometer.
[Diurnally corrected data were transcribed subsequently from field cards to Tektronix 4052 magnetic tape cartridges.]

Ground magnetic survey profiles are included in Appendix 7.

Each of the 25 features was briefly discussed in CRAE report 130418 (Colliver & Jenke, 1984).
In summary:

RC 1 was recovered as a discrete, shallow-sourced anomaly with an amplitude of ~30nT on ground profiles.

RC 2 was recovered at the location of a portable stockyard.

RC 3, 4, 5, 6, 8, 9, 19, 20, 22 & RC 24 ground profiles show very short wavelength "noise" responses, attributed to laterite/pisolite accumulations.

RC 7 ground profiles show a broad 70nT response, attributed to (Gold Creek) volcanics beneath sandstone outcrop.

RC 10 ground profiles show a deep-sourced magnetic gradient.

RC 11 ground profiles are noisy, but show indications of a possible contribution to the magnetic response pattern by a relatively shallow source, other than laterite.

RC 12 was recovered as a discrete, shallow-sourced anomaly with an amplitude of ~70nT on ground profiles.

RC 13 ground profiles show a discrete anomaly of irregular short-wavelength magnetic responses with amplitudes >100nT.

RC 14 ground profiles show a discrete anomaly of irregular short-wavelength magnetic responses with amplitudes <400nT.

RC 15 ground profile 1000mE shows an abrupt 5nT inflexion in an area of no outcrop.

RC 16 was recovered as a dipolar magnetic anomaly with an amplitude of ~150nT on ground profiles. From (airborne survey data) occurrence context, the response is attributed to (Gold Creek) volcanics at shallow depth beneath sandstone outcrop.

RC 17 ground profiles show no response which can be correlated clearly with the 5nT dipolar aeromagnetic feature selected for investigation.

RC 18 was recovered as a low-amplitude deep-sourced magnetic feature.

RC 21 ground profiles are (laterite-) noisy, but a possibly "real", shallow-sourced magnetic response of ~30nT amplitude can be discerned.

RC 23 & RC 25 ground profiles show long-wavelength magnetic features, attributed to (Gold Creek) volcanics sources beneath sandstone outcrop.

9.2 Loam sampling of magnetic anomalies

Ground-recovered aeromagnetic anomalies RC 1, RC 11 - 14 and RC 21 were interpreted to have relatively shallow but non-outcropping sources, other than laterite/pisolites. Over the interpreted source centres of these anomalies and at the recovered locations of aeromagnetic anomalies RC 15 and RC 17, "loam" samples of shallowly scraped surface soil (to take advantage of any heavy mineral concentration by soil deflation) were collected for detection of kimberlitic indicator minerals.

Locations of loam samples 1081601-605 and 1081612-615 are shown on plan NTd 3359.
Results are tabulated in Appendix 1.

No kimberlitic indicator minerals or microdiamonds were reported in these samples.

9.3 Scout drilling of aeromagnetic anomaly RC 14

In August 1984, scout drilling was undertaken to investigate the source of aeromagnetic anomaly RC 14.
DD84KC-1 cored red-brown weathered clayey material, logged as "volcanic", to 18m, then siliceous dolomite to end-of-hole at a depth of 45.1m.
Drill log DD84KC-1 is reproduced in Appendix 8.

From results of geochemical analysis of composite "chip" drill core sample 970924 (Appendix 5), the red-brown clay was re-interpreted as terrigenous fill in a sinkhole in dolomite. The aeromagnetic anomaly is ascribed to the very great contrast between magnetic susceptibilities of the sinkhole fill material and the cherty dolomite country rock.

Precollar drill cuttings samples 970928-933 (1m intervals surface to 6m) were reported negative for kimberlitic indicator minerals and microdiamonds.
Subsequently, grab samples 979939-947 were taken of cuttings from three open holes drilled in the RC 14 vicinity (seeking a local water supply for the core drilling). All were reported negative for kimberlitic indicator minerals and microdiamonds.

10.0 INVESTIGATION OF RADIOMETRIC ANOMALIES

Investigations of anomalous radiometric response features, selected from analogue records of the Geoterrex 1983 airborne geophysical survey, were undertaken in field seasons 1984 and 1985.
Ground recovery was helicopter supported, navigating from 1:25 000 black and white airphoto enlargements marked with estimated anomaly centres and using for anomaly location a Geometrics GR410 spectrometer with a crystal volume of 21 cubic in.
Radiometric features selected for investigation are tabulated in Appendices 3 & 4; anomaly centre locations are shown on Plan NTd 3873.

Investigations of anomalies #5, 16, 32, 33, 34, 37, 38 and KC 7-1 were discussed in CRAE Report 130468 (Alexander & Colliver, 1985):
Anomaly 5 was located over a swamp.
Anomalies 16, 32, 34, 37 and 38 were found to correlate with outcrop areas of flaggy fine-grained/silty sandstone.
Anomaly 33 was found to correlate with an outcrop of ferruginous sandstone in an interpreted fault zone.
Anomaly KC 7-1 was found to correlate with an outcrop area of Hobblechain Rhyolite, exposed in a window in the Masterton Sandstone.

In the course of drainage sampling and photofeature investigation it was observed that outcrops of Gold Creek Volcanics and Hobblechain Rhyolite lithologies consistently gave scintillometer readings >200cps (variably BGS-1A, BGS-2 or BGS-4 instruments) in contrast with background readings <~50cps for the Masterton Sandstone.

Investigation of U-channel anomalies 7,8,9,10,11 was discussed in CRAE Report 130638 (Colliver, 1986b).
These features were recovered as a cluster corresponding with an annular topographic depression centred on a small mesa remnant of the Masterton Formation plateau palaeosurface at AMG 789700mE 8137800mN. Friable medium grained cross-bedded sandstone capping the mesa gave readings of ~20cps on a BGS1-A scintillometer, compared with ~150cps for an underlying lithological unit of grey to white, flaggy to blocky, kaolinitic and cherty siltstone and fine sandstone with numerous load casts, slumps and sandstone dykes.

Corresponding with the GR410-identified locality of Anomaly 7, a small outcrop of blocky sandstone with wispy phosphatic lamination gave BGS1-A readings of 350-700cps.
Rock chip sample 746881 gave analytical values of 140ppm U, 4200ppm F and 4.5% P205; base metal values were low.
Check rock chip sample 1084786 gave values of 60ppm U and 1.43% P205 (Appendix 5).
Representative rock chip grab sample 1084785, from outcrop at the GR410-identified locality of anomaly 11, analysed 9.62% K20 with only background P205 and U values.

These results, together with results of field season 1984 investigations, demonstrate the presence of intercalations within the Masterton Formation of a lithofacies association of kaolinitic and phosphatic (uraniferous) silty sandstones. Occurrence patterns suggest these intercalations to represent a single stratigraphic interval.

11.0 REFERENCES

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12.0 KEYWORDS

Diamonds, phosphate, uranium, volcanics, diamond indicators, trace elements, airborne, geophys-mag, geophys-rad, photogeology, sampling-drainage, sampling-soil, sampling-rock, geochemistry, petrography, drill-diamond, drill-auger

13.0 LOCATION

SE 53-4 Robinson River (6364 Pungalina)
(6464 Selby)

14.0 LIST OF PLANS

Plan No	Title	Scale
NTd 2018	Location plan Karns Creek EL 4166	1:250 000
NTd 3850	Location plan (1985 reduced area) Karns Creek EL 4166	1:250 000
NTd 4129	Location plan (1986 reduced area) Karns Creek EL 4166	1:250 000
NTd 3359	Karns Creek EL 4166 Sample location plan	1:100 000
NTd 3873	Karns Creek EL 4166 Airborne geophysical survey anomaly location plan	1:100 000
NTd 3281	Karns Creek EL 4166 Aeromagnetic contour plan	1:100 000

Appendix 1

INDICATOR MINERAL SAMPLING DATA

08-JAN-87

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*       *****  *****  *****  *****  *****
*         *    *        *    *      *   *
*         *    *****    *    ****   *****
*         *        *    *    *      * *
*****   *****  *****    *    *****  *  **
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A PROGRAM IN THE GASP SYSTEM TO
PRINT A LISTING OF A DATA SET

VERSION 4.0 AUG 1983.

DATA TITLE: McARTHUR BASIN SAMPLING/I.M.RESULTS

LISTING OF ARCHIVAL INFORMATION FOR THE INPUT DATA

McARTHUR BASIN ORIENTATION SAMPLING (1981)

SAMPLE NOs. 964351 - 964378
964812 - 964830
DPO NOs. 21302, 21266
PERSONNEL: R.J.Rebek, W.H.Johnston, B.E.Harvey
Collection by Toyota, from sites readily accessed from road/track crossings, of representative gravel samples from the principal drainage systems of the McArthur Basin
Two-bag drainage gravel samples sieved -4mm

RUNNING CREEK FOLLOW-UP SAMPLING (November 1981)

SAMPLE NOs. 766751 - 766762
DPO NO. 21492
PERSONNEL: R.J.Rebek, W.J.Fraser
Heavy mineral accumulation (trap) site selection and sample collection helicopter supported
Two-bag drainage gravel samples sieved -4mm

1982 SAMPLING PROGRAM (McARTHUR BASIN RECONNAISSANCE)

SAMPLE NOs. 966432 - 966450 | (Bluey Waterhole camp)
966534 - 966723 | DPO's 21381, 21382, 21383

Follow-up samplins:
965501 - 965510 (Karns Creek) DPO 21386
965640 - 965670 (") 21391

PERSONNEL: I.C.Colliver, K.R.Alexander, J.B.Chalmers
Drainage gravel sampling reference Musgeridge and Temby (1979)
Trap site selection and sample collection helicopter supported,

aimed at a reconnaissance sampling density of about 1 : 20km2
Drainage samples sieved -2mm
Kraft packet -80mesh geochemical sample sieved on site from trap site sediment

CALVERT AREA INFILL/FOLLOW-UP AND RECONNAISSANCE EXTENSION
(August-September 1983)

SAMPLE NOs. 1081327 - 1081341 (Karns infill/follow-up)
1081342 - 1081600 |
1081617 - 638 | (Reconnaissance infill
1081640 | and extension)
1081642 - 687 |
1081691 - 696 |
DPO NOs. 21397, 21398
PERSONNEL: I.C.Colliver, D.A.Sims, K.R.Alexander
Follow-up of positive results of reconnaissance sampling, infill drainage sampling (aimed at increasing sample density to about 1 : 12km2) and extension of the coverage area of reconnaissance drainage sampling
Trap site selection and sample collection helicopter supported
Drainage samples sieved -2mm (generally 1 x 20kg bag per site)
Kraft packet -80mesh geochemical sample sieved on site from active drainage sediment

RUNNING CREEK-KARNS CREEK AEROMAG FOLLOW-UP (Aug.-Sept.1983)

SAMPLE NOS. 1081601 - 1081616 | (Running Creek
1081639, 641 | -Karns Creek)
1081688 - 1081690 | DPO 21398
1081697, 698 |
PERSONNEL: G.J.Bubner, K.R.Alexander, D.A.Sims
Programs of ground investigation and sampling of magnetic anomalies selected from 1983 airborne surveys
Aeromagnetic anomaly and photocircular feature recovery, ground surveys and sample collection helicopter supported
Loam samples comprise 3-5 bags per site of (-2mm) deflated surficial soil, shallowly scraped over areas of several m2.

WEARYAN SHELF PHOTOANOMALY INVESTIGATION (May 1984)

SAMPLE NOs. 1081916 - 1091923 | DPO's 21904, 21905
821979 - 822000 | (P4792, P4793 geochem)
PERSONNEL: B.Murrell
Airphoto-anomaly selection and reconnaissance investigation by Burton Murrell (CRAE Canberra Research Group).
Loam or loamed drainage samples composited of 1-3 x 20kg bags per site of (-2mm) deflated surficial sediment, shallowly scraped over areas of several m2.

WEARYAN SHELF PALAEODRAINAGE INVESTIGATION (June 1984)

SAMPLE NOs. 813434 - 813447 DPO 27063
1082229 - 1082234 21910
PERSONNEL: F.E.Hughes, R.G.Spencer
Photo-interpreted palaeochannel feature selection and reconnaissance investigation by Frank Hughes.
Rock samples composited generally of 5 bags of outcrop chip or subcrop grab material. Drainage samples sieved -2mm

CALVERT RIVER CAMP 4/1984 INFILL AND FOLLOW-UP SAMPLING

SAMPLE NOs. 1084201 - 1084334
DPO NOs. 21934, (21933 geochem)
PERSONNEL: K.R.Alexander, D.A.Sims, P.R.Dunn, B.Murrell
Helicopter-supported programs of ground recovery and investigation of 1983 airborne survey radiometric anomalies and photogeological features, ground magnetic surveys and infill and follow-up drainage and loam sampling.
Drainage samples sieved -2mm (generally 1x20kg bag per site)
Kraft packet -80mesh geochemical sample of active drainage sediment sieved on site.
Loam samples comprise 3-5 bags per site of (-2mm) deflated surficial soil, shallowly scraped over areas of several m2.

KARNS CREEK MAG.ANOMALY RUN-14 SCOUT DRILLING (August-Sept.)

SAMPLE NOs. 970928 - 970933 DPO 21918 | DD84KC-1
(970924 20925 geochem)|
970939 - 970947 21923
PERSONNEL: D.A.Sims
Scout drilling of aeromagnetic anomaly RUN-14
Program contracted by Gaden Drilling Pty.Ltd. (Warman 1000)
Open-hole cuttings samples keyed on drill log DD84KC-1

RUNNING CREEK GEMCODRILL AUGER SAMPLING (October 1964)

SAMPLE NOs. 824230 - 824241 Photofeature RUN-C
824242 - 266 RUN-F
824267 - 272 RUN-A
824273 - 275 RUN-D
824276 - 281 RUN-E
824283 KAR-F
DPO NOs. 21934; (21930-21933 geochem)
PERSONNEL: K.R.Alexander
Follow-up investigation of selected aeromagnetic anomalies and photofeatures, by bedrock auger sampling on local grid lines of the ground magnetic surveys
Gemcodrill HT-7 operation, field logging and sampling supervision by G.R.Cullins
Samples collected each comprise 1 bag (~20 kg) bottom-hole cuttings plus a Kraft packet of representative larger chips for identification of bedrock lithology
(Geochemical samples selectively split off cuttings samples)

CALVERT RIVER CAMP 3/1985 FOLLOW-UP SAMPLING (September)

SAMPLE NOs. (1084785, 1084786 DPO 22026 geochem)
1084787 - 1084834 DPO,s 22023, 22024
PERSONNEL: I.C.Colliver, G.J.Bubner, J.H.Lew
Follow-up of positive results of previous drainage sampling and selective "loam" and rock chip sampling of ground recovered magnetic and radiometric airborne survey anomalies
Loam samples composited of 5 bags of (-2mm) surficial soil, shallowly scraped over an area of several m2
Drainage samples sieved -2mm (1-5 x 20 kg bags per site)
Kraft packet -80mesh geochemical sample sieved on site from active drainage sediment

CALVERT RIVER CAMP 2/1986 FOLLOW-UP SAMPLING (June)

SAMPLE NOs. 1312051 - 1312141
DPO's 37606, 37608, 37609,
(37610 geochem, 37611 petrology)
PERSONNEL: I.C.Colliver, B.J.Mayers
Follow-up of positive results of previous sampling in areas of EL's 1991, 4166 and ELA 4496, including infill drainage sampling and "loam" sampling of ground recovered DAEDALUS and airphoto features and aeromagnetic anomaly centres
Airborne geophysical survey anomaly, DAEDALUS feature and photofeature recovery, drainage trap site selection and sample collection helicopter supported
Loam samples composited of 5 bags of (-2mm) surficial soil, shallowly scraped over an area of several m2
Drainage samples sieved -2mm (1-5 x 20 kg bags per site)
Kraft packet -80mesh geochemical sample sieved on site from active drainage sediment

LABELS LEGEND

EAST	A.M.G. coordinates (km) including zone
NORTH	
SAMTYPE	SAMPLE TYPE coded 1 = drainage (1.2 = pan con.) 2 = loam 3 = rock 3.1 = outcrop 3.2 = float 3.3 = auger cuttings 3.4 = RD/PD " 3.5 = DD core
SAMKG	SAMPLE WEIGHT (kg)
IND1	KIMBERLITIC INDICATOR MINERAL GRAINS OBSERVED (1.D = 1 diamond) (1.CR = 1 chromite)
IND2	INDICATOR MINERAL NO.2 OR OTHER MINERAL OF INTEREST (1.CRS = 1 chrome spinel)
MICROD	NUMBER OF MICRODIAMONDS RECOVERED

********** INFORMATION ADDED BY CRUNCH **********

** COORDINATE TRANSFORMATION
THE LOCAL GRID VARIABLES EAST AND NORTH WERE TRANSFORMED TO
AMG COORDINATE VARIABLES EASTAMG AND NORTHAMG IN ZONE 53

THE FOLLOWING SELECTION CRITERIA WILL BE SATISFIED IN THIS RUN.

SAMPLES WITH
EASTAMG BETWEEN 751500.000 AND 767000.000
AND
NORTHAMG BETWEEN 8118500.000 AND 8158000.000
WILL BE SELECTED.

SAMPLE NO.	EASTAMG	NORTHAMG	SAMTYPE	SAMKG	IND1	IND2	MICRO
965648	766601	8138000	1	19.4	0	0	0
965660	761601	8128400	1	19.2	0	0	0
965661	761601	8128400	1	20.5	0	0	0
965668	761000	8135300	1	16	0	0	0
965669	761000	8135300	1	15	0	0	0
965670	753199	8132200	1	15.8	0	0	0
966579	758300	8157300	1	16	0	0	0
966644	755300	8153600	1	20	0	0	0
966645	757000	8148900	1	20.1	0	0	0
966646	764300	8156700	1	24.6	0	0	0
966658	755500	8154500	1	20.8	0	0	0
966659	755500	8154500	1	20.3	1.0	0	0
966660	764800	8157800	1	17.3	0	0	0
966668	751898	8130900	1	18.6	0	0	0
966669	752500	8125700	1	11.8	0	0	0
966670	757800	8146100	1	20.2	0	0	0
966671	759500	8137300	1	20	0	0	0
966675	766199	8129200	1	20.7	0	0	0
966680	761199	8141100	1	20	0	0	0
966681	764601	8140400	1	19.2	0	0	0
966716	762199	8122100	1	17.4	0	0	0
1081327	764000	8139400	1	19	0	0	0
1081328	758699	8143800	1	18.2	0	0	0
1081329	754601	8147500	1	18.6	0	0	0
1081340	759300	8142900	1	23.2	0	0	0
1081341	754000	8147200	1	24.7	0	0	0
1081603	755300	8119000	2	85.2	0	0	0
1081604	765699	8140400	2	83.5	0	0	0
1081605	755398	8153200	2	49.2	0	0	0
1081612	764199	8141800	2	30.2	0	0	0
1081616	757699	8121000	2	91.3	0	0	0
1081688	765699	8130800	2	54.5	0	0	0
1081689	762500	8132200	2	41.6	0	0	0
821984	755199	8155000	1	17.6	0	0	0
821985	755199	8155000	1	16.5	0	0	2
813434	760101	8119900	3	39.8	0	0	0
813435	760101	8119900	2	31.6	0	0	0
813437	752000	8125800	3	115.8	0	0	0
813438	754300	8127500	3	83.6	0	0	0
813439	754300	8127500	1	23.8	0	0	0
813444	751500	8124800	3	111.6	0	0	0
813445	753101	8130200	3	118.4	0	0	0
813446	752698	8129800	1	25.1	0	0	0
1084269	755699	8155800	1	24.8	0	0	0
1084270	755601	8155500	1	38.4	0	0	0
1084271	754300	8153300	1	24.4	0	0	0
1084272	755699	8152600	1	19.7	0	0	0
1084278	756199	8155400	1	20.8	0	0	0
1084280	754800	8152800	1	20.2	0	0	0

SAMPLE NO.	EASTAMG	NORTHAMG	SAMTYPE	SAMKG	IND1	IND2	MICRO
1084282	758601	8148500	1	22.7	0	0	0
1084287	751898	8144900	1	15.8	0	0	0
1084292	752398	8135200	3	16.8	0	0	0
1084293	752398	8135200	3	15.9	0	0	0
1084294	752398	8135200	3	15.9	0	0	0
1084298	756199	8155500	1	19.7	0	0	0
1084299	754699	8155000	1	23.4	0	0	0
1084307	754398	8155500	1	17.4	0	0	0
1084308	754000	8156700	1	16.5	0	0	0
1084309	754000	8156700	1	15.9	0	0	0
1084326	760601	8133200	1	24	0	0	0
1084327	752800	8119300	1	18.8	0	0	0
1084328	751898	8122700	1	17.8	0	0	0
1084329	752800	8126000	1	24.4	0	0	0
1084330	760199	8133100	1	16.2	0	0	0
1084331	753398	8128900	1	20	0	0	0
1084332	752701	8127600	1	24.6	0	0	0
1084333	752601	8125400	1	20.8	0	0	0
824283	757000	8154300	3.3	17.6	0	0	0

****

WE WILL NOW MAKE ANOTHER PASS THROUGH THE DATA.

A NEW SET OF TRANSFORMATIONS AND SELECTIONS WILL BE SPECIFIED.

THE FOLLOWING SELECTION CRITERIA WILL BE SATISFIED IN THIS RUN.

SAMPLES WITH
EASTAMG BETWEEN 767000.000 AND 804000.000
AND
NORTHAMG BETWEEN 8118500.000 AND 8144500.000
WILL BE SELECTED.

SAMPLE NO.	EASTAMG	NORTHAMG	SAMTYPE	SAMKG	IND1	IND2	MICRO
766754	795000	8143100	1	26.4	0	0	0
766755	786601	8140500	1	29	0	0	0
766756	781300	8134100	1	26	0	0	0
766757	796101	8142500	1	26.6	0	0	0
766758	788699	8137700	1	27	0	0	0
766760	784500	8142600	1	24.8	0	0	0
766761	792199	8144200	1	27	0	0	0
766762	787500	8131800	1	23.3	0	0	0
965507	768199	8132000	2	16.4	0	0	0
965508	767398	8132200	1	25.2	0	0	0
965509	767398	8131700	1	19.3	0	0	0
965510	767398	8131700	1	19.7	0	0	0
965640	768199	8133900	1	19.2	0	0	0
965641	768199	8133900	1	17.2	0	0	0
965642	768199	8133900	1	20.4	0	0	0
965643	767800	8133800	1	21.6	0	0	0
965644	767800	8133800	1	22.7	0	0	0
965645	768601	8133700	1	20.7	0	0	0
965646	768601	8133700	1	19	0	0	0
965647	767199	8137600	1	15	0	0	0
965649	768898	8136700	1	18.6	0	0	0
965650	772000	8131900	1	17.8	0	0	0
965651	772000	8131900	1	17.4	0	0	0
965652	773898	8130500	2	26.3	0	0	0
965653	777000	8127100	1	21.1	0	0	0
965654	776699	8127100	1	21.6	0	0	0
965655	780800	8125700	1	20	0	0	0
965656	776500	8128700	1	18	0	0	0
965657	776500	8128700	1	18.2	0	0	0
965658	772699	8126300	1	14.5	0	0	0
965659	772699	8126300	1	18.2	0	0	1
965662	781500	8141000	1	15.8	0	0	0
965663	780601	8134600	1	17.4	0	0	0
965664	781000	8130200	1	24.4	0	0	0
965665	781398	8129900	1	16.6	0	0	0
965666	781398	8129900	1	16.1	0	0	0
965667	781699	8130100	1	18.4	0	0	0
966444	801500	8142000	1	15.6	0	0	0
966445	800601	8138500	1	16	0	0	0
966546	801300	8141700	1	18.8	0	0	0
966547	798300	8140400	1	19	0	0	0
966570	770199	8140100	1	17.1	0	0	0
966639	797800	8122900	1	19.5	0	0	0
966640	793101	8120700	1	20.4	0	0	0
966641	791500	8120700	1	18.7	0	0	0
966653	798699	8123200	1	18.3	0	0	0
966654	792699	8121100	1	21	0	0	0
966672	768398	8131300	1	20.4	0	0	0
966673	768199	8133900	1	22	1.D	0	1
966674	770800	8131500	1	17.2	0	0	0

SAMPLE NO.	EASTAMG	NORTHAMG	SAMTYPE	SAMKG	IND1	IND2	MICRO
966682	769300	8131700	1	16.8	0	0	0
966683	768500	8133900	1	15.7	0	0	0
966684	771800	8132000	1	19.8	0	0	1
966685	767500	8127700	1	18.1	0	0	0
966686	775101	8122300	1	19.5	0	0	0
966687	769199	8122300	1	20.3	0	0	0
966688	776398	8119100	1	21	0	0	0
966690	781699	8119000	1	20.2	0	0	0
966701	774101	8129900	1	22	0	0	0
966702	777000	8127100	1	14	0	0	0
966703	776101	8123600	1	17.7	0	0	0
966704	775300	8119000	1	17.3	0	0	0
966706	782101	8119600	1	20	0	0	0
1081601	777199	8133800	2	58	0	0	0
1081602	777398	8133800	2	76	0	0	0
1081613	777800	8140000	2	101.3	0	0	0
1081614	773699	8133800	2	14.6	0	0	0
1081615	770398	8120500	2	88.3	0	0	0
1081641	777000	8121000	2	64.2	0	0	0
821986	802000	8124700	1	19.2	0	0	0
821987	802000	8124700	1	16.1	0	0	0
970928	777300	8133700	3.4	27.8	0	0	0
970929	777300	8133700	3.4	24.5	0	0	0
970930	777300	8133700	3.4	21.1	0	0	0
970931	777300	8133700	3.4	21.7	0	0	0
970932	777300	8133700	3.4	15.5	0	0	0
970933	777300	8133700	3.4	21.9	0	0	0
970939	777300	8133700	3.4	20	0	0	0
970940	777300	8133700	3.4	22	0	0	0
970941	777300	8133700	3.4	22	0	0	0
970942	777500	8133700	3.4	20	0	0	0
970943	777500	8133700	3.4	20	0	0	0
970944	777500	8133700	3.4	20.5	0	0	0
970945	776800	8133400	3.4	17.6	0	0	0
970946	776800	8133400	3.4	21.2	0	0	0
970947	776800	8133400	3.4	20.5	0	0	0
1084205	793199	8143200	1	20.3	0	0	0
1084210	794300	8136500	1	22.4	0	0	0
1084216	789898	8135000	1	24.2	1.D	0	0
1084217	785398	8138400	1	28.5	0	0	0
1084218	782000	8131900	1	23.9	0	0	0
1084220	803000	8131400	1	19.6	0	0	0
1084221	790101	8136000	1	21.8	1.D	0	0
1084222	786101	8137900	1	22	0	0	1
1084224	784199	8129600	1	20.5	0	0	0
1084225	803500	8126000	1	20	0	0	0
1084226	798699	8129300	1	21.6	0	1.CRS	0
1084227	794500	8122600	1	17.4	0	0	0
1084228	790000	8122600	1	23.2	0	0	0

SAMPLE NO.	EASTAMG	NORTHAMG	SAMTYPE	SAMKG	IND1	IND2	MICRO
1084229	791398	8128300	1	22.3	0	0	0
1084230	789300	8130500	1	25	0	0	1
1084231	801398	8133000	1	17	0	0	0
1084232	796898	8123200	1	20.5	0	0	0
1084233	794300	8121900	1	18	0	0	0
1084234	790898	8128100	1	18.5	0	0	0
1084235	788800	8130400	1	20.8	0	0	0
1084241	784300	8128900	1	21.3	0	0	0
1084255	799699	8133300	1	14.1	0	0	0
1084261	799699	8133300	1	15.6	0	0	0
1084262	799699	8133300	1	14.9	0	0	0
1084263	799500	8133500	2	12.6	0	0	0
1084264	799500	8133500	2	12.5	0	0	0
1084273	799500	8136200	1	20	0	0	0
1084281	798800	8135900	1	16.4	0	0	0
1084284	795300	8136700	1	19.8	0	0	0
1084285	795601	8142000	1	21.4	0	0	0
1084286	798199	8136400	1	18	0	0	0
1084291	795199	8142200	1	22	0	0	0
1084295	803601	8134600	1	17	0	0	0
1084300	795000	8121100	1	17.4	0	0	0
1084301	788398	8120700	1	21.9	0	0	0
1084302	797500	8128100	1	17	0	0	0
1084303	783398	8127500	1	20.5	0	0	0
1084305	785500	8132400	1	21.4	0	0	0
1084306	786800	8132200	1	20.4	0	0	0
1084311	800199	8121800	1	17.4	0	0	0
1084312	789000	8120000	1	21.7	0	0	1
1084313	800398	8130500	1	17.6	0	0	0
1084314	796800	8128800	1	17.8	0	0	0
1084315	783500	8128300	1	23.2	0	0	0
1084316	788601	8141400	1	20.4	0	0	0
1084317	791199	8140500	1	24.1	0	0	0
1084318	779101	8132900	1	18.9	0	0	0
1084319	778601	8132900	1	22.3	0	0	0
1084322	799800	8133700	3				
1084323	795000	8121100	3				
1084334	791500	8135600	3				
824267	798199	8143900	3.3	25.8	0	0	0
824268	798199	8143900	3.3	21.4	0	0	0
824269	798199	8143900	3.3	21.8	0	0	0
824270	798199	8143900	3.3	21.6	0	0	1
824271	798199	8143900	3.3	22.2	0	0	0
824272	798199	8143900	3.3	22.4	0	0	0
824273	802300	8142700	3.3	16.3	0	0	0
824274	802300	8142700	3.3				
824275	802300	8142700	3.3				
1084785	789398	8138400	3.1				
1084786	790300	8138500	3.1				
1084787	791000	8135300	2	105.8	0	1.CR	0

SAMPLE NO.	EASTAMG	NORTHAMG	SAMTYPE	SAMKG	IND1	IND2	MICRO
1084788	789800	8135200	1	113	0	0	0
1084789	790199	8136000	1	116.4	0	0	0
1084790	791898	8131800	1	67.3	0	0	0
1084791	791199	8131700	1	63.6	0	0	0
1084792	789300	8130400	1	103.1	0	0	0
1084793	793398	8132100	2	118.7	0	0	0
1084794	798199	8128900	1	36.5	0	0	0
1084795	798500	8129600	1	40	0	0	0
1084796	789300	8136400	2	97.7	0	0	0
1084797	793300	8132100	1	70	0	0	0
1084798	789800	8135700	1	60.6	0	0	0
1312051	789000	8132700	2	85.1	0	0	0
1312052	791300	8133400	1	73	0	0	0

END

NUMBERS THAT ARE CODED REPRESENT "SPECIAL VALUES". THESE VALUES WILL BE EXCLUDED FROM ALL CALCUALTIONS IN THE MICRO-GAS SYSTEM.

Appendix 2

TABULATION OF AEROMAGNETIC ANOMALIES SELECTED FROM RUNNING CREEK AIRBORNE SURVEY STACKED PROFILES AND CONTOURS

Survey flown by Geoterrex June-July 1983
Anomalies selected by G.P.Jenke, August 1983

Appendix 2

TABULATION OF AEROMAGNETIC ANOMALIES SELECTED FROM RUNNING CREEK AIRBORNE SURVEY STACKED PROFILES AND CONTOURS

11th-17th AUGUST 1983

LEGEND OF TABLE HEADINGS

LINE No. (LINE) : Survey flight or tie line number

FIDUCIAL (FID) : Fiducial of anomaly centre

AMPLITUDE (AMP) : Amplitude of anomaly in nanoTeslars

WIDTH (WID) : Width of anomaly measured in cm on profile plots (approximating units of 250 metres)

MAP SHEET (MAP) : 1:100,000 map sheet reference
(P = Punsalina 6364)
(S = Selby 6464)

ANOMALY No. (No.) : Anomaly identification number

COORDINATES (COORDS - AMG) : Zone 53 AMG Eastins and Northins of anomaly centre

SHEET No. (SH) : 1:25,000 sheet designation

PHOTO No. (PHOTO) : Photo run/frame number
(Aerial Surveys 1983 - Running Creek)

LINE	FID	AMP	WID	MAP	No.	COORDS - AMG	SH	PHOTO
213.1	41600	52	1.5	S	16	792070 8133375	KC4	R3/4316
233.1	39328	13	2.5	S	25	786335 8124525	KC7	R4/4303
234.5	38987	16	2.5	S	25	786070 8124715	KC7	R4/4303
235.1	36762	3	2.5	S	25	785710 8124700	KC7	R4/4303
262.1	51665	4	1.5	S	15	777850 8139850	KC3	R3/4318
264.3	31982	50	2	S	14	777050 8133710	KC3	R3/4318
265.1	53951	38	2	S	14	776960 8134000	KC3	R3/4318
265.1	53721	17	2.5	S	23	776625 8118890	KC6	R4/4301
266.5	56382	14	2	S	23	776340 8118980	KC6	R4/4301
267.1	56494	5	2	S	23	776125 8118960	KC6	R4/4301
266.5	56294	6	0.5	S	24	776380 8124675	KC6	R4/4301
275.2	39189	7	1.5	S	13	773810 8133780	KC3	R3/4318
276.1	39733	9	1.5	S	13	773585 8133770	KC3	R3/4318
281.1	43213	4	1.5	S	22	771850 8121600	KC6	R4/4301
286.1	46264	4	1.5	S	21	770410 8120630	KC6	R4/4301
287.1	46470	4	1.5	S	21	770210 8120570	KC6	R4/4301
302.1	56933	8	1.5	P	12	765770 8140270	KC2	R3/4320
307.3	32122	5	1	P	11	764275 8141850	KC2	R3/4320
307.3	32286	4	0.5	P	4	764280 8152640	KC1	R2/4357
307.2	31680	3	1.5	P	20	763940 8124150	KC5	R4/4299
308.3	33106	4	1.5	P	20	763810 8124150	KC5	R4/4299
314.4	38171	3	0.5	P	3	762175 8148430	KC1	R2/4357
320.2	43749	3	2	P	10	760375 8138100	KC2	R3/4320
321.2	44529	2	2	P	10	759965 8138080	KC2	R3/4320
321.2	44487	3	2	P	9	759950 8135230	KC2	R3/4320
322.2	45354	4	2	P	9	759780 8135265	KC2	R3/4320
322.2	45549	1	0.5	P	19	759565 8123915	KC5	R4/4299
323.3	46193	1	0.5	P	19	759190 8124090	KC5	R4/4299
324.2	47423	5	1	P	19	758915 8124125	KC5	R4/4299
325.3	48077	3	0.5	P	19	758650 8124050	KC5	R4/4299
326.4	49760	3	0.5	P	8	758580 8138510	KC2	R3/4320

LINE	FID	AMP	WID	MAP	No.	COORDS - AMG	SH	PHOTO
328.3	51277	27	3	P	7	758000 8140395	KC2	R3/4320
329.4	32543	36	4	P	7	757785 8140380	KC2	R3/4320
330.1	52145	20	4	P	7	757420 8140485	KC2	R3/4320
329.1	57760	3	0.5	P	2	757750 8151125	KC1	R2/4357
332.2	53840	1	0.5	P	6	756850 8145400	KC2	R3/4320
332.2	53595	9	3	P	18	756850 8130000	KC5	R4/4299
333.2	54787	5	3	P	18	756510 8130050	KC5	R4/4299
336.1	56672	5	1	P	17	755330 8119125	KC5	R4/4299
337.1	57643	3	1	P	1	755410 8153260	KC1	R2/4357
337.1	57973	3	0.5	P	5	755350 8134775	KC2	R3/4320

Appendix 3

TABULATION OF RADIOMETRIC ANOMALIES SELECTED FROM RUNNING CREEK - KARNS CREEK AIRBORNE SURVEY ANALOGUES

Survey flown by Geoterrex June-July 1983
Anomalies selected by G.F.Jenke, September 1983

LEGEND OF TABLE HEADINGS

LINE No. (LINE) :	Survey flight or tie line number
FIDUCIAL (FID) :	Fiducial of anomaly centre
URANIUM RESPONSE (U) :	Amplitude (x background) of U-channel anomaly
THORIUM RESPONSE (T) :	Amplitude of Th-channel anomaly (coincident with a U-channel anomaly)
POTASSIUM RESPONSE (K) :	Amplitude of K-channel anomaly (coincident with a U-channel anomaly)
ANOMALY No. (No.) :	Anomaly identification number
COORDINATES (COORDS - AMG) :	Zone 53 AMG Easting and Northing of anomaly centre
SHEET No. (SH) :	1:25,000 sheet designation
PHOTO No. (PHOTO) :	Photo run/frame number (Aerial Surveys 1983 - Running Creek)

LINE	FID	U	T	K	No.	COORDS - AMG	SH	PHOTO
217.4 S	35780	2.5			3	791035 8140955	KC4	R3/4316
218.1 N	55090	3.5			4	790820 8141165	KC4	R3/4316
220.2 N	50913	2			7	790300 8138500	KC4	R3/4316
221.1 S	49471	2	1.5	4	8	789995 8137850	KC4	R3/4316
221.2 S	50111	2.5	2	20	2	789890 8122170	KC7	R4/4303
222.1 N	48116	3	3	15	9	789765 8137550	KC4	R3/4316
223.2 S	47310	3.5	2.5	10	10	789600 8138470	KC7	R3/4316
224.1 N	45737	3	2.5	15	11	789280 8138400	KC4	R3/4316
226.1 S	43708	2			5	788670 8141150	KC4	R3/4316
226.1 S	43781	2.5			12	788600 8136840	KC4	R3/4316
226.1 S	43831	6	2	2	17	788555 8134120	KC4	R3/4316
227.1 N	43338	4	3	5	18	788210 8134060	KC4	R3/4316
227.1 N	43343	3	3	5	19	788215 8134375	KC4	R3/4316
228.1 S	42639	3			21	788040 8134785	KC4	R3/4316
228.1 S	42648	4	2	4	20	788040 8134310	KC4	R3/4316
231.1 N	41119	2			13	787080 8138485	KC4	R3/4316
231.1 N	41161	3			6	787100 8141270	KC4	R3/4316
236.1 S	36233	5	2		22	785660 8134390	KC4	R3/4316
237.2 N	35811	3			23	785340 8134575	KC4	R3/4316
238.2 S	34487	3			24	784960 8134000	KC4	R3/4316
240.1 S	32886	2.5			14	784475 8138525	KC4	R3/4318
240.1 S	32959	4			26	784385 8134735	KC4	R3/4318
240.1 S	32976	2.5			25	784370 8133600	KC4	R3/4318

LINE	FID	U	T	R	No.	COORDS - AMG	SH	PHOTO
241.1 N	32495	4			27	784130 8134120	KC4	R3/4318
242.1 S	37585	4	2	2	28	783830 8134275	KC4	R3/4318
242.1 S	37634	2			32	783750 8131690	KC7	R4/4301
243.2 N	39166	2			33	783430 8131840	KC4	R3/4318
243.2 N	39202	3			29	783435 8134380	KC4	R3/4318
243.2 N	39271	2			15	783620 8139285	KC4	R3/4318
246.1 S	41331	2	2	2	35	782550 8133660	KC4	R3/4318
246.1 S	41346	3	2	2	34	782515 8132790	KC4	R3/4318
247.1 N	41912	3			36	782205 8131830	KC4	R3/4318
247.1 N	41951	3.5			30	782300 8135435	KC4	R3/4318
248.2 S	43171	3			31	782105 8135030	KC4	R3/4318
249.1 N	44057	2.5			37	781620 8133040	KC4	R3/4318
250.1 S	44469	2	3	5	16	781520 8140285	KC4	R3/4318
251.1 N	45197	3.5			38	781055 8132570	KC4	R3/4318
336.1 N	57270	2.5			39	755770 8156830	KC1	R2/4357

Appendix 4

TABULATION OF RADIOMETRIC ANOMALIES SELECTED FROM RUNNING CREEK - KARNS CREEK AIRBORNE SURVEY ANALOGUES

Survey flown by Geoterrex June-July 1983
Anomalies selected by C.G.Anderson, September 1984

C.R.A. EXPLORATION PTY. LIMITED
(Incorporated in New South Wales)
18 Km. STUART HIGHWAY, BERRIMAH, N.T.

P.O. BOX 39598,
WINNELLIE, N.T. 5789.
TELEGRAMS: "EXPLORECO"
TELEPHONE: 84 4066
TELEX: AA85354.

12 September 1984

Memorandum to: W.H. Johnston

copy to: G.J. Bubner

from: C.G. Anderson

re: Running Creek/Karns Creek radiometric data

Analogs for the Running/Karns Creeks surveys were inspected for possible radiometric expressions of kimberlitic intrusives.

The selected anomalies were classified according to combined radiometric and magnetic responses as follows:-

Class 1	Minor radiometric feature, with vague or indiscernible magnetic expression.
Class 2	Radiometric anomaly, due to non-potassium (generally Uranium) channel with discernible magnetic association.
Class 3A	Radiometric (potassium) anomaly with unusual magnetic expression (e.g. broad magnetic lows, "noisy" mag features etc).
3B	Unusual magnetic features with weak or no (potassium) radiometric anomaly.
Class 4A	Radiometric (potassium) anomaly with distinctly anomalous magnetic expression (di-polar source, obvious 'spike').
4B	Distinct magnetic feature with no discernible radiometric expression.

To evaluate the radiometric features, the most prominent anomalies from Classes 2 and 3A plus all Class 4A features have been plotted on the attached 1:100,000 plan and are described in the attached lists.

A cut-off of 3 times background was applied to the radiometric features, except in a few cases where the magnetic expression was considered to be exceptional (in Class 3A).

Finally, it should be noted that large amplitude potassium features associated with strong magnetic relief in the NE section of the survey area were discounted, except in cases where unusual radiometric and magnetic features coincided.

C.G. ANDERSON

ANOMALY	FLIGHT LINE LINE	FID	MAGNETIC AMP (nTa)	MAGNETIC WIDTH (fid.values)	SIGNATURE (x background)	CLASS	REMARKS
RC3-1	106.1	49865	30	10	U (2x)	2	
RC3-2	113.1	44145	-15	10	K (U)1.7x	3A	
RC3-2	114.1	43885	-15	10	K 2x	3A	
RC3-2	115-1	43055	-15	10	K 2x	3A	
RC3-3	118.1	41700	25	25	K 3x	3A	Two mag. peaks.
RC3-4	124.1	38115	10	5	K 3x	3A	
RC6-1	127.1	36235	-5	10	K 2x	4A	
RC6-2	130.2	33190	-10	10	K 3x	3A	
RC3-5	130.4	33940	25	15	K 2.5x	3A	
RC3-5	130.6	32150	25	10	K 2.5x	3A	
RC3-6	134.1	56235	5	5	K 3.5x	3A	
RC6-3	136.1	55257	10	10	K 4x	3A	
RC6-3	137.1	54235	10	10	K 5x	3A	
RC6-4	138.1	53820	60	10	K 3x	3A	
RC6-5	139.1	52995	85	20	K 4x	3A	K peak near centred of complex mag. zone.
RC6-6	147.1	46810	25?	10	K 3x	3A	Complex mag.
RC6-6	148.1	46650	25	10	K 3x	3A	
RC6-6	150.1	45430	55	10	K 5x	3A	
RC6-6	151.1	44280	8	10	K 4x	3A	
RC6-7	150.1	45225	10	5	T.C. 2x	4A	

ANOMALY	FLIGHT LINE LINE	FID	MAGNETIC AMP (nTa)	MAGNETIC WIDTH (fid.values)	RADIOM (x background)	CLASS	REMARKS
RC3-7	151.1	44700	15	5	K 2x	4A	
RC6-8	153.1	43215	-25	5	K 2x	4A	
RC6-9	155.1	41760	50	10	K 4x	3A	Broad radiometric.
RC5-1	157.1	40480	20	3	K 5x	4A	
RC5-2	158.2	40387	10	3	K 3x	3A	
RC5-3	160.1	38460	10	2	K 3x	4A	
RC2-1	170.1	58045	30	10	K 3x	3A	
RC5-4	172.1	56497	20	3	K 7x	4A	
RC2-2	175.1	54630	25	15	K 5x	3A	Broad zone.
RC2-3	180.2	47750	20	7	U 1.8x	2	
RC2-4	180.2	47810	-30	15	K 5x	3A	
RC2-4	181.1	46460	-30	15	K 4x	3A	
RC5-5	182.2	45925	50	7	K 5x	3A	Broad R.m. zone.
RC5-6	182.2	46018	35	3	K 4x	4A	
RC2-5	191.1	37950	70	10	K 5x	3A	
RC5-7	192.1	37244	75	10	K 8x	3A	
RC5-8	192.1	37514	90	5	K 5x	4A	
RC2-6	192.1	37585	40	6	K 5x	3A	

ANOMALY	FLIGHT LINE LINE	FID	MAGNETIC AMP (nTa)	MAGNETIC WIDTH (fid.values)	RADIOM (x background)	CLASS	REMARKS
RC5-9	194.1	34797	-20	3	K 13x	3A	Broad R.m. zone
RC5-10	195.1	32728	15	3	K 8x	3A	
RC5-11	198.2	55089	-50	3	K 4x	4A	
RC2-7	199.1	53880	-30	12	K 4x	4A	
RC5-12	202.1	52180	90	3	K 2.5x	4A	
RC2-8	202.1	52260	-20	2	K 7x	4A	
RC2-8	203.1	51540	120	5	K 6x	4A	U channel 2x b.g.
RC2-8	204.1	50997	160	5	K 7x	4A	U channel 1.8 x b.g.
RC5-13	208.2	47261	-90	7	K 5x	3A	
KC4-1	211.1	45733	40	5	K 2x	4A	
KC4-2	213.1	41560	30	5	K 6x	3A	
KC4-3	213.1	41598	50	7	K 7x	3A	Broad R.m zone.
KC7-1	215.2	39020	60	6	K 3x	3A	
KC7-2	218.1	54880	-20	4	K 20x	3A	High Th channel
KC4-12	217.4	35780	45	20	U 4x	2	U peak near centre of complex mag.
KC4-4	221.1	49350	40	4	K 4x	3A	
RC1-1	224.1	46100	120	10	K 3.5x	3A	
RC4-1	226.1	43642	-20	5	k 15x	3A	High Th channel

ANOMALY	FLIGHT LINE LINE		MAGNETIC AMP (nTa)	MAGNETIC WIDTH (fid.values)	RADIOM (x background)	CLASS	REMARKS
KC4-5	235.1	36995	35	15	U 2x	2	
KC4-6	241.1	32457	20	20	U,Th 2x	2	
KC4-7	243.2	39275	5	10	T.C.(U) 2x	4A	
KC4-8	244.2	39800	-15	30	T.C. 3x	3A	Broad mag.low incl 'noisy' zones
KC4-9	245.1	40747	-15	35	K 20x	3A	" "
KC4-10	247.1	42015	-15	30	K 10x	3A	" "
KC3-1	259.1	49920	20	10	K 4x	3A	
KC3-2	262.1	51762	10	5	T.C.1.5x	4A	
KC3-3	264.2	53342	40	4	K 1.5x	4A	
KC3-3	264.3	31982	40	4	-	4B	
KC3-3	265.1	53950	35	4	Weak K	4A	
KC3-4	273.1	37580	5	10		3A	T.C. low in 'noisy' mag. area
KC3-5	276.1	39710	10	3	Weak K	4A	
KC3-6	280.4	42715	5	4	Weak K	4A	
KC3-7	291.1	49186	-10	10	K 2x	3A	K anomaly narrow pe
KC3-8	299.1	54500	5	10	K 6x	3A	
KC2-1	302.1	56935	10	5	K 2x	4A	Two mag. peaks.
KC2-2	302.1	57000	-30	20	K 4x	3A	K peak in centre of mag. low.
KC2-3	304.4	375782	-10	10	K 4x	3A	

ANOMALY	FLIGHT LINE LINE	FID	MAGNETIC AMP (nTa)	MAGNETIC WIDTH (fid.values)	RADI M (x background)	CLASS	REMARKS
Kc2-4	307.3	32050			K 4x	3A	Broad mag. low.
KC2-5	312.2	36295	-20	20	K 2x	3A	Broad radiam high over mag. low + 'noisy'
KC2-6	315.3	39485	∓ 5	12	K 2x	4A	Three mag. peaks.
KC2-7	321.2	44595	-10	15	K 4x	3A	
KC1-1	332.2	54043	4	3	K 2x	4A	
KC5-1	340.1	35605	-15	20	K 3x	3A	
KC1-2	342.1	37607	∓2	10	U 1.5x	2	
KC2-8	344.1	39535			K 4x	3A	Broad mag. low.
KC5-2	702.2	35985	-20	30	K 3x	3A	
KC4-11	706.1	39280	-25	10	U 2.5x	2	
KC1-4	710.1	41166	3	4	K 2x	4A	

Appendix 5

GEOCHEMICAL ANALYSIS REPORTS

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SOIL SAMPLING LEDGER

D.P.O. No. 20799/21933/20800

DATE 22·11·84 / 8·11·84

AREA KARNS CREEK - EL 4166

ROCK SAMPLE Nos. 1084322, 1084323, 1084324

COLLECTED BY D. SIMS

MAP OR PHOTO REFERENCE SE 53-4 ROBINSON RIVER

ANALYSED BY ANALABS

Grid Co-ordinate	Sample No.	Metal content, p. p. m.									(% where indicated)													Geological observations
		Pb	Zn	Cu	Ni	Co	Cr	Mn	V	Rb	Sr	Ba	Y	La	Zr	Nb	Th	U	Au	Na2O%	MgO%	H2O3%		
799·8mE	1084322	x	20	35	55	10	15	160	15	190	25	720	60	60	430	20	35	8	0·005	0·070	1·82	11·2		PHOTOFEATURE KAR G
8133·7mN																								BRECCIA PIPE
		SiO2%	P2O5%	K2O%	CaO%	TiO2%	MnO%	Fe2O3%	LOI %	Ce	Pr	Nd	Sm	Eu	Tb	Dy	Ho	Er	Yb					
		74·1	0·04	6·89	0·080	3290	270	3·81	1·79	102	x	47	8	2	x	11	x	7	8					
795·0mE	1084323	Pb	Zn	Cu	Ni	Co	Cr	Mn	V	Rb	Sr	Ba	Y	La	Zr	Nb	Th	U	Na2O	MgO%	H2O3%	SiO2%		Brecciated amygdaloidal volcanics
8121·1mN		35	75	155	85	35	50	910	150	180	10	800	35	70	170	15	20	x	450	0·9	11·7	57·0		andesitic to basaltic in composition
		P2O5%	K2O%	CaO%	TiO2%	MnO%	Fe2O3%	FeO%	SO3%	CO2%	H2O+%	H2O-%												Evidence of alteration & cavity quar
		0·174	8·55	0·24	2·10	0·15	15·9	1·00	0·01	0·25	1·75	0·22												fillings. In places not amygdaloida
																								but more massive.
791·5mE	1084334	Pb	Zn	Cu	Ni	Co	Cr	Mn	V	Rb	Sr	Ba	Y	La	Zr	Nb	Th	U	Na2O	MgO%	H2O3%	SiO2%		A siltstone, fine detrital quartz
8135·6mN		10	70	90	95	160	55	2·45%	70	15	30	2550	80	170	45	x	20	10	150	x	1·10	5·90		grains and a ferruginous rock. Identi
		P2O5%	K2O%	CaO%	TiO2%	MnO%	Fe2O3%	FeO%	SO3%	CO2%	H2O+%	H2O-%												any signs of alteration and the
		0·174	8·55	0·24	2·10	0·15	15·9	1·00	0·01	0·25	1·75	0·22												nature of the fine grained matrix
																								material. PHOTOFEATURE KAR H

FORM No. 134

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

Phone (09) 458 7999 — 52 Murray Road, Welshpool, W.A. 6106 — Telex AA92560

ANALYTICAL REPORT No. 15.8 14 1074

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

CRA Exploration Pty Ltd
PO Box 39598
Winnellie
N.T. 5789

ORDER No.	PROJECT
20799	4259

DATE RECEIVED	RESULTS REQUIRED
14.11.84	

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
	22.11.84	3	4

STATE OF SAMPLES	PRE-TREATMENT								ANALYSIS		
REFER BELOW	SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
RO	1084323-25,34		1	3	2 4				Mn Cr Ni Co Cu Zn Pb V Rb Sr Ba Y La Zr Nb Th U Whole Rock		101 101 401 401 408

RESULTS TO: K. R. ALEXANDER

RESULTS TO:

REMARKS

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1074	22.11.84	20799	1 OF 4

TUBE No.	SAMPLE No.	H2O-%	H2O+%	CO2%	Na2O	MgO%	Al2O3%	SiO2%	P2O5%	SO3%
1	1084323	0.22	1.75	0.25	450	0.9	11.7	57.0	0.174	0.01
2	1084324	0.73	3.00	0.30	450	1.0	16.9	55.9	0.076	0.01
3	1084325	0.36	2.90	0.20	500	0.1	14.5	51.5	0.277	0.05
4	1084334	0.44	5.80	0.55	150	x	1.10	5.90	0.252	0.06
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01	0.01	0.05	50	0.1	0.05	0.1	0.007	0.01
24	DIGESTION									
25	METHOD	408	408	603	104	408	408	408	402	603

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

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A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1074	22.11.84	20799	2 OF 4

TUBE No.	SAMPLE No.	K20%	CaO%	TiO2%	V	Cr	Mn	MnO%	FeO%	Fe2O3%
1	1084323	8.55	0.24	2.10	150	50	910	0.15	1.00	15.9
2	1084324	12.3	0.10	3.25	150	20	675	0.10	0.60	5.25
3	1084325	11.0	0.09	2.80	170	40	2700	0.45	0.20	15.3
4	1084334	0.50	0.08	0.13	70	55	2.45%	8.90	x	74.7
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01	0.01	0.01	5	5	5	0.01	0.05	0.01
24	DIGESTION									
25	METHOD	408	408	408	401	101	101	408	608	408

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1074	22.11.84	20799	3 OF 4

TUBE No.	SAMPLE No.	Co	Ni	Cu	Zn	Rb	Sr	Y	Zr	Nb
1	1084323	35	85	155	75	180	10	35	170	15
2	1084324	30	35	220	15	260	20	90	250	10
3	1084325	35	55	135	25	190	80	45	220	15
4	1084334	160	85	90	70	15	30	80	45	x
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	5	5	5	5	5	3
24	DIGESTION									
25	METHOD	101	101	101	101	401	401	401	401	401

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1074	22.11.84	20799	4 of 4

TUBE No.	SAMPLE No.	Ba	La	Pb	Th	U	Total%			
1	1084323	800	70	35	20	x	99.9			
2	1084324	920	85	x	25	3	99.6			
3	1084325	2650	70	x	25	x	99.8			
4	1084334	2550	170	10	20	10	98.5			
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	20	20	5	4	3				
24	DIGESTION									
25	METHOD	401	401	101	401	401	408			

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.
Phone (09) 458 7999 — 52 Murray Road, Welshpool, W.A. 6106 — Telex AA92560

ANALYTICAL REPORT No. 15.8 14 1062

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

CRA Exploration Pty Ltd
PO Box 39598
Winnellie
N.T. 5789

ORDER No.	PROJECT
21933	4259

DATE RECEIVED	RESULTS REQUIRED
8.11.84	

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
	22.11.84	3	1

STATE OF SAMPLES		PRE-TREATMENT							ANALYSIS		
REFER BELOW	SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
RO	1084322		1	3	2 4				Various		

RESULTS TO: D. Sims

RESULTS TO:

REMARKS

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1062	22.11.84	21933	1 OF 5

TUBE No.	SAMPLE No.	Na2O%	MgO%	Al2O3%	SiO2%	P2O5%	K2O%	CaO%	TiO2	V
1	1084322	0.070	1.82	11.2	74.1	0.04	6.89	0.080	3290	15
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.007	0.002	0.04	0.2	0.02	0.06	0.007	30	5
24	DIGESTION									
25	METHOD	204	204	204	204	204	204	204	204	401

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1062	22.11.84	21933	2 OF 5

TUBE No.	SAMPLE No.	Cr	Mn	MnO	Fe2O3%	Co	Ni	Cu	Zn	Rb
1	1084322	15	160	270	3.81	10	55	35	20	190
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	30	0.03	5	5	5	5	5
24	DIGESTION									
25	METHOD	101	101	204	204	101	101	101	101	401

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1062	22.11.84	21933	3 OF 5

TUBE No.	SAMPLE No.	Sr	Y	Zr	Nb	Ba	La	Ce	Pr	Nd
1	1084322	25	60	430	20	720	60	102	x	47
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	3	20	10	15	20	20
24	DIGESTION									
25	METHOD	401	401	401	401	401	401	203	203	203

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1062	22.11.84	21933	4 OF 5

TUBE No.	SAMPLE No.	Sm	Eu	Tb	Dy	Ho	Er	Yb	Ru	Pb
1	1084322	8	2	x	11	x	7	8	0.005	x
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	1	5	5	20	2	2	0.005	5
24	DIGESTION									
25	METHOD	203	203	203	203	203	203	203	305	101

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1062	22.11.84	21933	5 OF 5

TUBE No.	SAMPLE No.	Th	U	LOI%						
1	1084322	35	8	1.79						
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	4	3	0.01						
24	DIGESTION									
25	METHOD	401	401	204						

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

C.R.A. EXPLORATION PTY. LIMITED

(Incorporated in New South Wales)

Head Office: 95 Collins Street, Melbourne, 3000

D.P.O № 21932

A MEMBER OF THE C.R.A. GROUP

Date 7-11-84

From Office located at DARWIN

To ANALABS, WINNELLIE

DESPATCH ADVICE, PACKING LIST AND ORDER

The following samples have been despatched to you per 11/ND DELIVERY

addressed ..... No. of Samples 2

Please carry out the work required and report results to ATTN I COLLIVER

CRA EXPLORATION P/L PO BOX 39598, WINNELLIE NT 5789

A copy of the report should be forwarded with the ~~Invoice~~ to this Company, G.P.O. Box 384D, Melbourne, Vic., 3001 PO BOX 656 CASUARINA NT 2609

Please quote our order number on report and Invoice. INVOICE DARWIN

Samples		Work Required
Serial Numbers	Quantity	
824282 824283	(2)	GEMCO AUGER CUTTING SAMPLE PLEASE PREPARE AS NECESSARY & ANALYSE FOR AAS CODE 101 V, Mn, Cr, Ni, Co, Cu, Zn, Pb, XRF CODE 401 Rb, Sr, Ba, Y, La, Zr Nb, Th, U. TCP CODE 204 SILICATE ANALYSIS.

Paid
Inv. 14-1015.
Date. 30.11.84
Amt $135.79

LOCATION (Head office & file copies only) SE 53-4 ROBINSON RIVER

SAMPLE PREPARATION ~~IS~~ / IS NOT REQUIRED

C.R.A.E. A/c No. 4267

Authorised by

1072 TAB

DUPLICATE—MAIL TO HEAD OFFICE

C.R.A.E. 36

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.
52 Murray Road, Welshpool, W.A. 6106
Telex AA92560

ANALYTICAL REPORT No. 15.8 14 1057

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

CRA Exploration Pty Ltd
PO Box 39598
Winnellie
N.T. 5789

ORDER No.	PROJECT
21932	4267

DATE RECEIVED	RESULTS REQUIRED
8.11.84	

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
	22-11-84	3	2

TYPE OF SAMPLE	SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
CU	824282-83	1		3	2 4				Various		

RESULTS TO

I.R. Collyer
S. Abbott

RESULTS TO

REMARKS

STATE OF SAMPLES

whole core	WC
split core	SC
cutting	CU
rock	Ro
soil	SO
pulp	PU
water	WA
tissue	TI
stream sediment	SS
heavy mineral	HM

ANALYSIS — PREPARATION

perchloric acid	A1	cold acid	CA
hydrochloric acid	A2	specific sulphide	SS
nitric acid	A3	other mixed acids	Ma
aqua regia	A4	alkaline attack	AA
nitric-perchloric	A5	volatilization	VO
HF mixture	A6	ignition	IG
HF under pressure	A7	pressed powder (XRF)	PP
fusion	A8	glass fusion (XRF)	GF

ANALYSIS — METHOD

atomic absorption	AAS
x-ray fluorescence	XRF
spectrophotometry	SPEC
colorimetry	COL
chromatography	CHR
titration	TTN
other chemicals means	CHEM
miscellaneous	MISC
fluorescence	FLUOR
inductively coupled plasma	ICP

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1057	22.11.84	21932	1 OF 4

TUBE No.	SAMPLE No.	Na2O%	MgO%	Al2O3%	SiO2%	P2O5	K2O%	CaO%	TiO2%	V
1	824282	0.130	1.67	15.5	60.5	1640	8.07	0.600	0.620	70
2	824283	0.030	0.740	13.1	67.8	1260	1.44	0.040	0.490	120
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.007	0.002	0.04	0.2	200	0.06	0.007	0.003	5
24	DIGESTION									
25	METHOD	204	204	204	204	204	204	204	204	401

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1057	22.11.84	21932	2 OF 4

TUBE No.	SAMPLE No.	Cr	Mn	MnO%	Fe2O3%	Co	Ni	Cu	Zn	Rb
1	824282	25	1050	0.200	7.29	25	50	5	35	320
2	824283	50	1400	0.260	10.2	25	80	70	40	90
3										
4										
5										
6										
7										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	0.003	0.03	5	5	5	5	5
24	DIGESTION									
25	METHOD	101	101	204	204	101	101	101	101	401

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
< = element concentration is below detection limit
- = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1057	22.11.84	21932	3 OF 4

TUBE No.	SAMPLE No.	Sr	Y	Zr	Nb	Ba	La	Pb	Th	U
1	824282	40	35	190	10	440	65	10	25	4
2	824283	35	35	200	10	400	70	75	10	6
3										
4										
5										
6										
7										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23	DETECTION	5	5	5	3	10	10	5	4	3
24	DIGESTION									
25	METHOD	401	401	401	401	401	401	101	401	401

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
/ = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1057	22.11.84	21932	4 OF 4

TUBE No.	SAMPLE No.	LOI%								
1	824282	2.50								
2	824283	5.24								
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.01								
24	DIGESTION									
25	METHOD	204								

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

Head Office and
Central Laboratory
305 SOUTH ROAD,
MILE END SOUTH
STH. AUST. 5031
TEL.: (08) 43 5722
TELEX: AA89323

NATA REGISTERED No. 1526

Copy DAS
file DPO's

OUR REF.: COM 841968

YOUR REF.: 20925

Mr. I. Colliver,
C.R.A. Exploration Pty. Ltd.,
18 KM Post,
Stuart Highway,
BERRIMAH NT,

26.9.84

Dear Sir,

RE: JOB COM 841968

Enclosed are the assays for the samples delivered to our laboratory on the 10th. September, 1984.

Yours sincerely,
COMLABS PTY LTD

per :

P R Harvey

c.c.: Fyshwick -

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM841968 O/N : 20925

Results in %

Analysis	970926	970924	970923
Fe as Fe203	13.8	5.70	19.6
MnO	0.18	0.39	0.10
TiO2	2.25	0.85	1.56
CaO	1.20	0.10	0.13
K20	6.75	0.81	0.53
P205	0.38	0.06	0.06
SiO2	48.1	74.2	47.6
Al203	12.2	11.7	21.0
MgO	5.95	0.15	0.26
Na20	0.28	<0.01	<0.01
L.O.I.	7.70	5.80	9.60

Method of Analysis : Silicates : ROC1A

PD83 KG-3
DD84 KC-1
DD84 ES-1

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM841968 O/N : 20925

Results in ppm

SAMPLE	Cu	Pb	Zn	Ni	Co	Mn	Cr
970923	100	<4	8	4	<4	120	18
970924	24	20	24	20	18	2200	6
970925	6	12	8	<4	<4	55	8
970926	40	<4	22	<4	36	1100	6

Method of Analysis : Cu Pb Zn Ni Co : AAS1
Mn Cr : AAS2

970923 DD84 GS-1
924 DD84 KC-1
925 PD84 LC-2
926 PD83 KG-3
927 Helen Springs alluvial sediment(?)

.../ 2

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM841968 O/N : 20925

Results in ppm

SAMPLE	Rb	Sr	Ba	Y	La	Ce	Zr
970923	30	24	135	175	110	270	100
970924	80	42	270	26	30	80	280
970925	135	70	500	<2	20	30	330
970926	105	60	1100	28	30	70	195

Method of Analysis : Rb Sr Ba Y La Ce Zr : XRF1

.../ 3

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM841968 O/N : 20925

Results in ppm

SAMPLE	Nb	Th	U	V
970923	9	<4	4	200
970924	14	20	<4	70
970925	8	12	<4	20
970926	14	<4	<4	300

Method of Analysis : Nb Th U : XRF1
V " : AAS3

.../ 4

C.R.A. EXPLORATION PTY. LIMITED

(Incorporated in New South Wales)

Head Office: 95 Collins Street, Melbourne, 3000

D.P.O № 20938

A MEMBER OF THE C.R.A. GROUP

Date 12/11/84

From Office located at 18 Km 87 Stuart Highway Berrimah, N.T.

To Analabs Darwin

DESPATCH ADVICE, PACKING LIST AND ORDER

The following samples have been despatched to you per personal delivery

addressed as above No. of Samples 20

Please carry out the work required and report results to P.R. Dunn c/— CRAE Exploration P.O. Box 37598 Winnellie, N.T. 5789.

A copy of the report should be forwarded with the Invoice to this Company, G.P.O. Box 384D, Melbourne, Vic., 3001

Please quote our order number on report and Invoice.

Samples		Work Required
Serial Numbers	Quantity	
746881→897	17	Co Ni Cu Pb Zn Cr Bi Ag } AAS U Th Ba } XRF P_2O_5 Au — AAS Gold
747000	1	K and Ba Inv. 14-1022. Amt $661.03 Date 30.11.84
746992→993	2	whole rock analyses XRF (Silicate)

LOCATION (Head office & file copies only) ROBINSON RIVER 1:250 000

SAMPLE PREPARATION ~~IS~~ / ~~IS NOT~~ REQUIRED

C.R.A.E. A/c No. 4259

Authorised by Kenneth Alexander

1072 TAB

DUPLICATE – MAIL TO HEAD OFFICE

C.R.A.E. 26

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.
Phone (09) 458 7999
52 Murray Road, Welshpool, W.A. 6106
Telex AA92560

ANALYTICAL REPORT No. 15.8 14 1069

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

CRA Exploration Pty Ltd
PO Box 39598
Winnellie
N.T. 5789

ORDER No.	PROJECT
20938	4259

DATE RECEIVED	RESULTS REQUIRED
12.11.84	

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
	22.11.84	3	20

STATE OF SAMPLES	PRE-TREATMENT							ANALYSIS		
REFER BELOW	SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
RO	746881-97 746992-93 747000		1	3	2 4				Various		

RESULTS TO: K. ALEXANDER.

RESULTS TO:

REMARKS

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER B D

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1069	22.11.84	20938	1 OF 4

TUBE No.	SAMPLE No.	H2O-%	H2O+%	CO2%	Na2O	MgO%	Al2O3%	SiO2%	P2O5%	P2O5%
1	746881	–	–	–	–	–	–	–	4.45	–
2	746882	–	–	–	–	–	–	–	22.0	–
3	746883	–	–	–	–	–	–	–	–	0.31
4	746884	–	–	–	–	–	–	–	–	0.77
5	746885	–	–	–	–	–	–	–	5.70	–
6	746886	–	–	–	–	–	–	–	–	0.35
7	746887	–	–	–	–	–	–	–	–	0.32
8	746888	–	–	–	–	–	–	–	–	0.51
9	746889	–	–	–	–	–	–	–	–	0.27
10	746890	–	–	–	–	–	–	–	–	0.10
11	746891	–	–	–	–	–	–	–	–	0.16
12	746892	–	–	–	–	–	–	–	–	0.47
13	746893	–	–	–	–	–	–	–	–	0.53
14	746894	–	–	–	–	–	–	–	–	x
15	746895	–	–	–	–	–	–	–	16.85	–
	746896	–	–	–	–	–	–	–	–	1.04
17	746897	–	–	–	–	–	–	–	–	0.24
18	746992	0.19	1.00	7.75	1100	3.65	9.45	60.2	0.119	–
19	746993	0.28	2.00	0.20	900	0.60	13.3	61.5	0.580	–
20	747000	–	–	–	–	–	–	–	–	–
21										
22										
23	DETECTION	0.01	0.01	0.05	50	0.05	0.05	0.1	0.005	0.07
24	DIGESTION									
25	METHOD	408	408	603	104	408	408	408	408	402

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
– = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1069	22.11.84	20938	2 OF 4

TUBE No.	SAMPLE No.	SO3%	K2O%	K%	CaO%	TiO2%	Cr	MnO%	Fe2O3%	FeO%
1	746881	–	–	–	–	–	55	–	–	–
2	746882	–	–	–	–	–	115	–	–	–
3	746883	–	–	–	–	–	25	–	–	–
4	746884	–	–	–	–	–	35	–	–	–
5	746885	–	–	–	–	–	35	–	–	–
6	746886	–	–	–	–	–	130	–	–	–
7	746887	–	–	–	–	–	45	–	–	–
8	746888	–	–	–	–	–	65	–	–	–
9	746889	–	–	–	–	–	X	–	–	–
10	746890	–	–	–	–	–	150	–	–	–
11	746891	–	–	–	–	–	65	–	–	–
12	746892	–	–	–	–	–	60	–	–	–
13	746893	–	–	–	–	–	45	–	–	–
14	746894	–	–	–	–	–	305	–	–	–
15	746895	–	–	–	–	–	105	–	–	–
	746896	–	–	–	–	–	120	–	–	–
17	746897	–	–	–	–	–	40	–	–	–
18	746992	0.01	5.55	–	5.20	0.42	–	0.33	4.75	0.15
19	746993	0.01	8.90	–	0.72	2.45	–	0.05	7.50	0.45
20	747000	–	–	1.50	–	–	–	–	–	–
21										
22										
23	DETECTION	0.01	0.01	0.01	0.01	0.01	5	0.01	0.01	0.01
24	DIGESTION									
25	METHOD	603	408	402	408	408	101	408	408	408

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1069	22.11.84	20938	3 OF 4

TUBE No.	SAMPLE No.	Co	Ni	Cu	Zn	Ag	Ba	Au	Pb	Bi
1	746881	45	70	165	20	x	360	x	70	x
2	746882	20	55	405	50	1.5	140	x	560	10
3	746883	30	30	10	30	x	850	0.01	5	10
4	746884	40	50	50	110	x	420	0.01	15	x
5	746885	30	30	105	25	x	680	x	40	x
6	746886	55	105	375	35	x	230	0.01	280	x
7	746887	70	60	175	155	x	520	x	35	x
8	746888	75	100	125	115	x	790	x	x	x
9	746889	45	55	195	70	x	620	x	x	20
10	746890	15	135	15	20	x	400	0.01	x	x
11	746891	50	70	35	25	x	220	x	10	x
12	746892	75	80	100	90	x	830	0.01	x	x
13	746893	110	95	130	65	0.5	1150	0.05	20	x
14	746894	15	290	20	40	x	90	0.06	5	x
15	746895	15	75	205	20	0.5	130	0.12	115	10
	746896	30	110	495	230	x	85	0.14	x	x
17	746897	295	165	155	285	x	6400	0.04	x	10
18	746992	–	–	–	–	–	–	–	–	–
19	746993	–	–	–	–	–	–	–	–	–
20	747000	–	–	–	–	–	300	–	–	–
21										
22										
23	DETECTION	5	5	5	5	0.5	20	0.01	5	10
24	DIGESTION									
25	METHOD	101	101	101	101	101	401	303	101	101

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1069	22.11.84	20938	4 OF 4

TUBE No.	SAMPLE No.	Th	U	Total%						
1	746881	25	140	–						
2	746882	15	760	–						
3	746883	20	×	–						
4	746884	25	10	–						
5	746885	20	130	–						
6	746886	6	80	–						
7	746887	9	30	–						
8	746888	8	5	–						
9	746889	20	15	–						
10	746890	6	4	–						
11	746891	×	×	–						
12	746892	15	10	–						
13	746893	25	25	–						
14	746894	6	×	–						
15	746895	7	370	–						
	746896	9	120	–						
17	746897	15	4	–						
18	746992	–	–	99.9						
19	746993	–	–	99.6						
20	747000	–	–	–						
21										
22										
23	DETECTION	4	3							
24	DIGESTION									
25	METHOD	401	401	408						

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

C.R.A. EXPLORATION PTY. LIMITED

(Incorporated in New South Wales)

Head Office: 95 Collins Street, Melbourne, 3000

D.P.O No 20941

A MEMBER OF THE C.R.A. GROUP

Date 19/11/84

From Office located at 18 Km Post Stuart Hwy Berrimah

To ANALABS, DARWIN

DESPATCH ADVICE, PACKING LIST AND ORDER

The following samples have been despatched to you per previously delivered 12/11/84

addressed Analabs Darwin No. of Samples 20

Please carry out the work required and report results to

A copy of the report should be forwarded with the Invoice to this Company, G.P.O. Box 384D, Melbourne, Vic., 3001

Please quote our order number on report and Invoice.

Samples		Work Required
Serial Numbers	Quantity	
746881 → 897 746992 → 993 747000	20	Refer to D.P.O 20938 and Telex 19th November 1984 Please assay for Nb Zr Y – XRF F

Paid

Inv. 14-1034.
Date 30.11.84.
Amt $322.80

LOCATION (Head office & file copies only) ROBINSON RIVER 1:250000

SAMPLE PREPARATION IS / IS NOT REQUIRED

C.R.A.E. A/c No. 4259

Authorised by Kevin Alexander

1072 TAB

DUPLICATE – MAIL TO HEAD OFFICE

C.R.A.E. 26

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.
Phone (09) 458 7999
52 Murray Road, Welshpool, W.A. 6106
Telex AA92560

ANALYTICAL REPORT No. 15.8 14 1082

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

CRA Exploration Pty Ltd
PO Box 39598
Winnellie
N.T. 5789

ORDER No.	PROJECT
20941	4259

DATE RECEIVED	RESULTS REQUIRED
20.11.84	

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
	29.11.84	3	20

STATE OF SAMPLES:

	PRE-TREATMENT							ANALYSIS		
REFER BELOW	SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PUL-VERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
PU	746881-97 746992-93 747000							1	Nb Zr Y F		401 129

RESULTS TO

RESULTS TO

REMARKS

RECEIVED
30 NOV 1984

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	15.8 14 1082	29.11.84	20941	1 OF 1

TUBE No.	SAMPLE No.	F	Y	Zr	Nb					
1	746881	4200	40	280	4					
2	746882	13300	260	×	×					
3	746883	×	45	270	15					
4	746884	1050	55	200	9					
5	746885	5200	160	320	20					
6	746886	200	25	60	×					
7	746887	200	20	40	8					
8	746888	100	25	100	9					
9	746889	100	110	260	15					
10	746890	×	25	75	5					
11	746891	100	6	10	15					
12	746892	100	60	150	15					
13	746893	100	40	35	10					
14	746894	200	9	15	×					
15	746895	13300	250	170	×					
16	746896	100	10	60	×					
17	746897	100	65	100	5					
18	746992	500	30	16	9					
19	746993	500	35	180	10					
20	747000	300	45	290	15					
21										
22										
23	DETECTION	100	5	5	3					
24	DIGESTION									
25	METHOD	129	401	401	401					

RECEIVED 30 NOV 1984

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

C.R.A. EXPLORATION PTY. LIMITED

(Incorporated in New South Wales)

Head Office: 95 Collins Street, Melbourne, 3000

D.P.C No 22026

A MEMBER OF THE C.R.A. GROUP

Date 14/10/85

From Office located at DARWIN

To ANALABS WINNELLIE

DESPATCH ADVICE, PACKING LIST AND ORDER

The following samples have been despatched to you per HAND

addressed ..... No. of Samples .....

Please carry out the work required and report results to ATTN I. COLLIVER

CRA EXPLORATION BOX 39598 WINNELLIE N.T. 5789

A copy of the report should be forwarded with the Invoice to this Company, G.P.O. Box 384D, Melbourne, Vic., 3001

Please quote our order number on report and Invoice.

Samples		
Serial Numbers	Quantity	Work Required
1084785, 786	2 ROCK SAMPLES	
1084830	1 "	
968281, 282	2 "	
970763, 771, 801	3 GEMCO CUTTINGS SAMPLES	
		PLEASE DIGEST & ANALYSE BY (PILBARA) ICP FOR MAJOR ELEMENTS SiO_2 TiO_2 Al_2O_3 Fe (tot.) MnO MgO, Na_2O K_2O, CaO, P_2O_5, LOI PLUS CODE 310 V Cr Ni Co Cu Zn Ag Sr Ba Y La Ce Zr Nb Th
		ADDITIONALLY PLEASE ANALYSE 1084785, 786 ONLY BY XRF CODE 401 FOR U, Th

LOCATION (Head office & file copies only)

SAMPLE PREPARATION — IS ~~IS NOT~~ REQUIRED

C.R.A.E. A/c No.

SAMPLES 1084785, 786, 830 CHARGE 4130

" 968281, 282] " 4289

970763, 771, 801

Authorised by

1072 TAB

DUPLICATE — MAIL TO HEAD OFFICE

C.R.A.E. 26

TELEX MESSAGE TELEX MESS

*
NTLAB AA85765

*
NTLAB AA85765
PILAB AA93837'

PILBARA LABORATORIES - PERTH
AUTO-CALL EQUIPMENT
11:54 AM FRI., 1 NOV., 1985
OUR REF: PE15141 JA

ATTENTION: RAE YOUR REF: 15.814.1356

OUR REF: PE 15141 CLIENT REF: DPO 22026

SAMPLE	NA2O	MGO	AL2O3%	SIO2%	P2O5	K2O	CAO
1084785	695	1580	13.2	73.0	916	9.62%	555
1084786	199	682	1.85	93.5	1.43%	1320	1.05%
1084830	199	3930	13.4	35.5	2410	8110	1180
968281	685	2.06%	8.19	68.8	352	3.13%	4.41%
968282	1930	1.89%	11.2	73.2	1000	1.37%	7050
970763	1910	1.70%	17.0	66.4	586	4.17%	1110
970771	2050	12.1%	10.8	52.6	722	2.59%	9580
970801	1430	1.83%	21.0	59.4	614	5.05%	811

SAMPLE	TIO2	V	CR	MNO	FE2O3	CO	NI
1084785	3420	44	-50	183	2.08%	18	10
1084786	638	10	-50	122	4280	52	-10
1084830	1.37%	457	193	1050	39.6%	57	195
968281	4960	80	-50	418	4.51%	20	17
968282	5450	102	-50	141	4.92%	30	22
970763	6850	67	-50	167	4.64%	23	32
970771	4720	57	-50	390	4.34%	22	39
970801	8270	122	-50	231	5.16%	18	33

SAMPLE	CU	ZN	SR	Y	ZR	NB	AG
1084785	30	34	71	18	271	-20	-5
1084786	114	-5	486	78	20	-20	-5
1084830	181	275	44	31	181	-20	-5
968281	29	28	84	24	124	-20	-5
968282	18	54	194	8	104	-20	-5
970763	30	31	101	27	259	-20	-5
970771	17	33	127	23	194	-20	-5
970801	40	47	166	34	180	-20	-5

SAMPLE	BA	LA	CE	TH(1)	TH(2)	U
1084785	646	37	64	19	35	-3
1084786	442	27	54	19	25	60
1084830	419	22	38	20	--	--
968281	1140	34	50	12	--	--
968282	1140	36	64	24	--	--
970763	424	49	98	29	--	--
970771	430	40	76	25	--	--
970801	614	54	93	18	--	--

DATA IN PPM UNLESS OTHERWISE STATED.
(-) BEFORE DATA DENOTES LESS THAN THE LIMIT OF DETECTION.
-- DENOTES ANALYSIS NOT REQUESTED.
REGARDS,
JUNE.

PILAB AA93837'

TELEX MESSAGE TELEX MESSAGE TELEX MESS

I.C.C.

Pilbara Laboratories

A division of Macdonald Hamilton & Co. Pty. Ltd.
(Incorporated in New South Wales)

4 MacAdam Place
Balcatta
Western Australia 6021
All Correspondence
To:— P.O. Box 261
Tuart Hill, W.A. 6060

Telephone: (09) 344 2411
Telex: AA 93837
Cables: Pilbaralab — Perth

Analytical Report

Cover Sheet

RECEIVED - 6 NOV 1985

CRA EXPLORATION PTY LTD

Submission Date: October 14, 1985
Clients Order: DPO 22026
Project:
Locality:
Sample Type: Rock

Report Code: PE 15141
Report Date: November 4, 1985
Report Comprises: 3 data sheets

Distribution:
Winnellie Office.
Fyshwick Office.

DETERMINATION	ANALYTICAL TECHNIQUE	PRECISION— ACCURACY	DETECTION LIMIT
Na2O MgO P2O5	ICP	prec. ± 10%	70,20,200
Al2O3 SiO2	ICP	prec. ± 10%	0.04%,0.2%
K2O CaO TiO2	ICP	prec. ± 10%	600,70,30
V Cr MnO Fe2O3	ICP	prec. ± 10%	5,50,30,300
Co Ni Cu Zn	ICP	prec. ± 10%	5,10,5,5
Sr Y Zr Nb	ICP	prec. ± 10%	1,1,5,20
Ag Ba La Ce	ICP	prec. ± 10%	5,5,5,15
Th(1)	ICP	prec. ± 10%	10
Th(2) U	XRF	prec. ± 10%	4,3

KEY

ICP: INDUCTIVELY COUPLED PLASMA EMISSION SPECTROSCOPY
AAS: ATOMIC ABSORBTION SPECTROPHOTOMETRY
UVV: UV-VISIBLE SPECTROPHOTOMETRY
COL: COLORIMETRY
F: FLUORIMETRY
L: LECO FURNACE ANALYSIS
SIE: SPECIFIC ION ELECTRODE ANALYSIS
PT: PRECISE TITRATION INSTRUMENTATION
CCA: CLASSICAL CHEMICAL ANALYSIS
FA: FIRE ASSAY
SNR: SAMPLE NOT RECEIVED
—: ANALYSIS NOT REQUESTED
IS: INSUFFICIENT SAMPLE
DTF: DATA TO FOLLOW
DSP: DATA SENT PREVIOUS

COMMENT: Data in ppm unless otherwise stated.

THIS LABORATORY IS REGISTERED BY THE NATIONAL ASSOCIATION OF TESTING AUTHORITIES AUSTRALIA. THE TESTS REPORTED HEREIN HAVE BEEN PERFORMED IN ACCORDANCE WITH ITS TERMS OF REGISTRATION.

REGISTERED LABORATORY NUMBER 1076

Pilbara Laboratories
A division of Macdonald Hamilton & Co. Pty. Ltd.
(Incorporated in New South Wales)

Analytical Report

Data Sheet

Report Code: PE 15141

Sample Prefix:

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta,
Western Australia, 6021

SAMPLE	%Na2O	%MgO	Al2O3%	SiO2%	P2O5	K2O	CaO	TiO2%	V
[illegible]	695	1580	13.2	73.0	916	9.62%	555	3420	44
[illegible]	199	682	1.85	93.5	1.43%	1320	1.05%	638	10
[illegible]	199	3930	13.4	35.5	2410	8110	1180	1.37%	457
[illegible]	685	2.06%	8.19	68.8	352	3.13%	4.41%	4960	80
[illegible]	1930	1.89%	11.2	73.2	1000	1.37%	7050	5450	102
[illegible]	1910	1.70%	17.0	66.4	586	4.17%	1110	6850	67
[illegible]	2050	12.1%	10.8	52.6	722	2.59%	9580	4720	57
[illegible]	1430	1.83%	21.0	59.4	614	5.05%	811	8270	122

Data in ppm unless otherwise stated.

Pilbara Laboratories
A division of Macdonald Hamilton & Co. Pty. Ltd.
(Incorporated in New South Wales)

Analytical Report

Data Sheet

Report Code: PE 15141

Sample Prefix:

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta,
Western Australia, 6021

SAMPLE	Cr	MnO	Fe2O3	Co	Ni	Cu	Zn	Sr	Y
[illegible]	<50	183	2.08%	18	10	30	34	71	18
[illegible]	<50	122	4280	52	<10	114	<5	486	78
[illegible]	193	1050	39.6%	57	195	181	275	44	31
[illegible]	<50	418	4.51%	20	17	29	28	84	24
[illegible]	<50	141	4.92%	30	22	18	54	194	8
[illegible]	<50	167	4.64%	23	32	30	31	101	27
[illegible]	<50	390	4.34%	22	39	17	33	127	23
[illegible]	<50	231	5.16%	18	33	40	47	166	34

Data in ppm unless otherwise stated.

Pilbara Laboratories
A division of Macdonald Hamilton & Co. Pty. Ltd.
(Incorporated in New South Wales)

Analytical Report

Data Sheet

Report Code: PE 15141

Sample Prefix:

REGISTERED LABORATORY
NUMBER 1076
4 MacAdam Place, Balcatta,
Western Australia, 6021

SAMPLE	Zr	Nb	Ag	Ba	La	Ce	Th(1)	Th(2)	U
1084785	271	<20	<5	646	37	64	19	35	<3
1084786	20	<20	<5	442	27	54	19	25	60
1084830	181	<20	<5	419	22	38	20	--	--
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968282	104	<20	<5	1140	36	64	24	--	--
970763	259	<20	<5	424	49	98	29	--	--
970771	194	<20	<5	430	40	76	25	--	--
970801	180	<20	<5	614	54	93	18	--	--

THE DATA REPORTED HERE COMPRISE AN AUTHENTIC NATA DOCUMENT ONLY WHEN ACCOMPANIED BY THE FORMAL COVER SHEET

Data in ppm unless otherwise stated.

Appendix 6

PETROGRAPHIC REPORTS

Central Mineralogical Services

39 Beulah Road
Norwood, S.A. 5067
Telephone 42 5659

Mr. W.H. Johnston
C.R.A. Exploration Pty. Ltd.
P.O. Box 39598
WINNELLIE / N.T. 5789

28th November, 1984

REPORT CMS 84/11/23

YOUR REFERENCE:	D.P.O. No. 20800
DATE RECEIVED:	15th November, 1984
SAMPLE NOS.:	1084323 - 1084325, 1084334
SUBMITTED BY:	K.R. Alexander
WORK REQUESTED:	Petrology

for

H.W. Fander, M. Sc.

Copy to:
The Chief Geologist
C.R.A. Exploration Pty. Ltd.
P.O. Box 656
FYSHWICK / A.C.T. 2609

REPORT CMS 84/11/23

Four rock samples were received for petrological examination. Representative thin-sections were prepared and examined together with their respective offcuts. Attached tabulated descriptions summarise the microscopic data and include interpretative comments.

Summary

Three rocks (1084323, 324 and 325) may be categorised as "melaphyric" volcanics. Compositionally, these are opaque-rich, semi-chilled felsic (alkali feldspathic) lavas. Petrogenetically, they are of strictly basaltic character.

Closely analogous rocks occur as flow-marginal variants of, for example, the Adelaidean Beda Volcanics and temporally and spatially-proximal Roopena Lavas, Wooltana Lavas and Depot Creek Volcanics of the Stuart Shelf/Adelaide Geosyncline complex (S.A.). In these situations, the melaphyric lava zones flank flows of orthodox basalt, with doleritic cores developed in thicker flow units.

Related examples include certain "facies" of the Wilangee Volcanics (Precambrian N.W., N.S.W.), lavas within the Wooloomin Beds (Palaeozoic, New England Geosyncline), the Eastern Creek Volcanics (Mount Isa), and the Antrim Plateau Basalts. All are characterised by primary alkali feldspathic/ferromag opaque-rich composition, and generally amygdaloidal "basaltic" textures. Many of these rocks have been classified variously as "hematite trachytes" or "melaphyres", although their basalt-variant nature is generally obvious.

The current three examples are clearly closely related and are similarly mildly (?deuterically) altered.

Sample 1084334 represents a thoroughly weathered and ferruginised pelitic sediment. Relict features indicate this rock was calcareous (?dolomitic) and may have verged on an impure dolomite. Alteration features, if present, are obscured by weathering and ferruginisation.

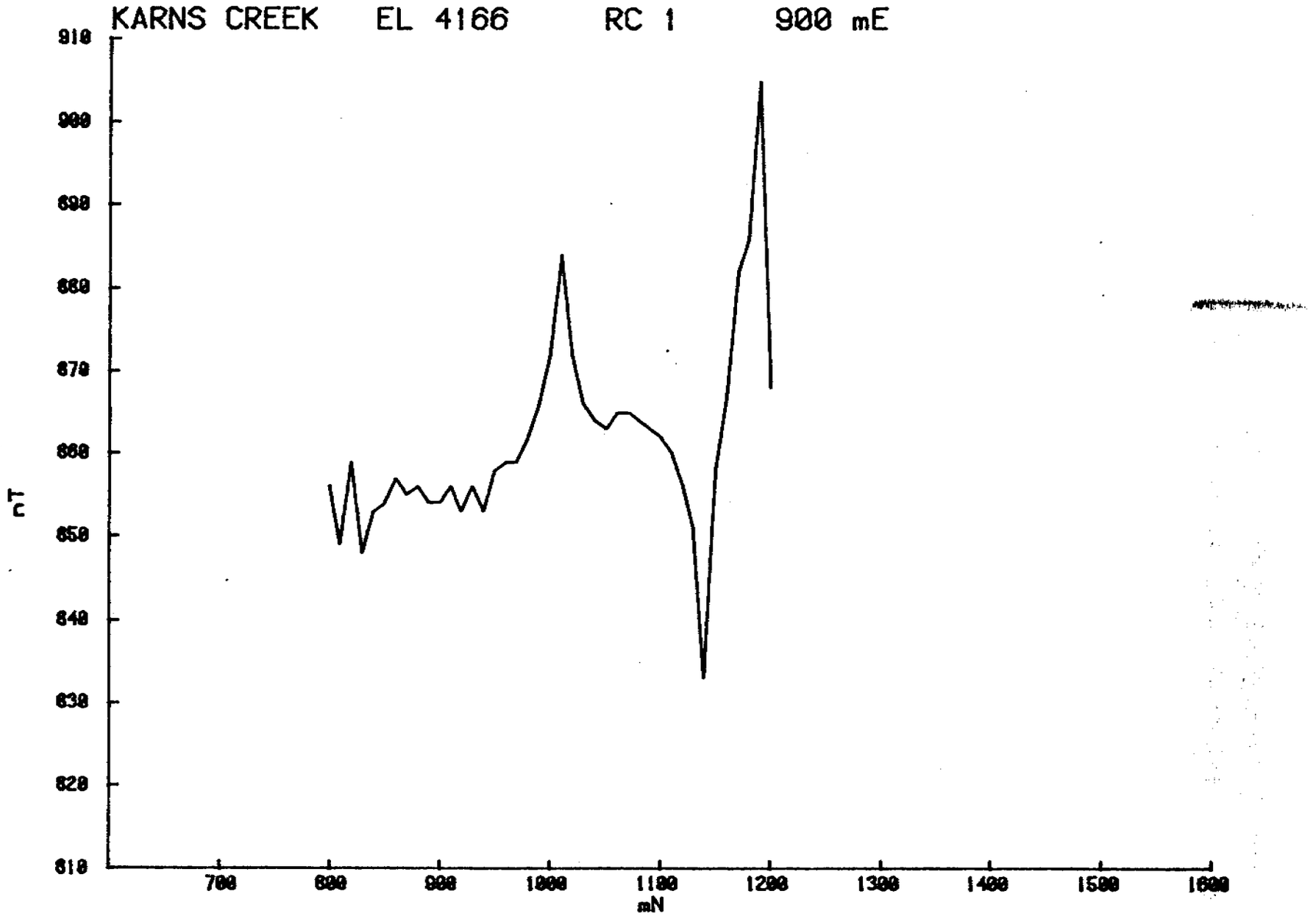
D. Cowan, B. Sc.

CENTRAL MINERALOGICAL SERVICES

Sample No.	Classification - Composition	Fabric	Accessories	Comments
1084-323 (T.S. 52010)	Vesicular "Melaphyre". Partly degraded (kaolinised/Fe-stained) alkali feldspar micro-laths, minor chloritised pyroxene, conspicuous leucoxenised/oxidised opaques; abundant vesicles.	Incipiently flow-structured, strongly vesicular, weakly feldspar-porphyritic, fine-grained "basaltic".	Traces of primary apatite. Minor traces of exotic silt-sized clastic quartz, limon-itic clays in vesicles.	Semi-chilled subaerial basaltic characteristics. Reflects weak chloritisation, with bulk of alteration reflecting weathering.
1084-324	Amygdaloidal "Melaphyre". Partly degraded alkali feldspar microlaths with a montmorillonitic mesostasis, conspicuous leucoxenised opaques. Sporadic amygdales of bright green indeterminate clay.	Weakly flow-structured, amygdaloidal, fine-grained basaltic.	Ultrafine acicular primary apatite, montmorillonite-pseudomorphed inter-stitial pyroxene.	Close affinities with 1084323, similarly interpreted. Slightly relatively ?deuterically argillised.
1084-325	Amygdaloidal "Melaphyre". Partly degraded (kaolinised, Fe-stained) alkali feldspar microlaths, minor microphenocrysts, minor montmorillonitised interstitial pyroxene granules; conspicuous fine hematite, martitised magnetite.	Fine-grained, weakly porphyritic, basaltic (sim. 1084323, 1084324).	Ultrafine acicular primary apatite. Thinly disseminated quartz micro-amygdales.	Close affinities with 1084323 and 1084324. Similarly mildly phyllo-silicate-altered.
1084-334 (T.S. 52013)	Ferruginised Pelite. Limonite and limonitic/ degraded clay with interspersed nodular masses of extremely fine-grained secondary hematite.	Massive-featureless to weakly banded.	Traces of fine silt-sized quartz.	Vague relict microtextural detail consistent with a dolomitic, slight silty shale. Detail largely obscured by weathering, ferruginisation.

Appendix 7

GROUND MAGNETIC SURVEY PROFILES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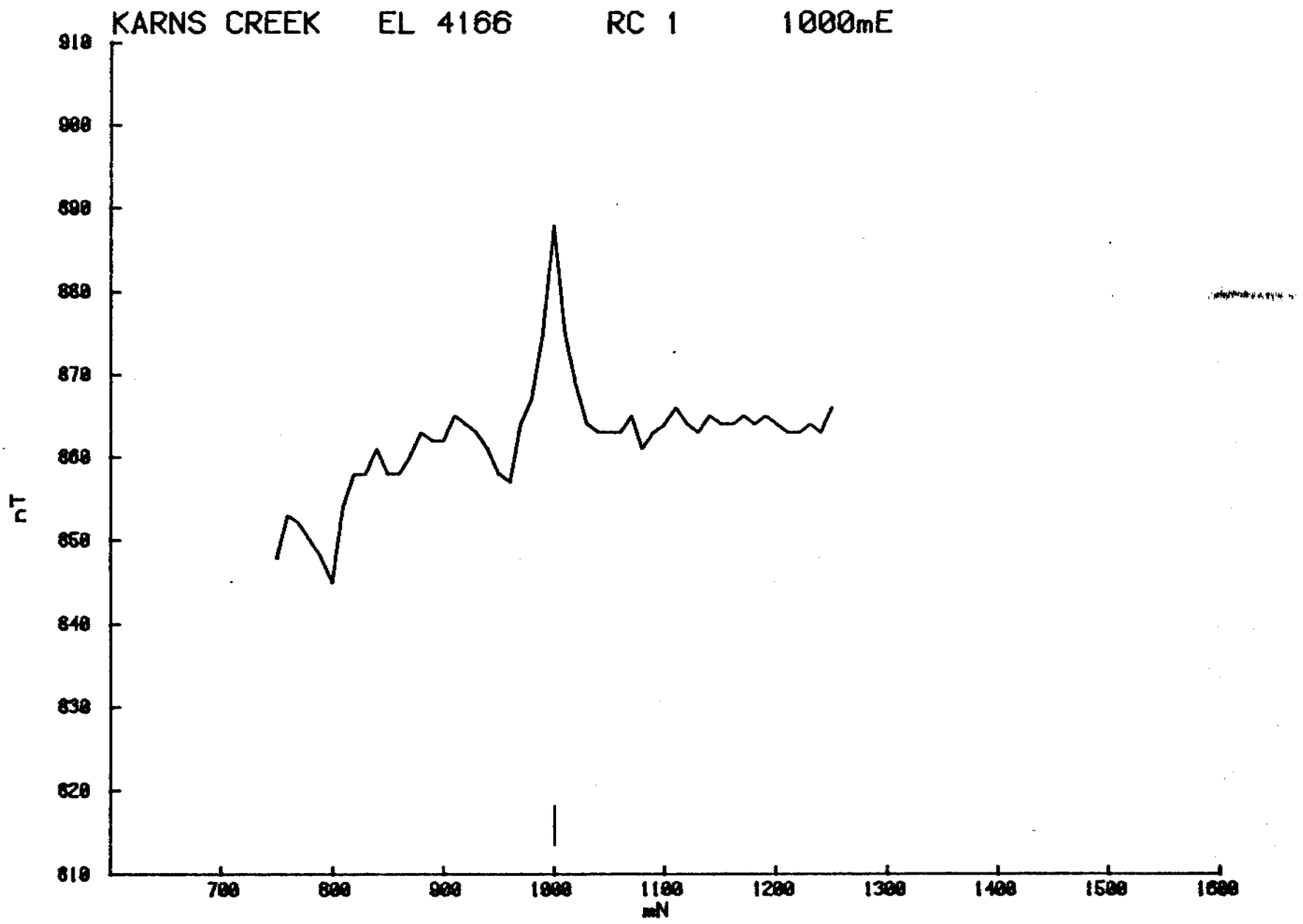
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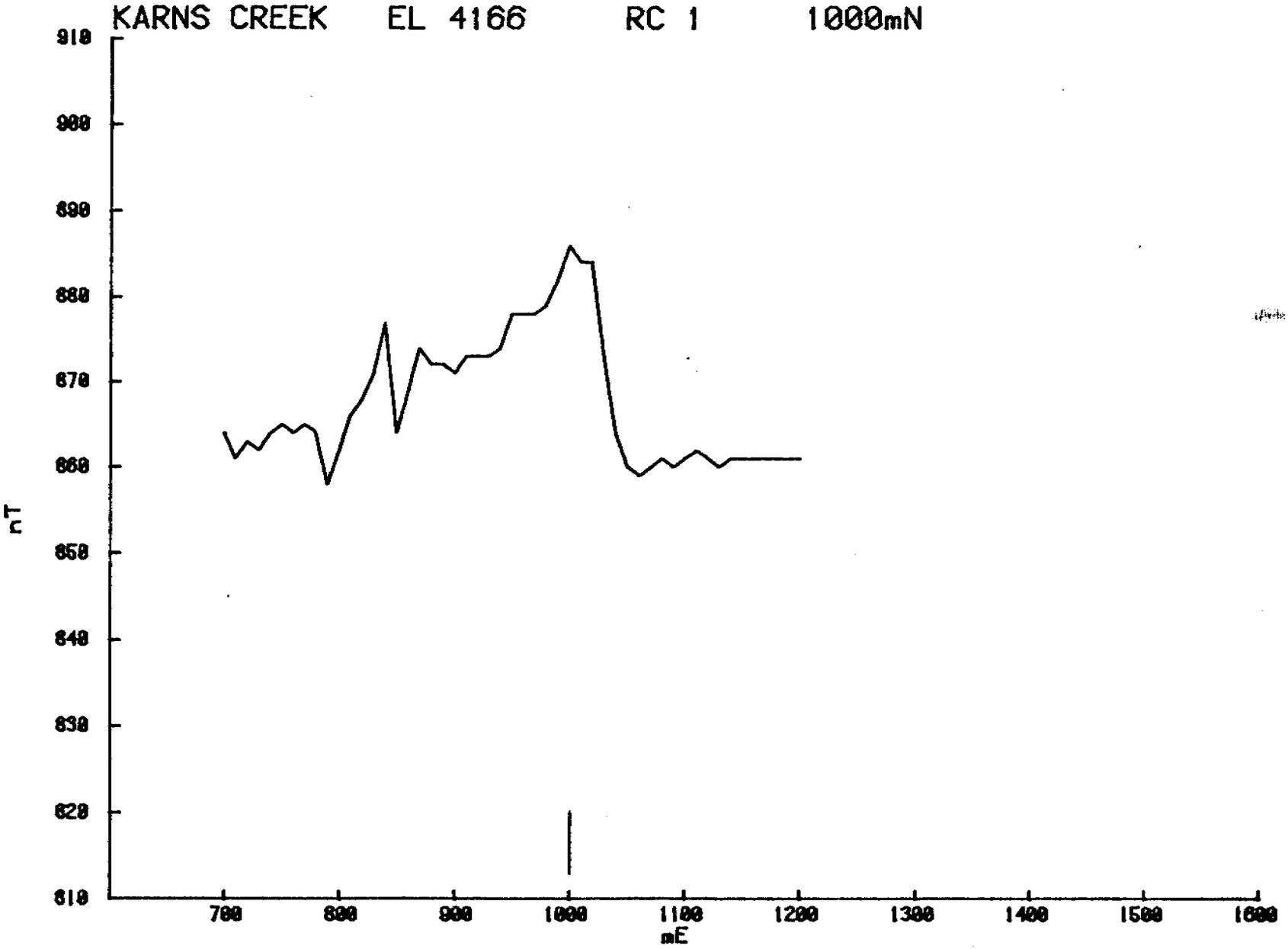
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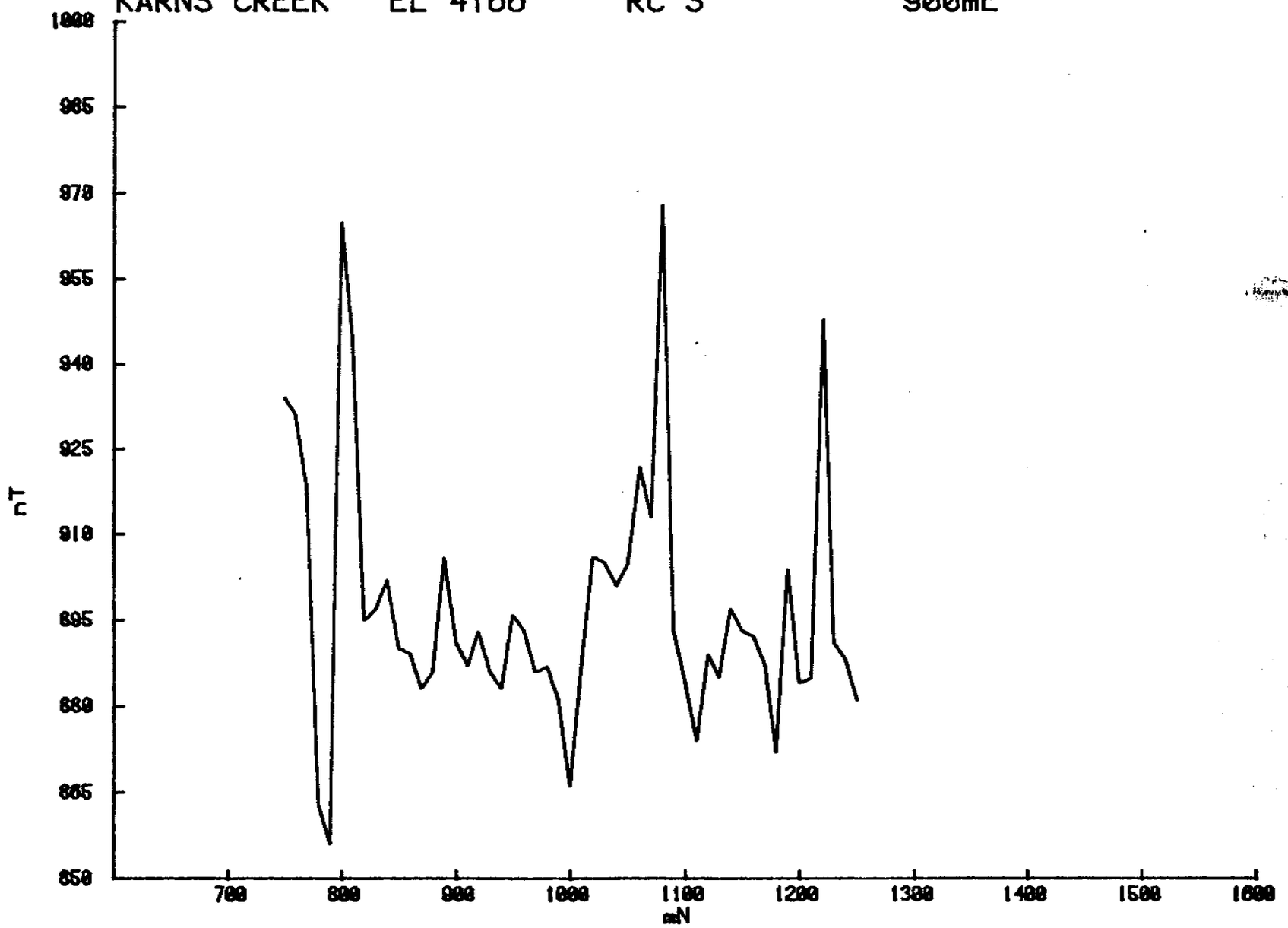
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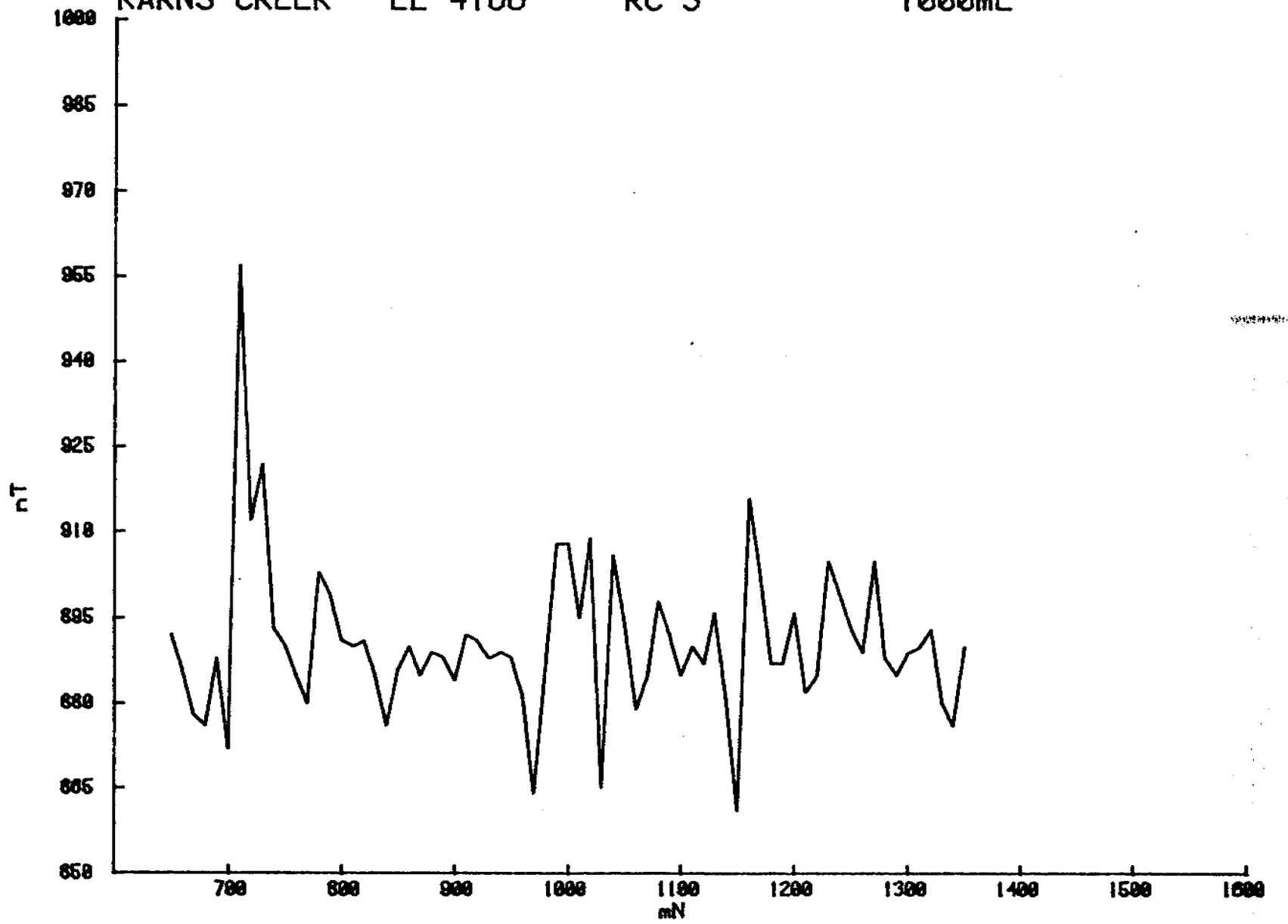
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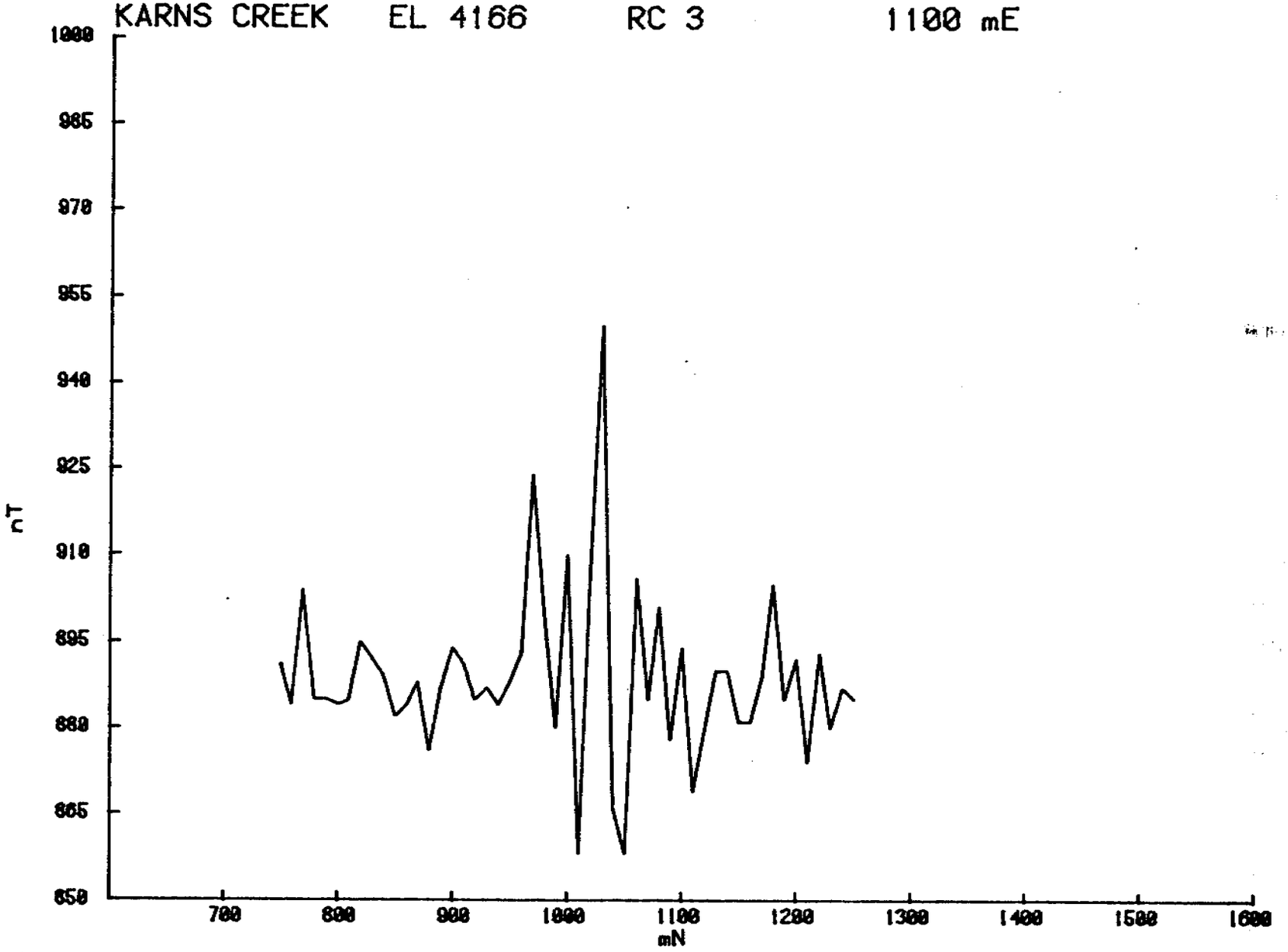
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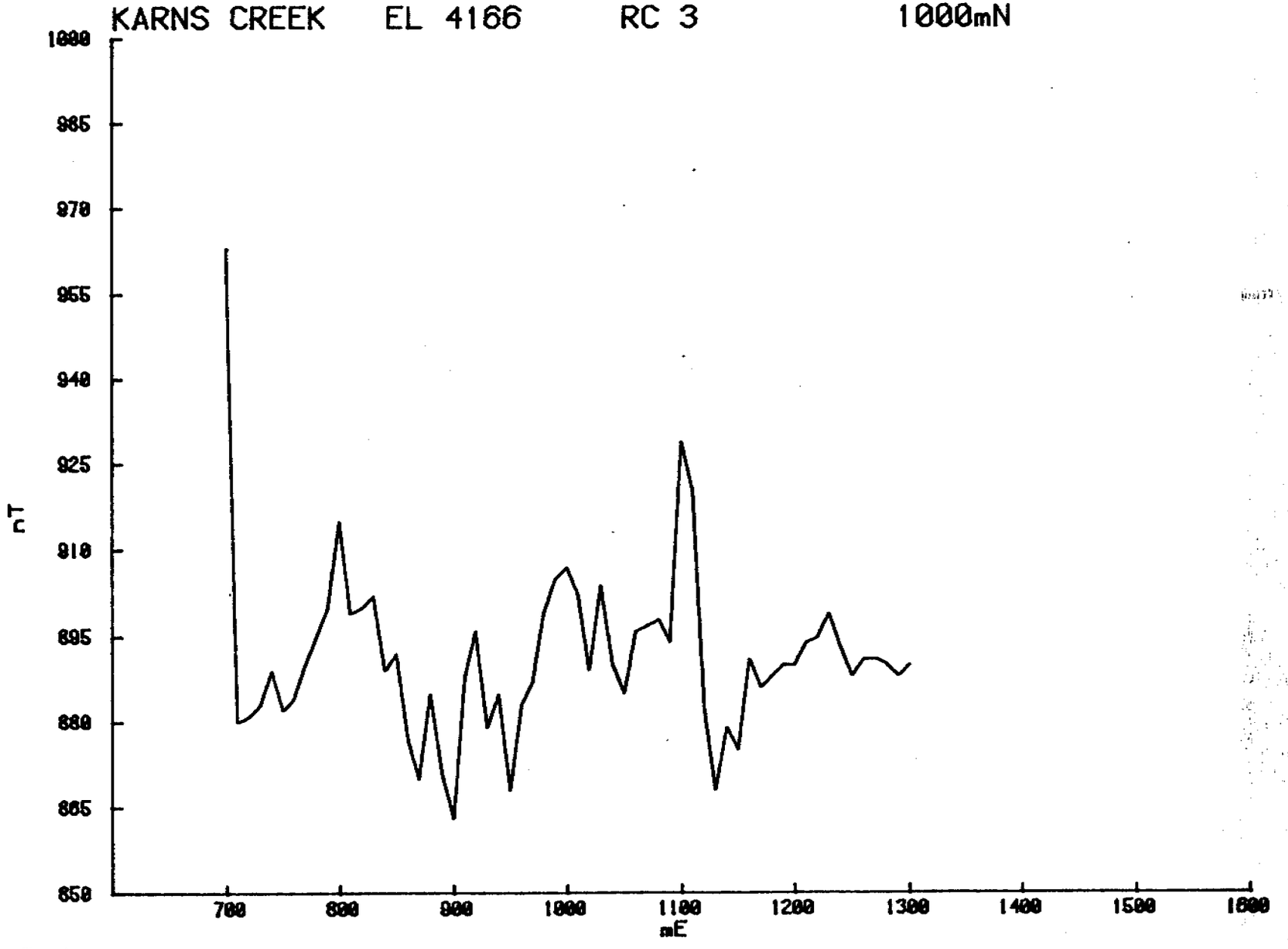
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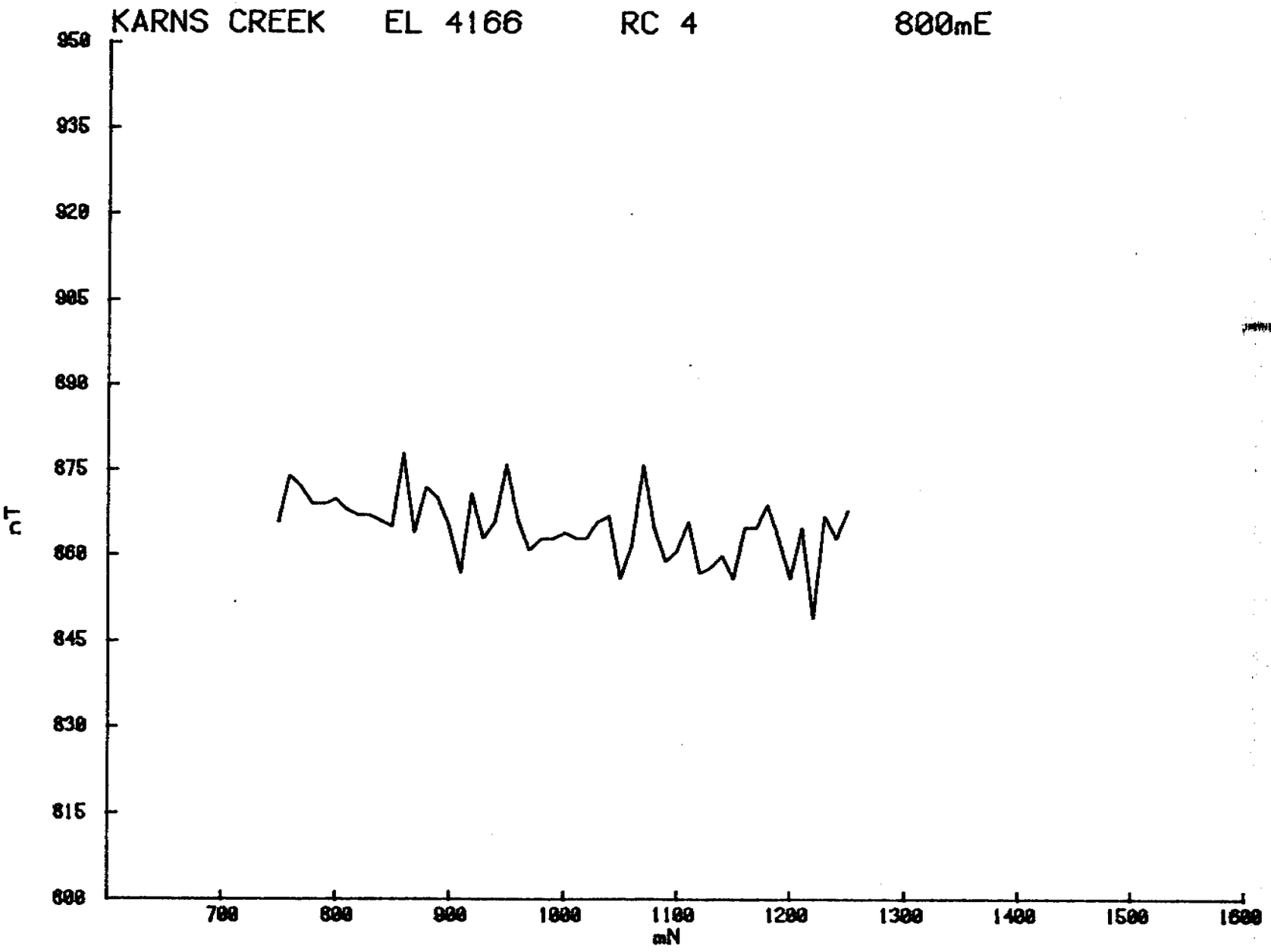
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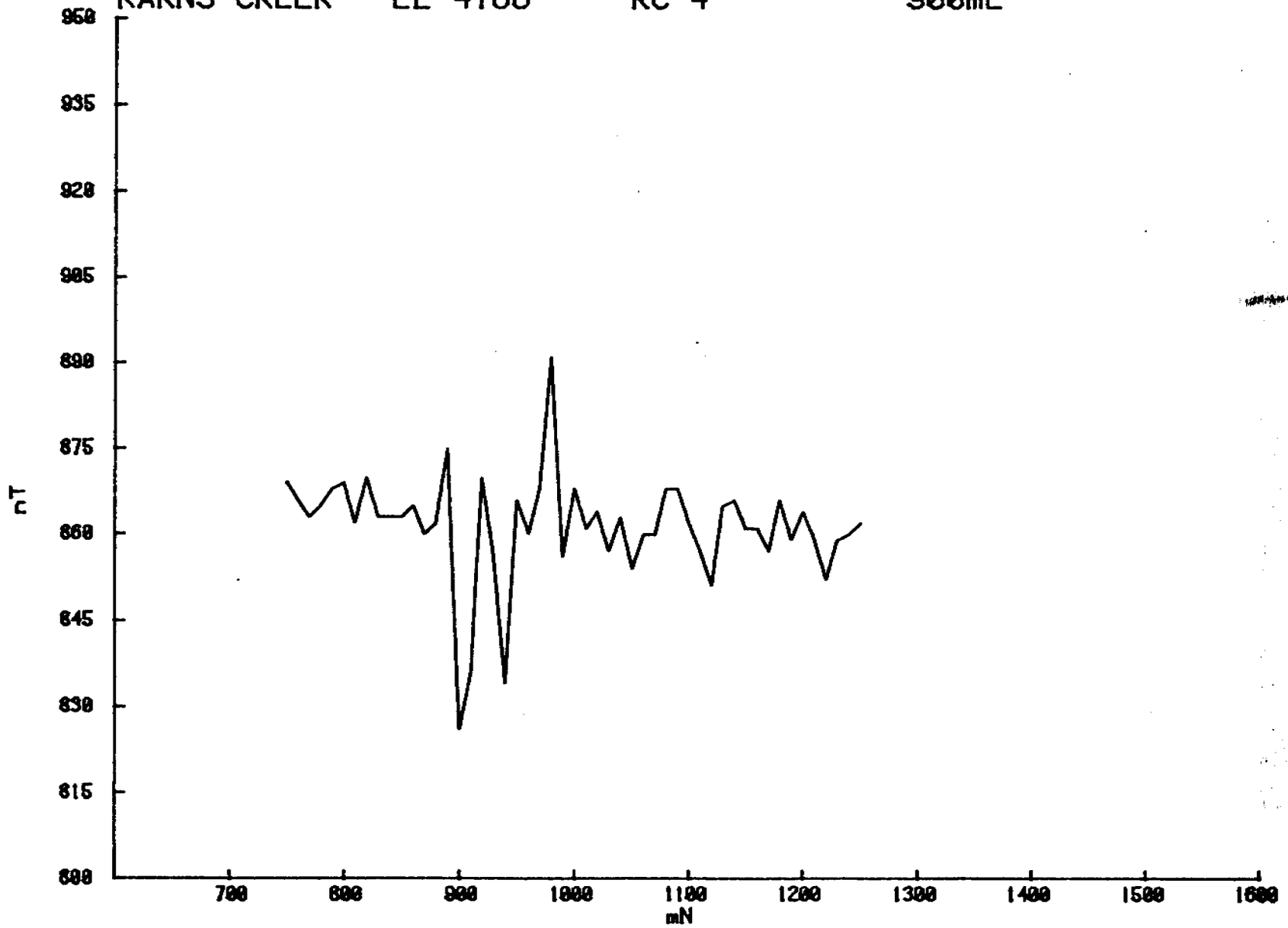
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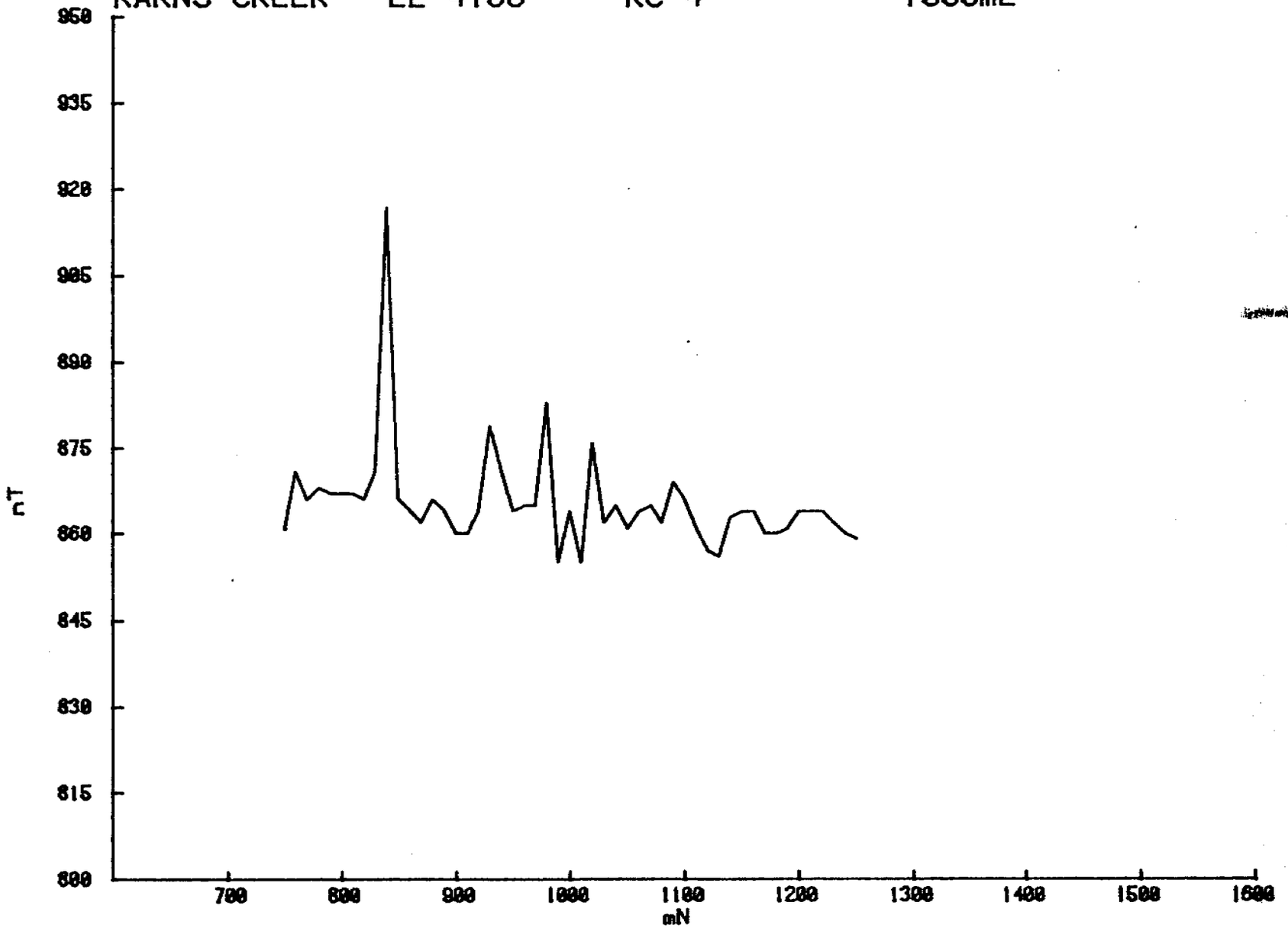
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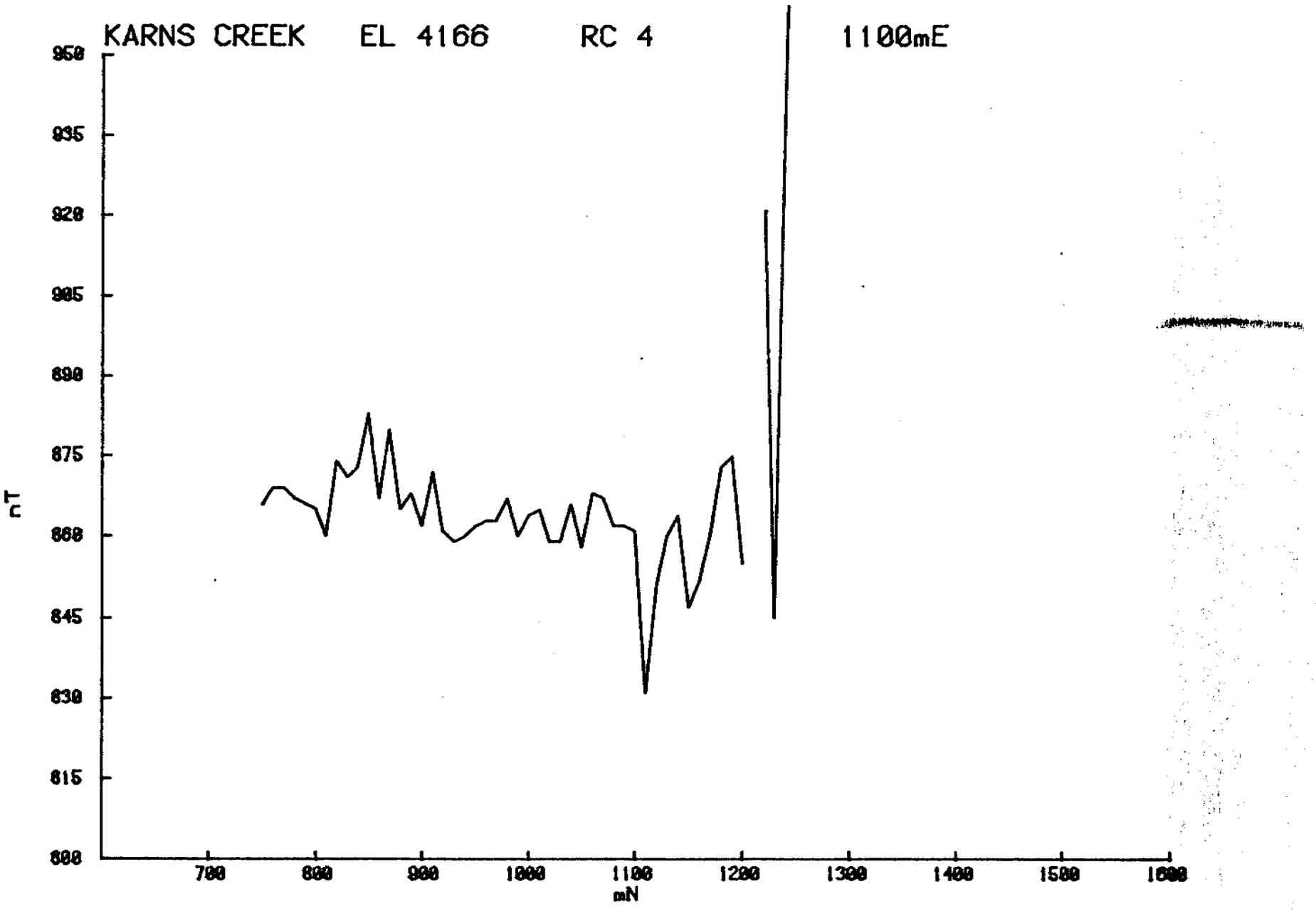
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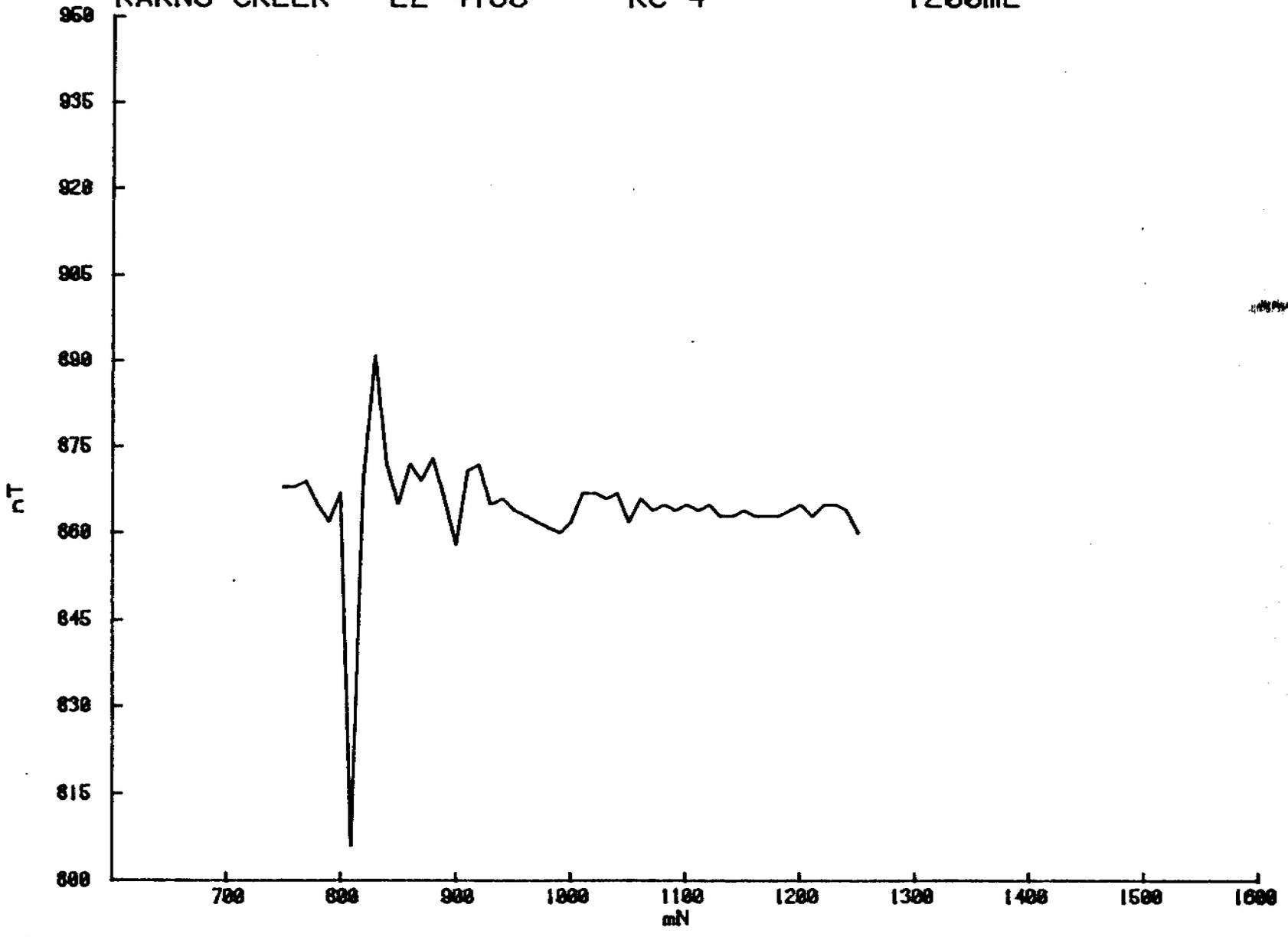
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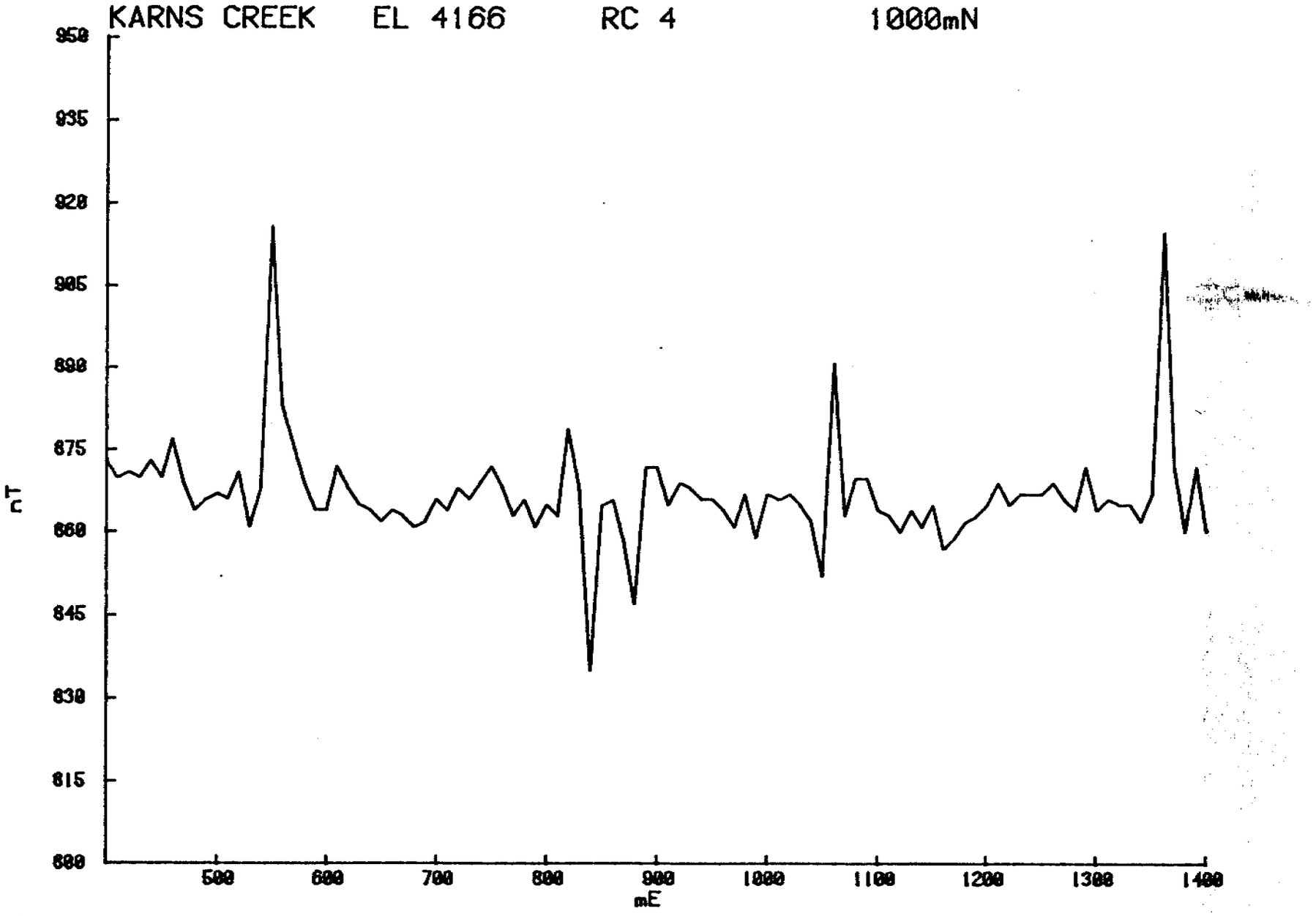
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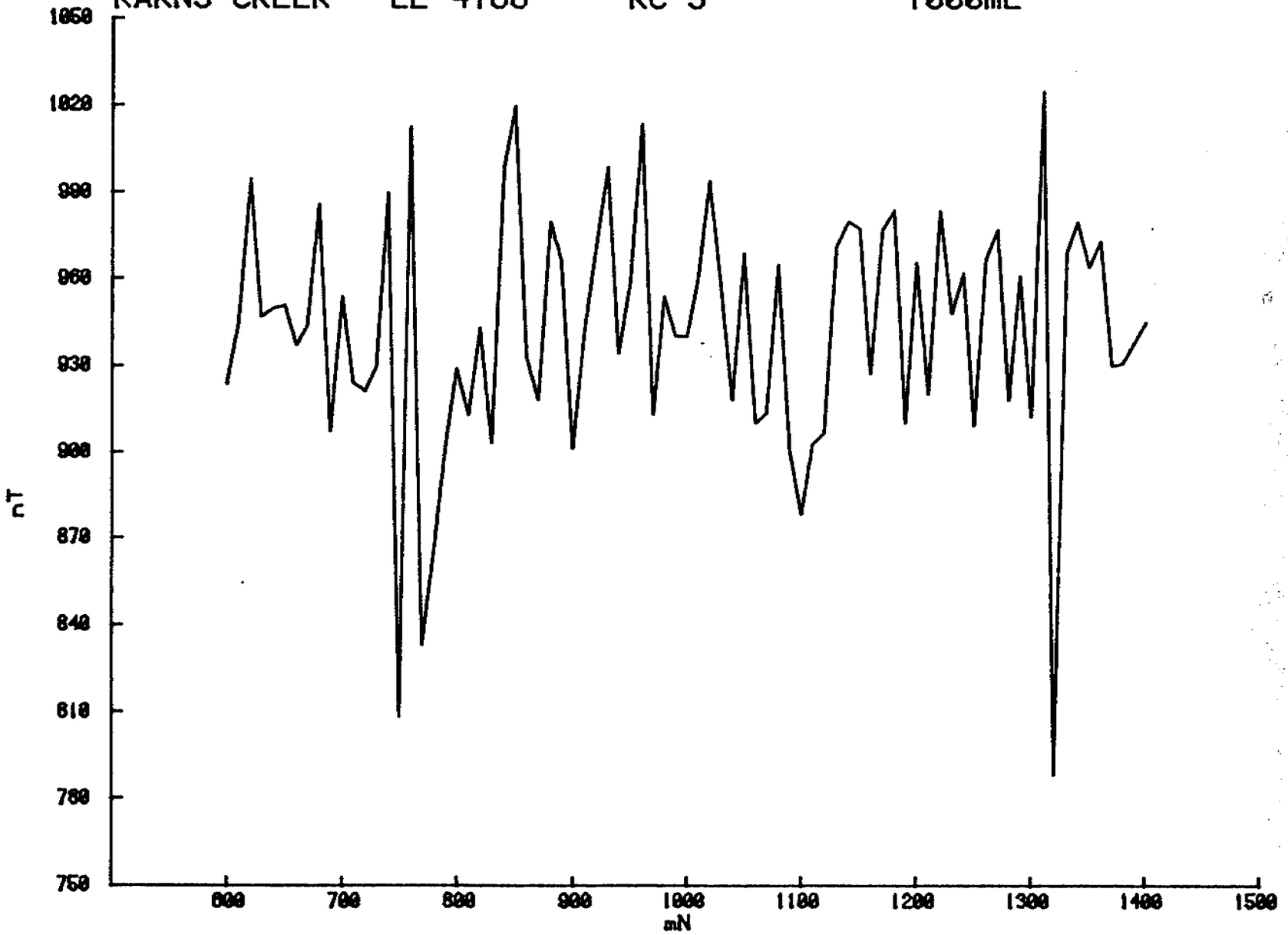
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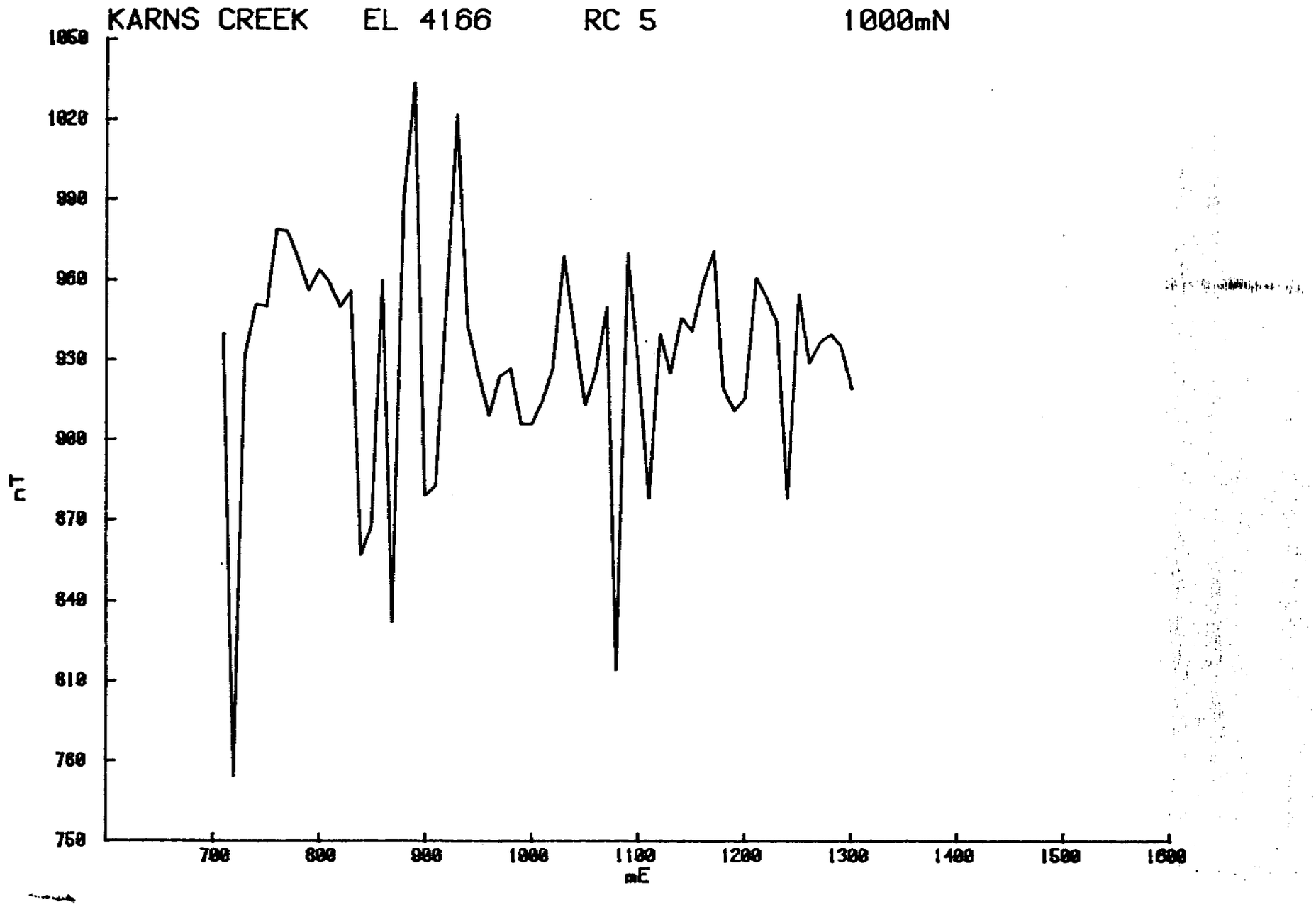
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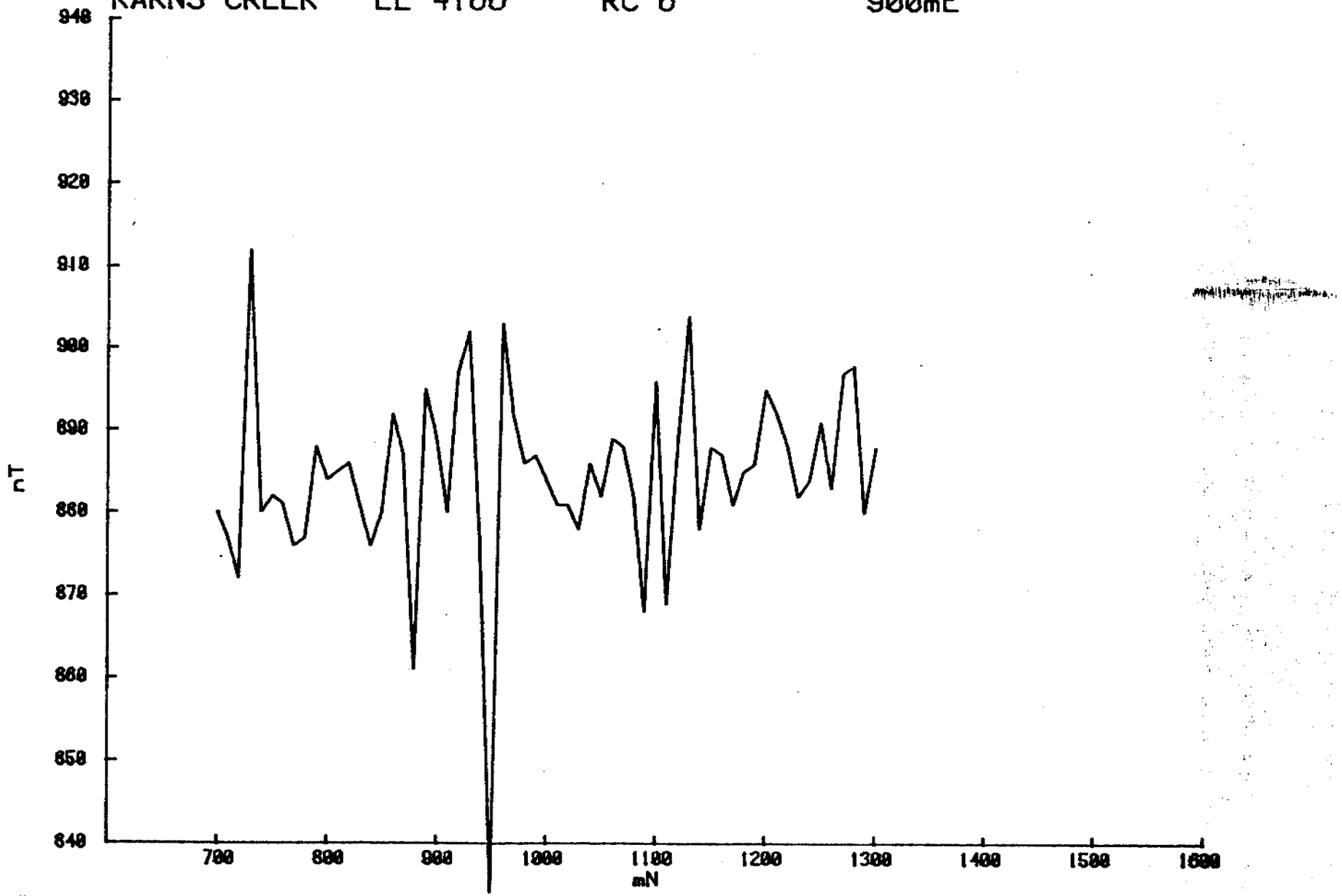
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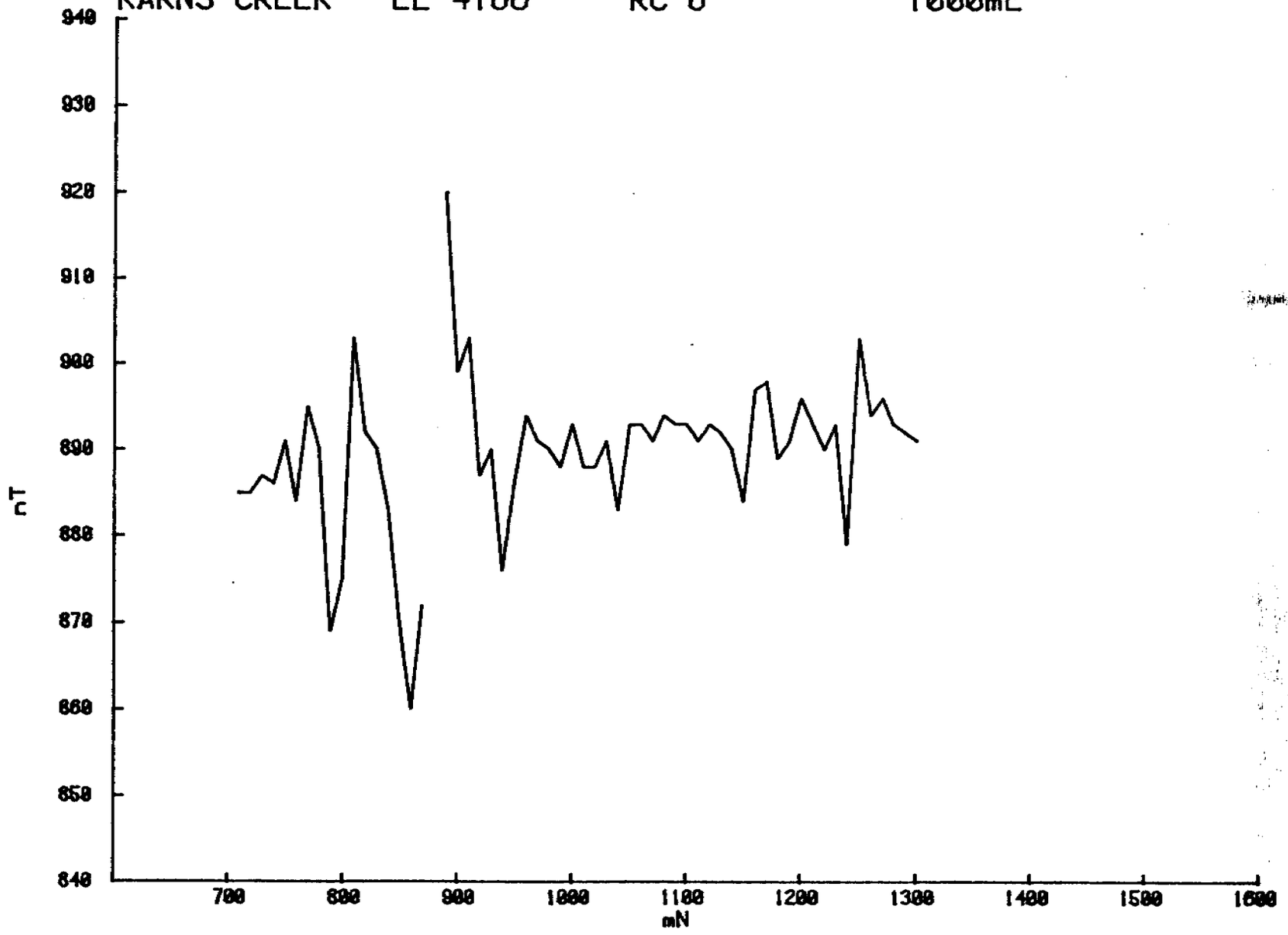
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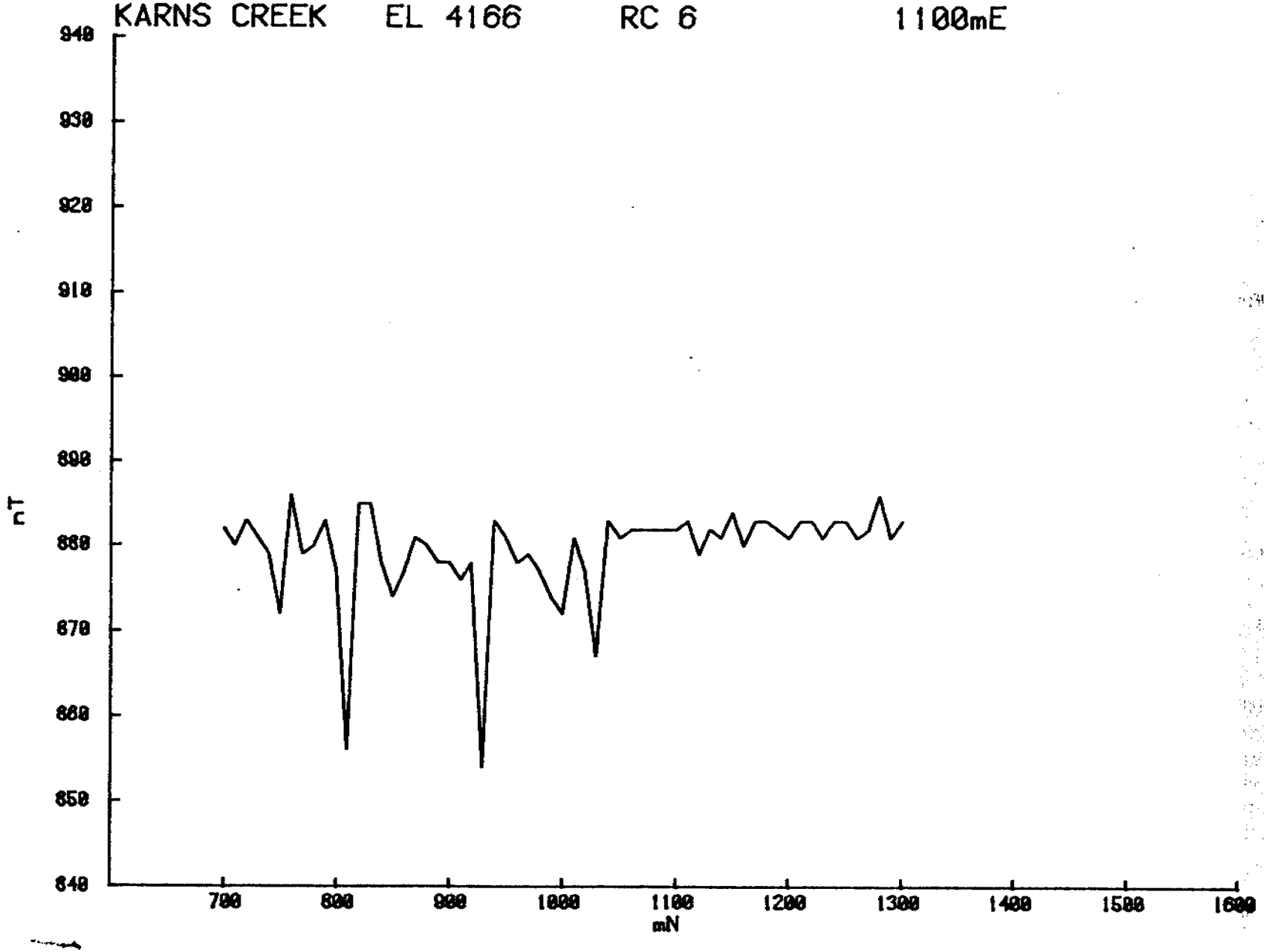
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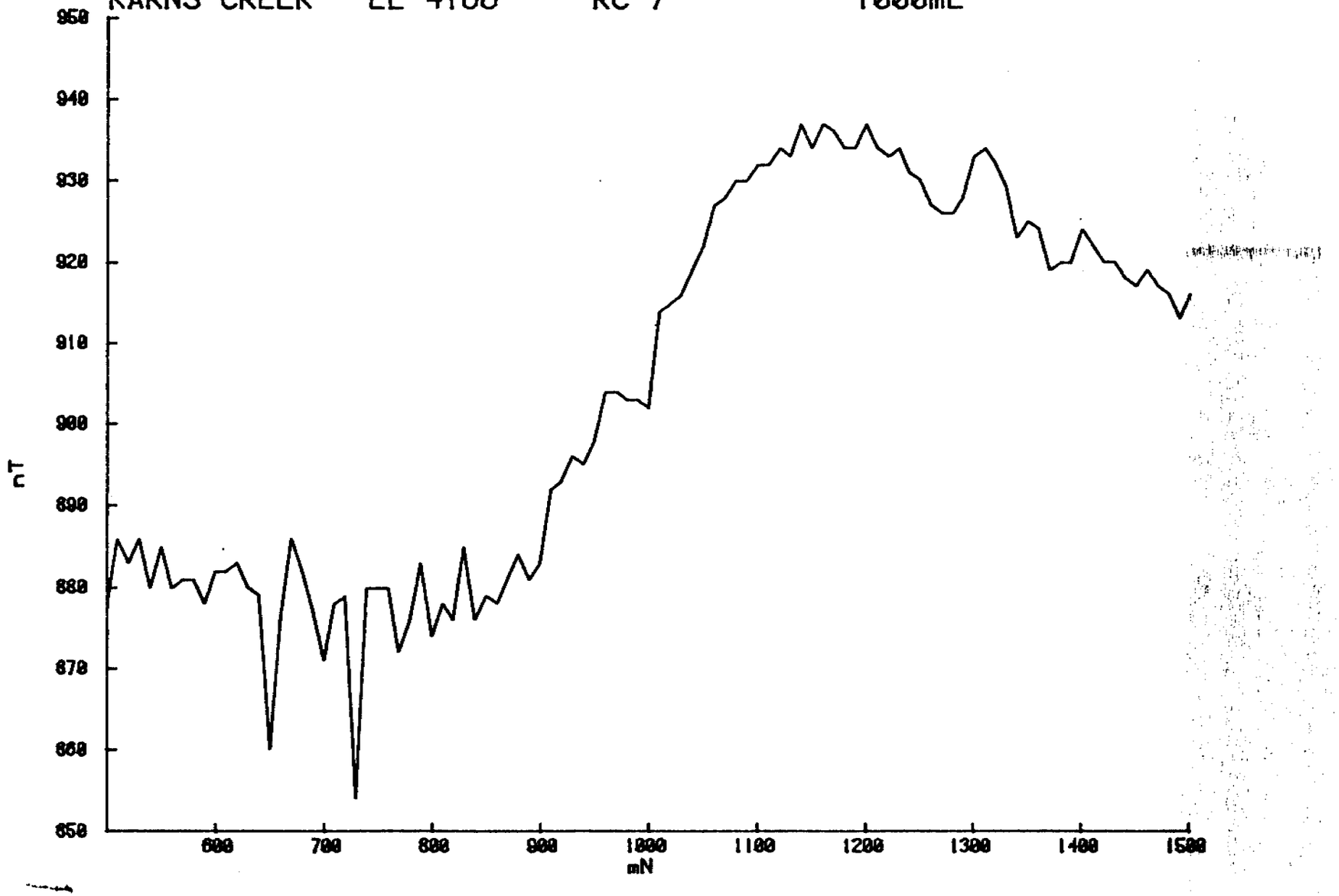
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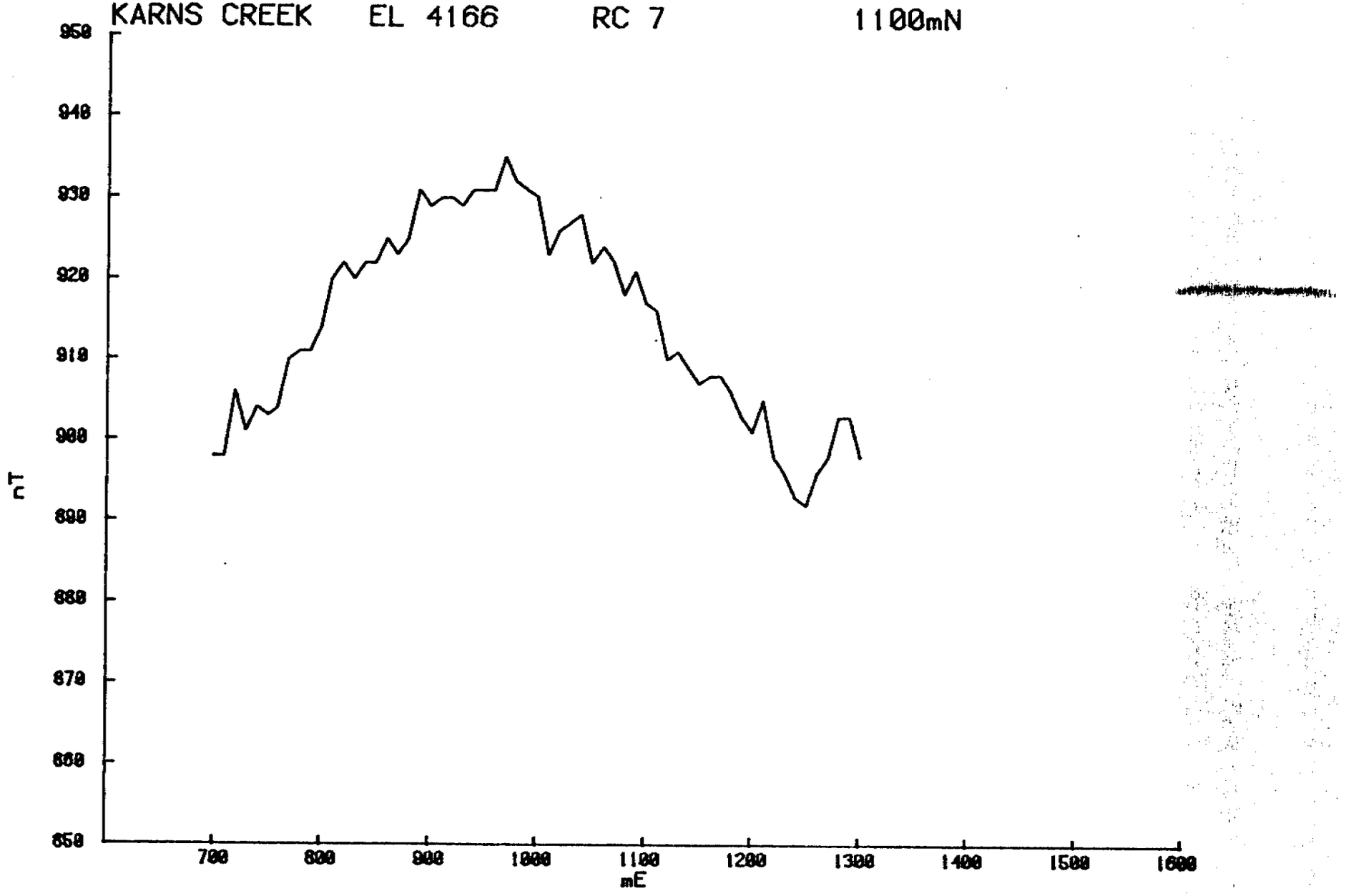
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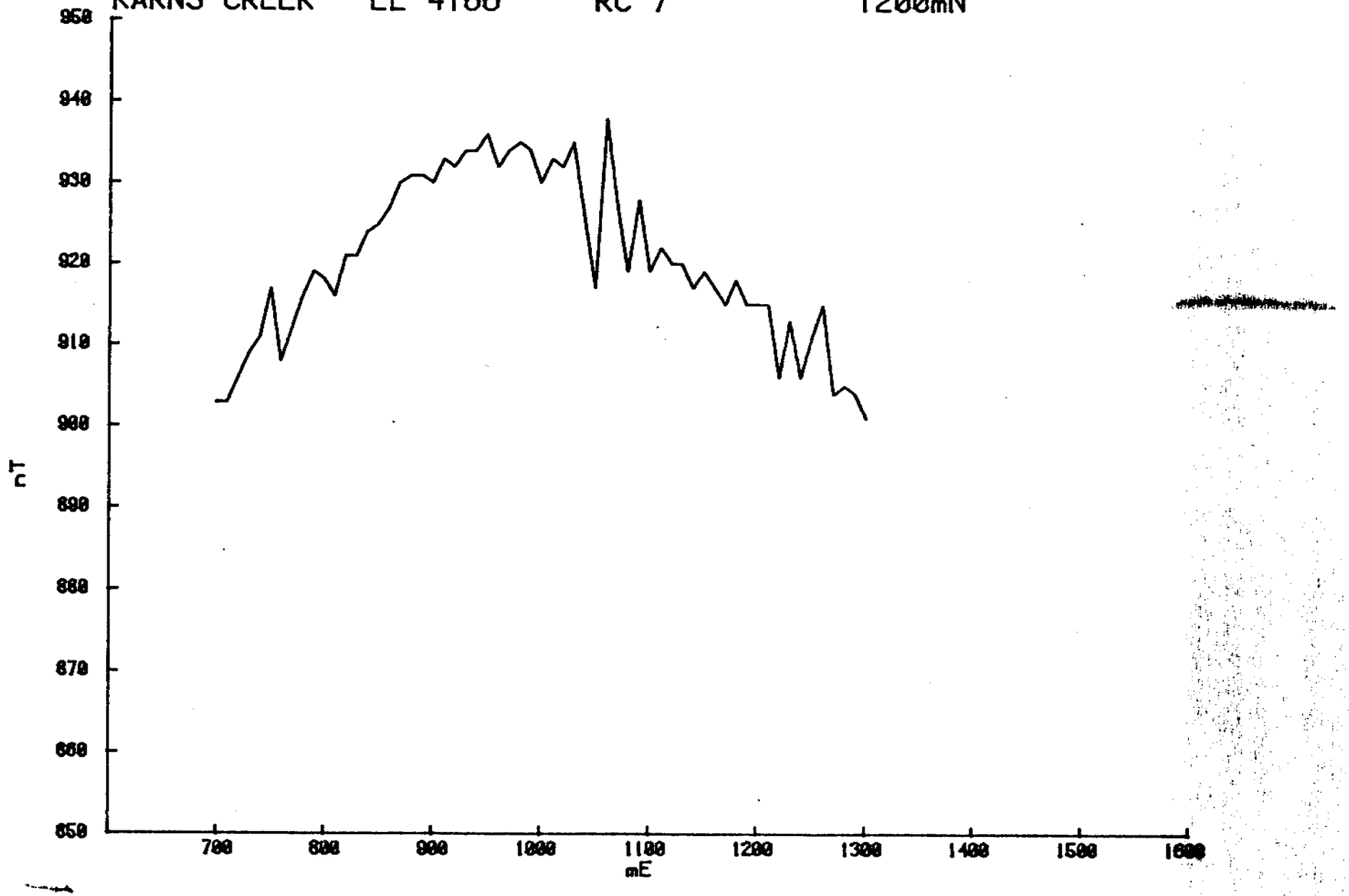
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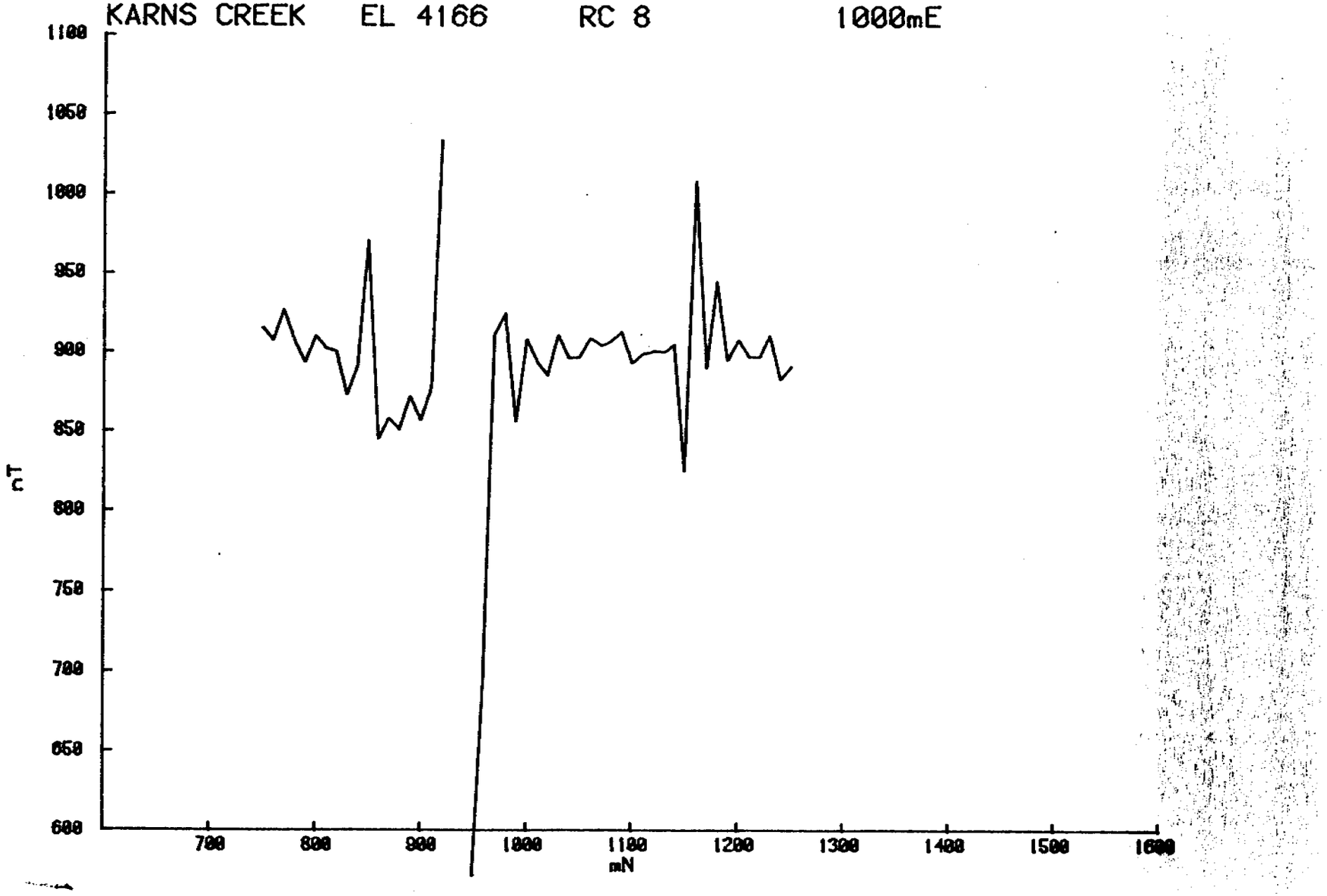
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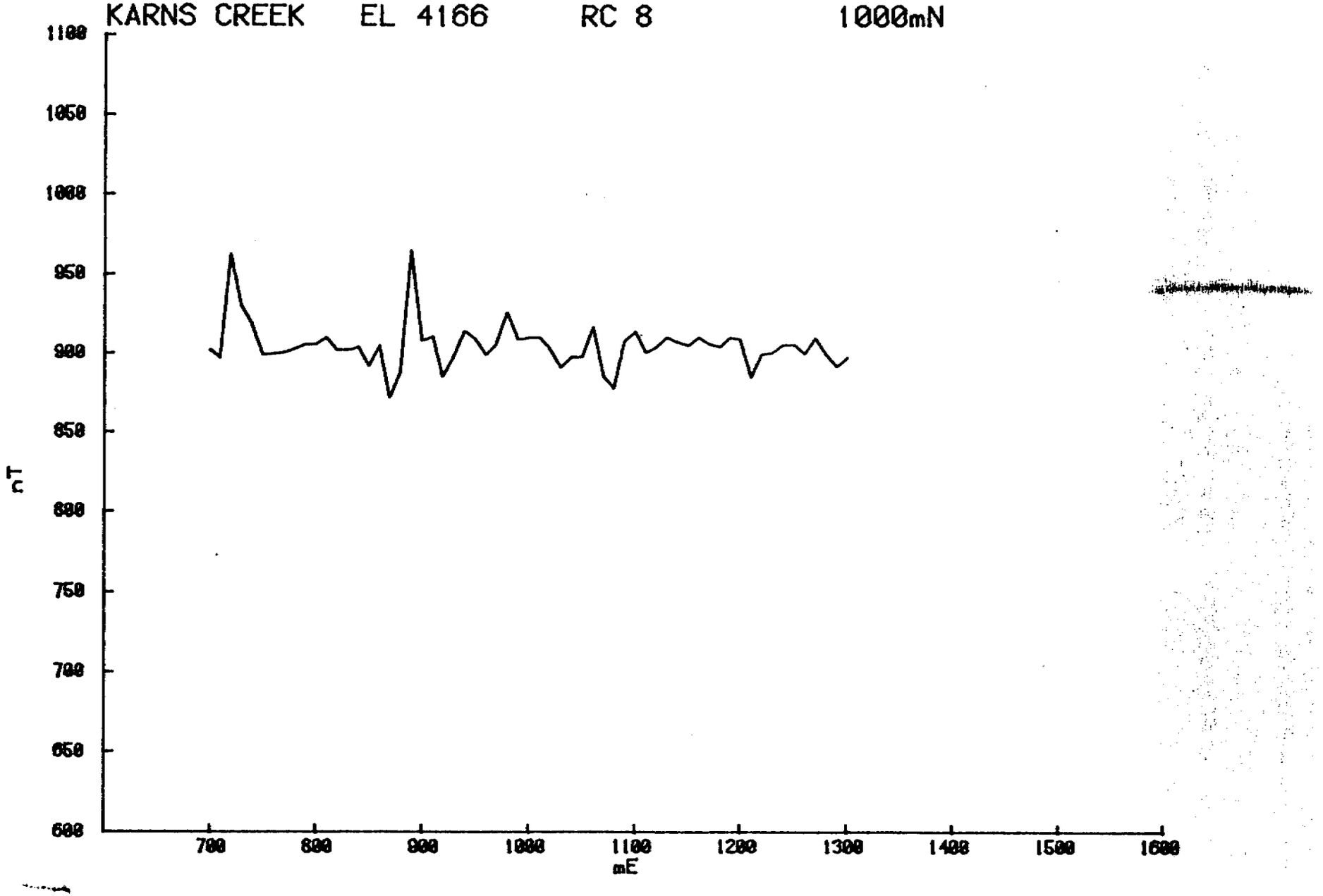
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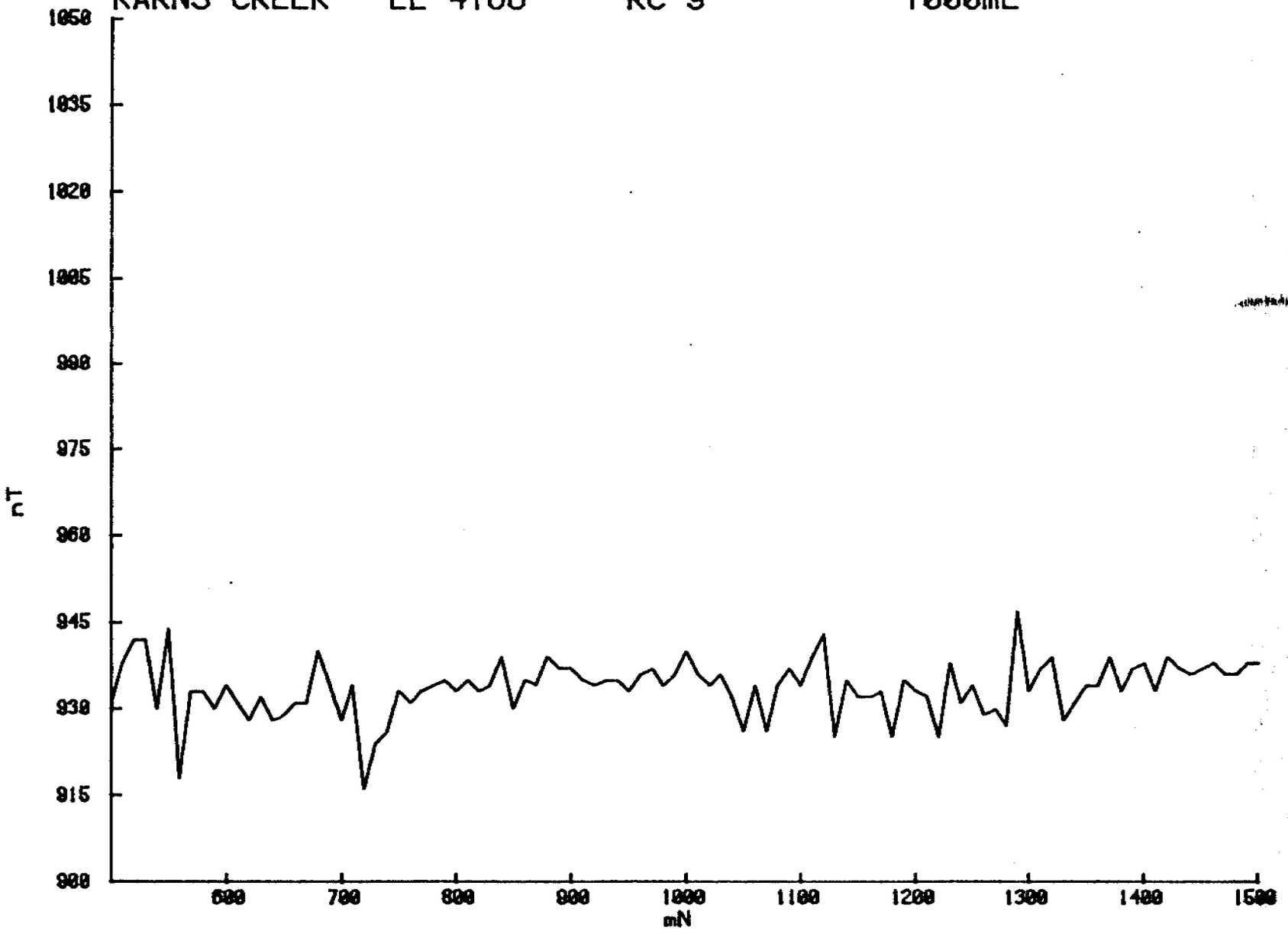
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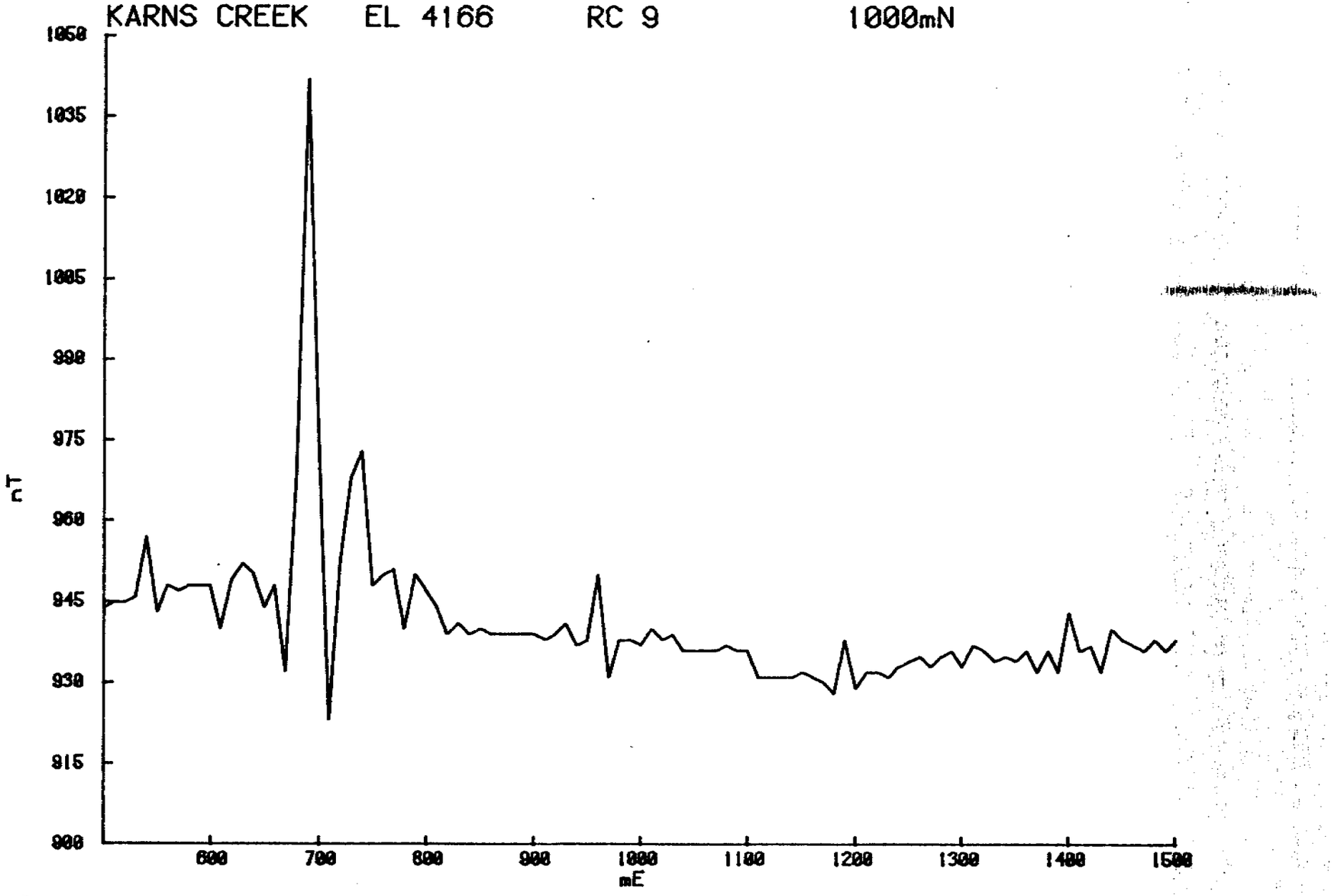
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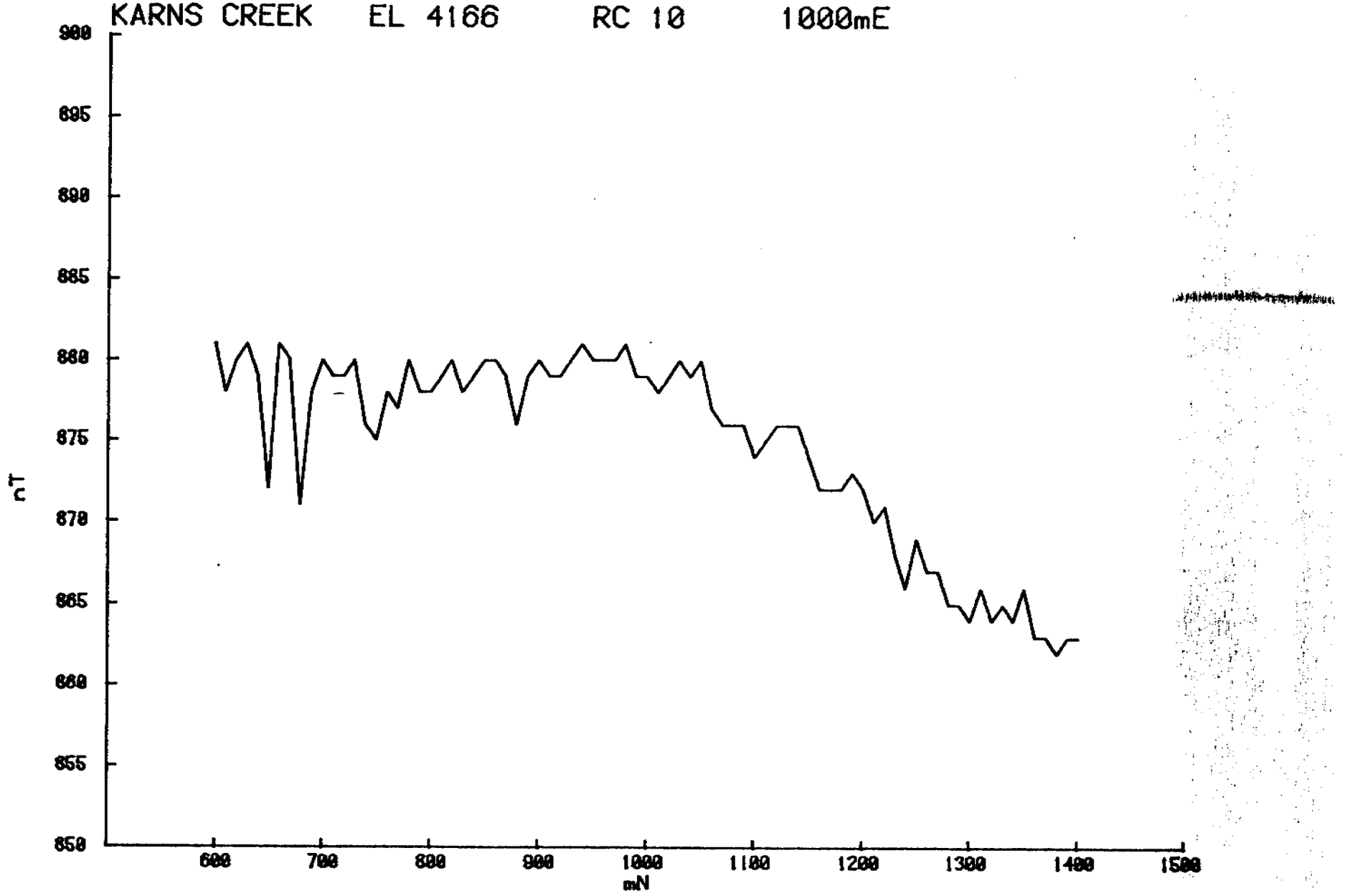
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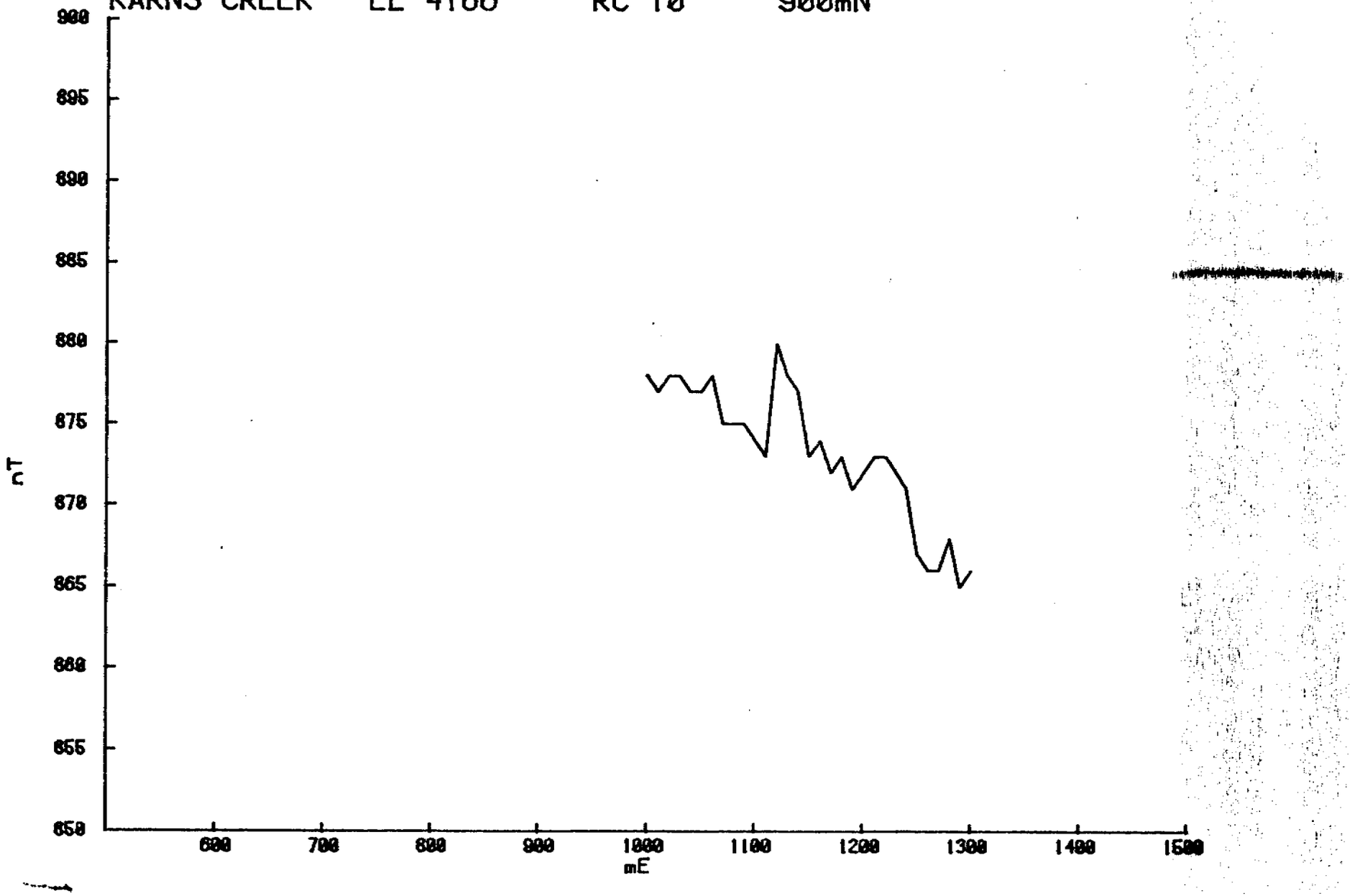
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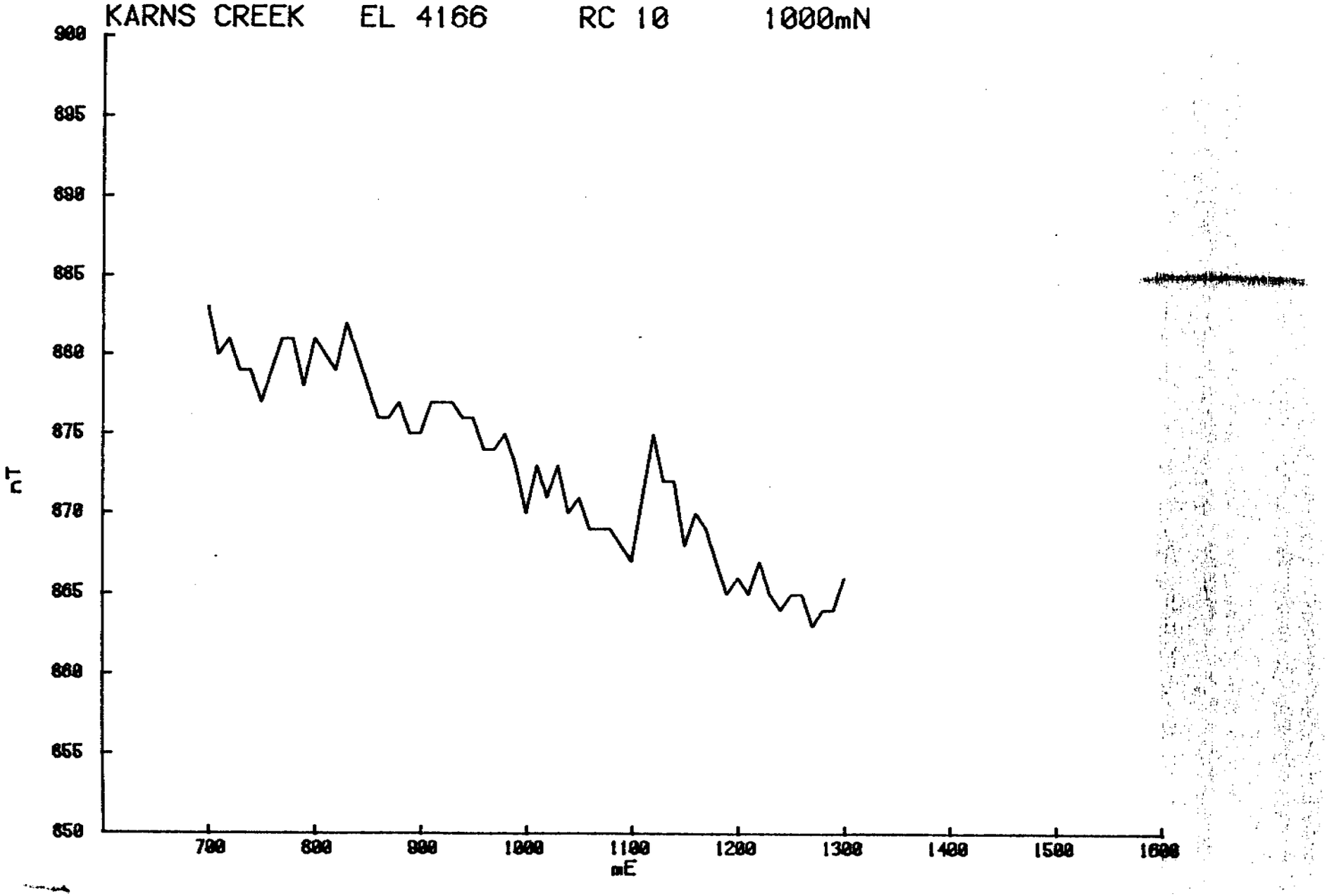
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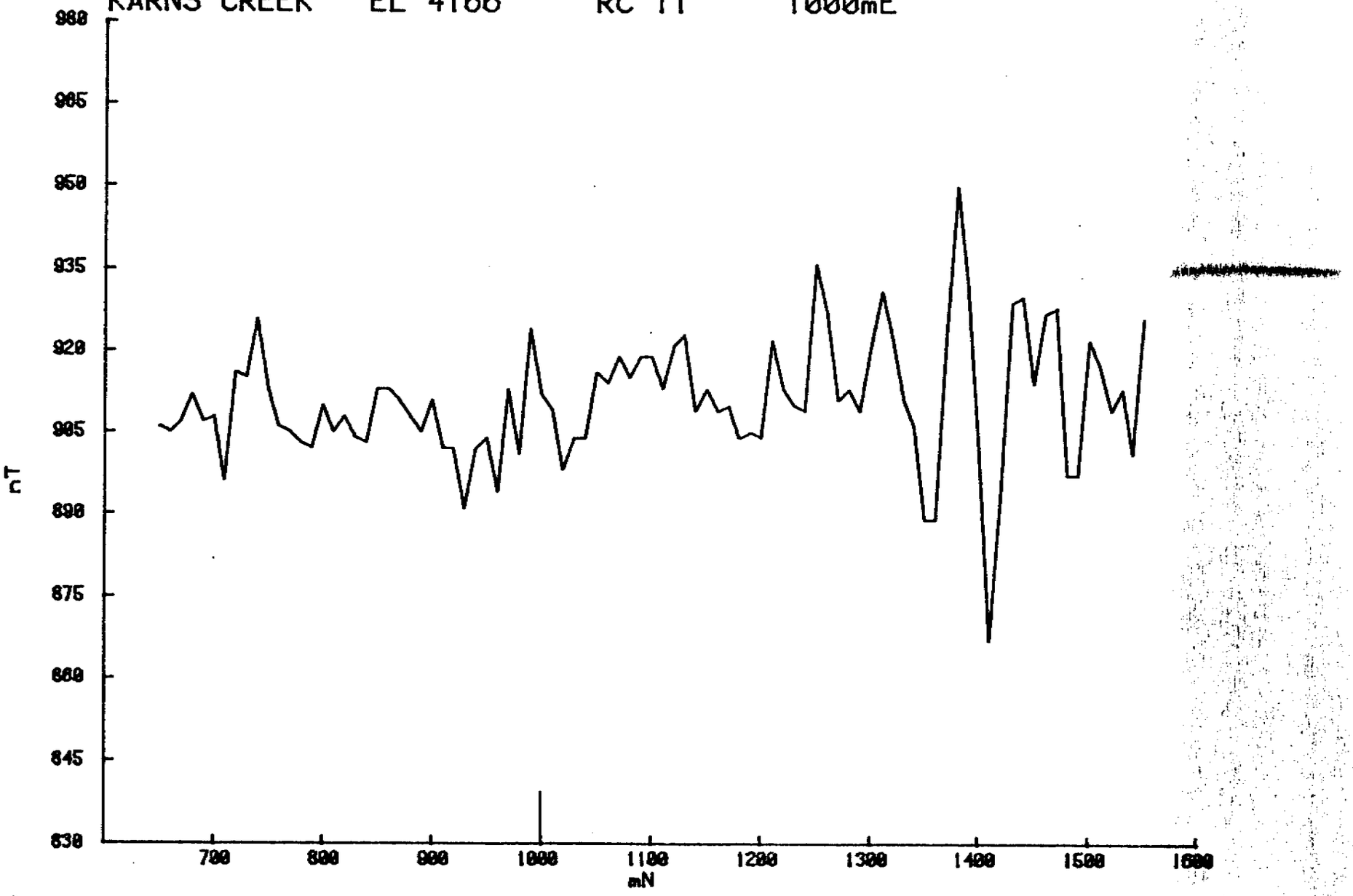
KARNS CREEK EL 4166 RC 11 1000mE
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935
920
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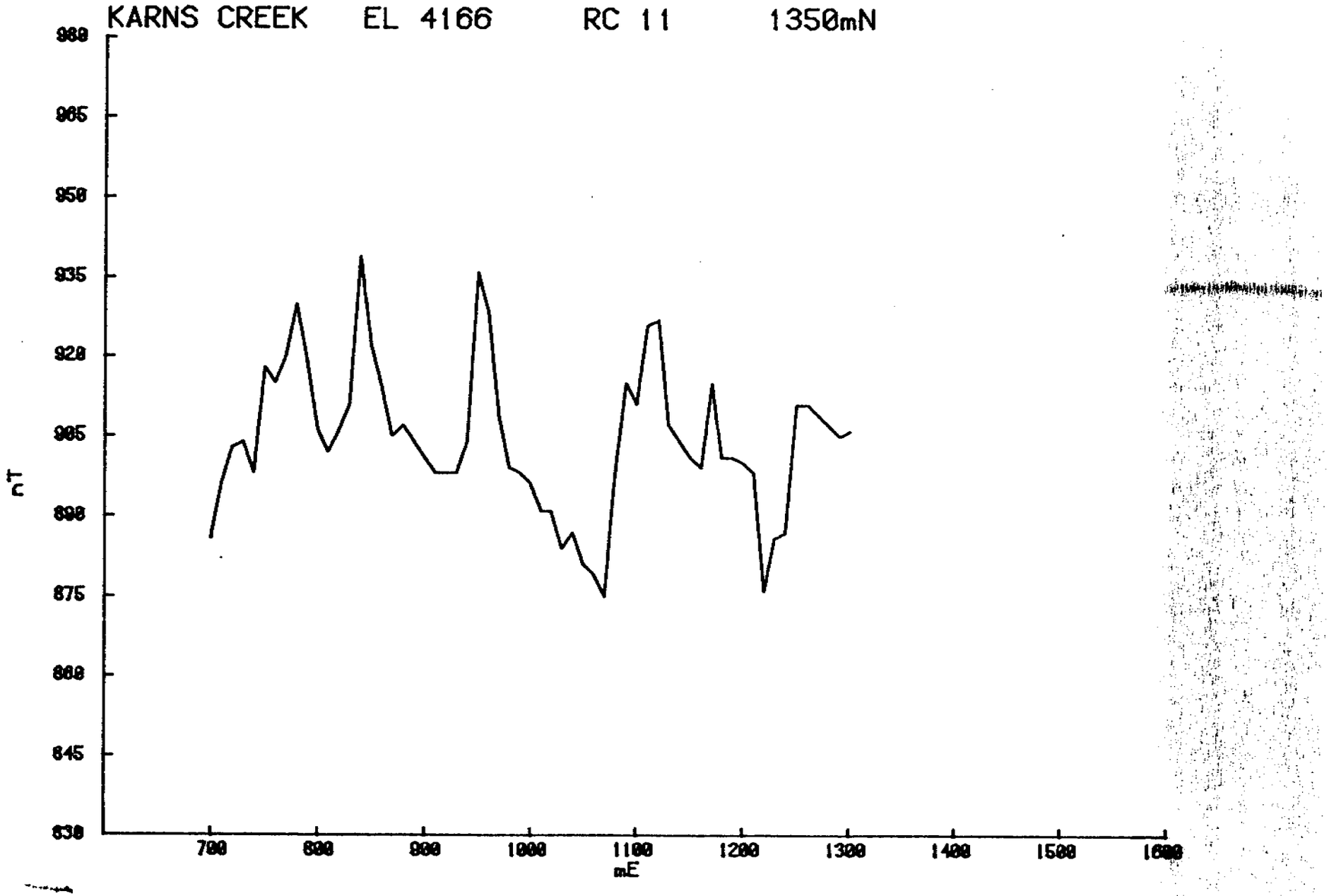
KARNS CREEK EL 4166 RC 11 1350mN
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935
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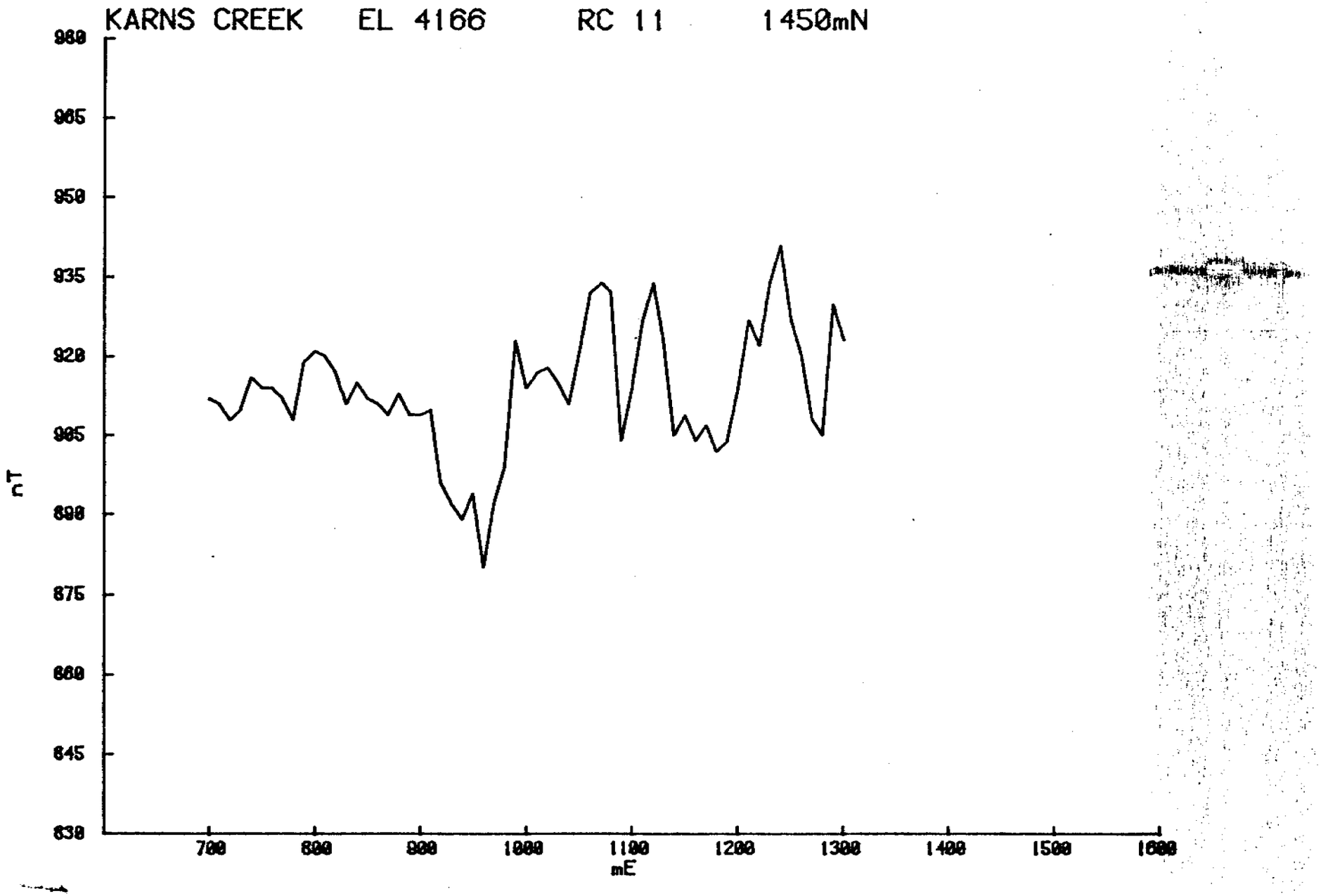
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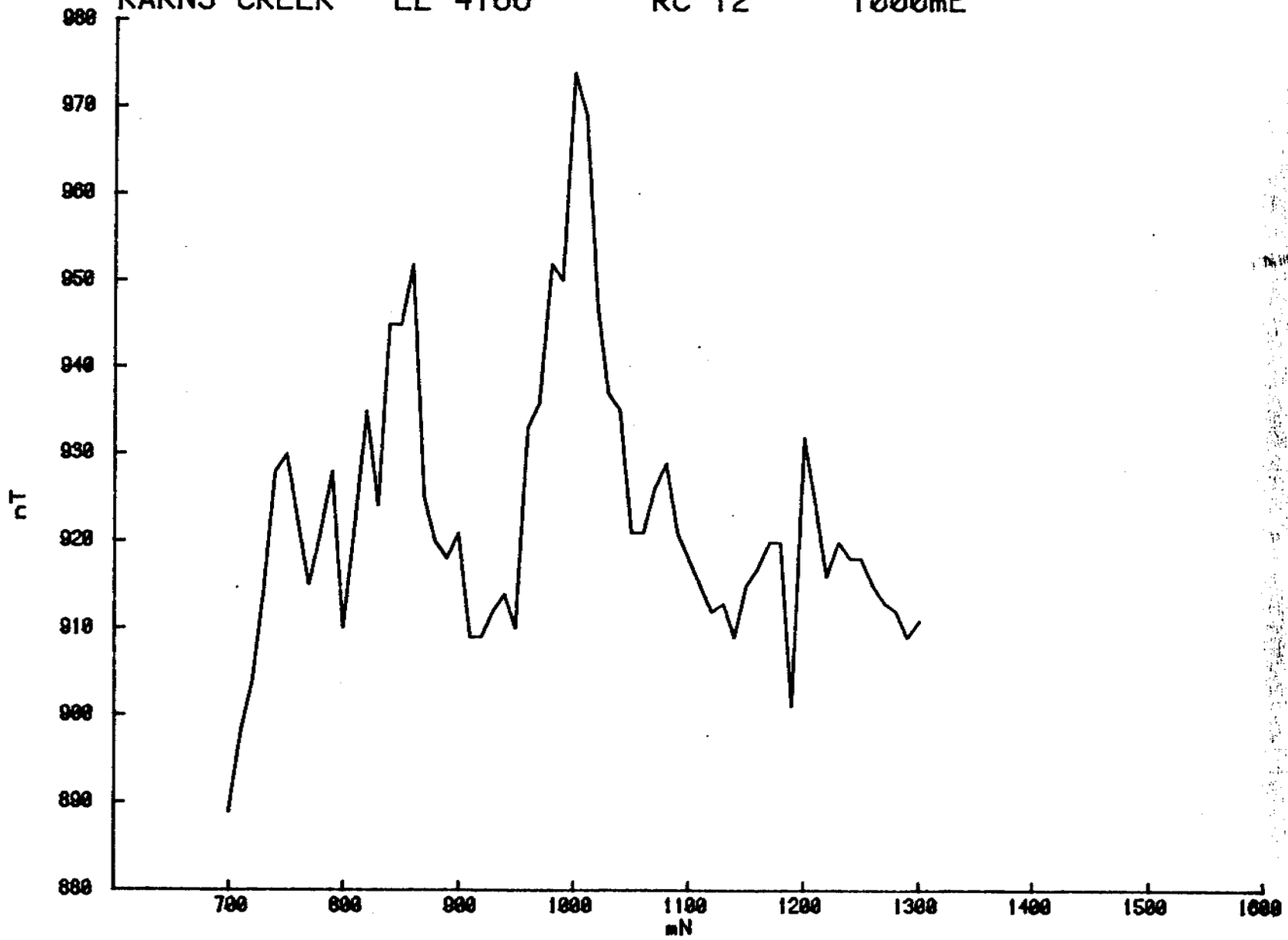
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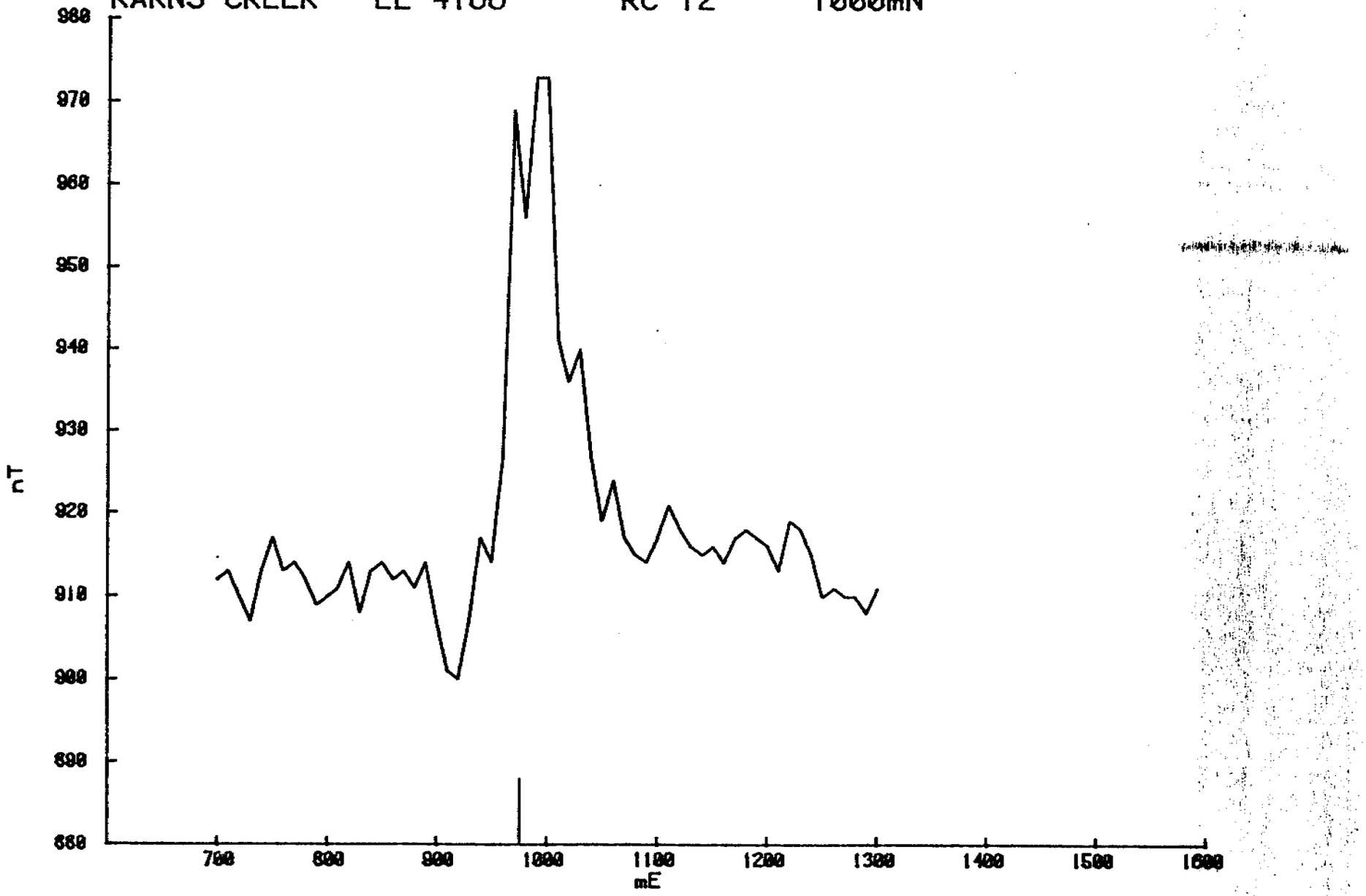
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970
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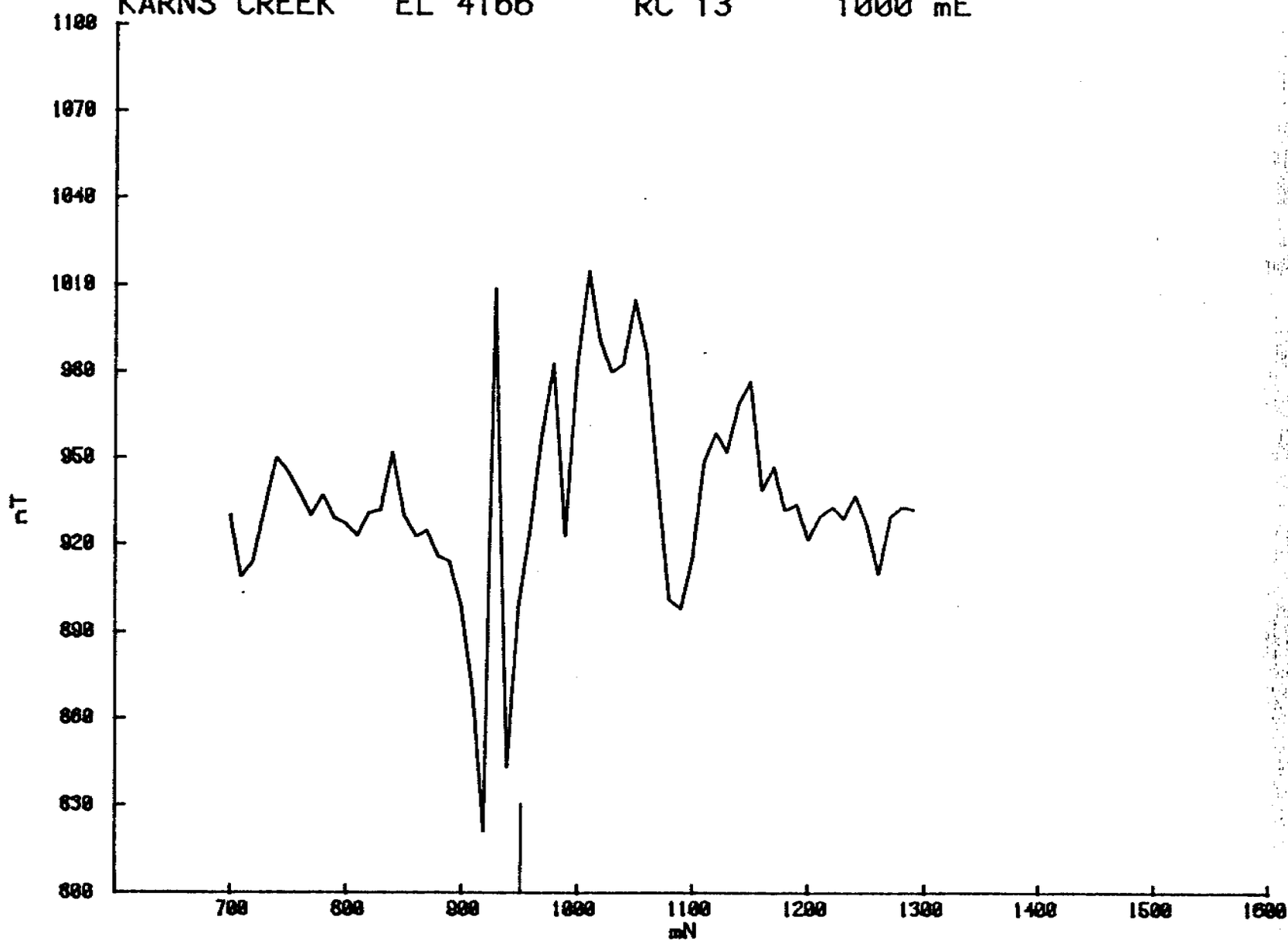
KARNS CREEK EL 4166 RC 13 1000 mE
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1010
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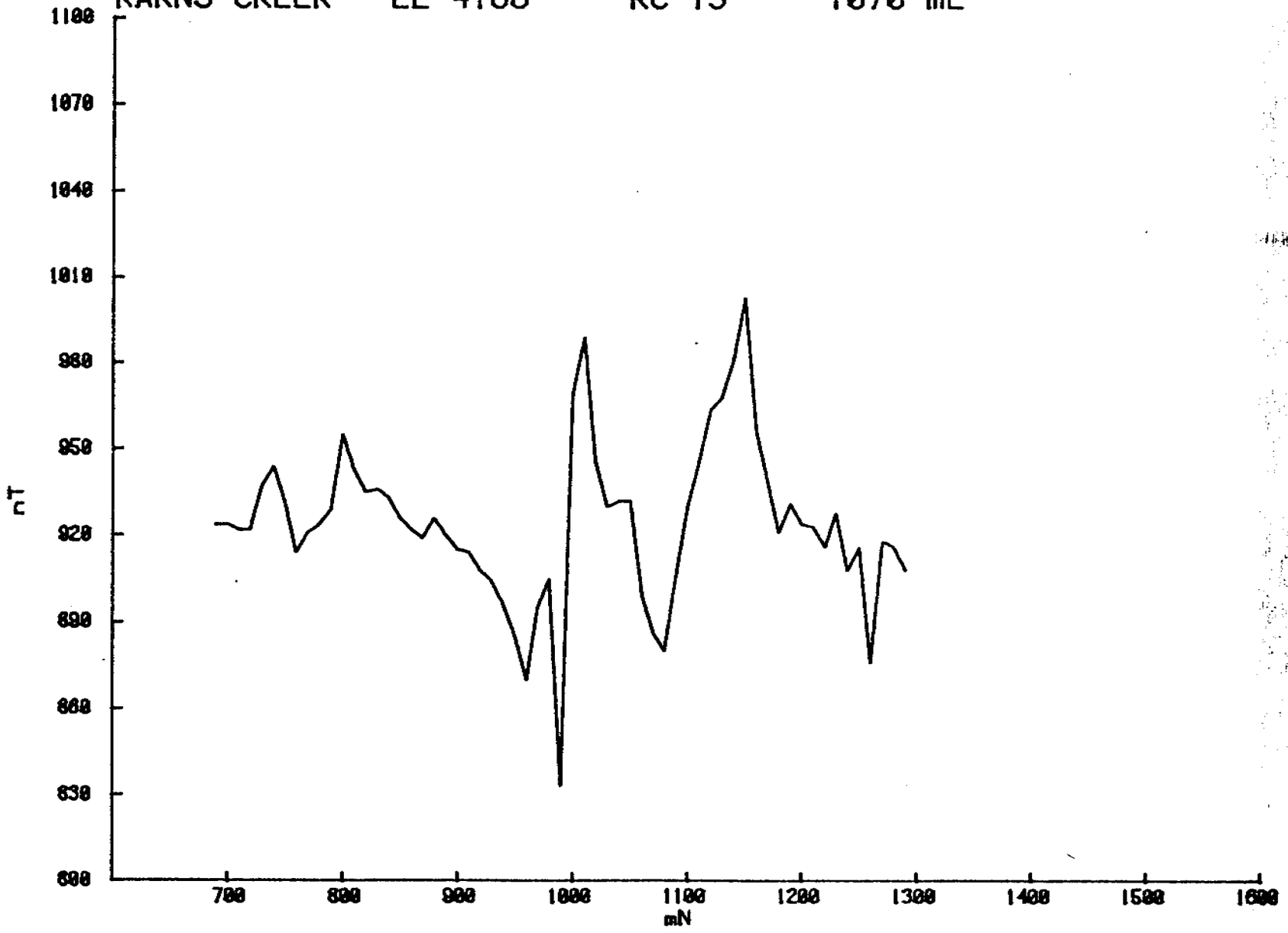
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1070
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1010
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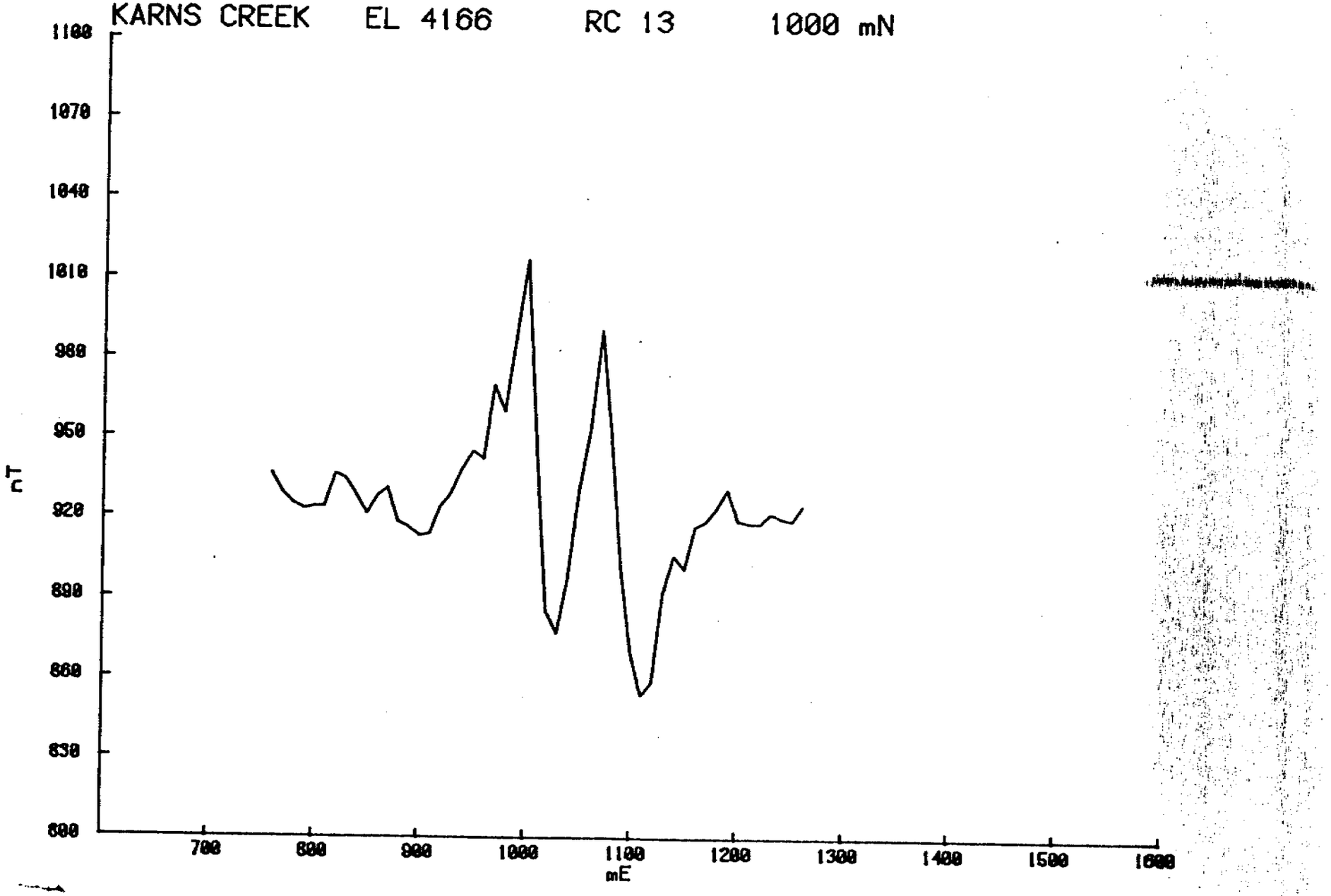
KARNS CREEK EL 4166 RC 13 1000 mN
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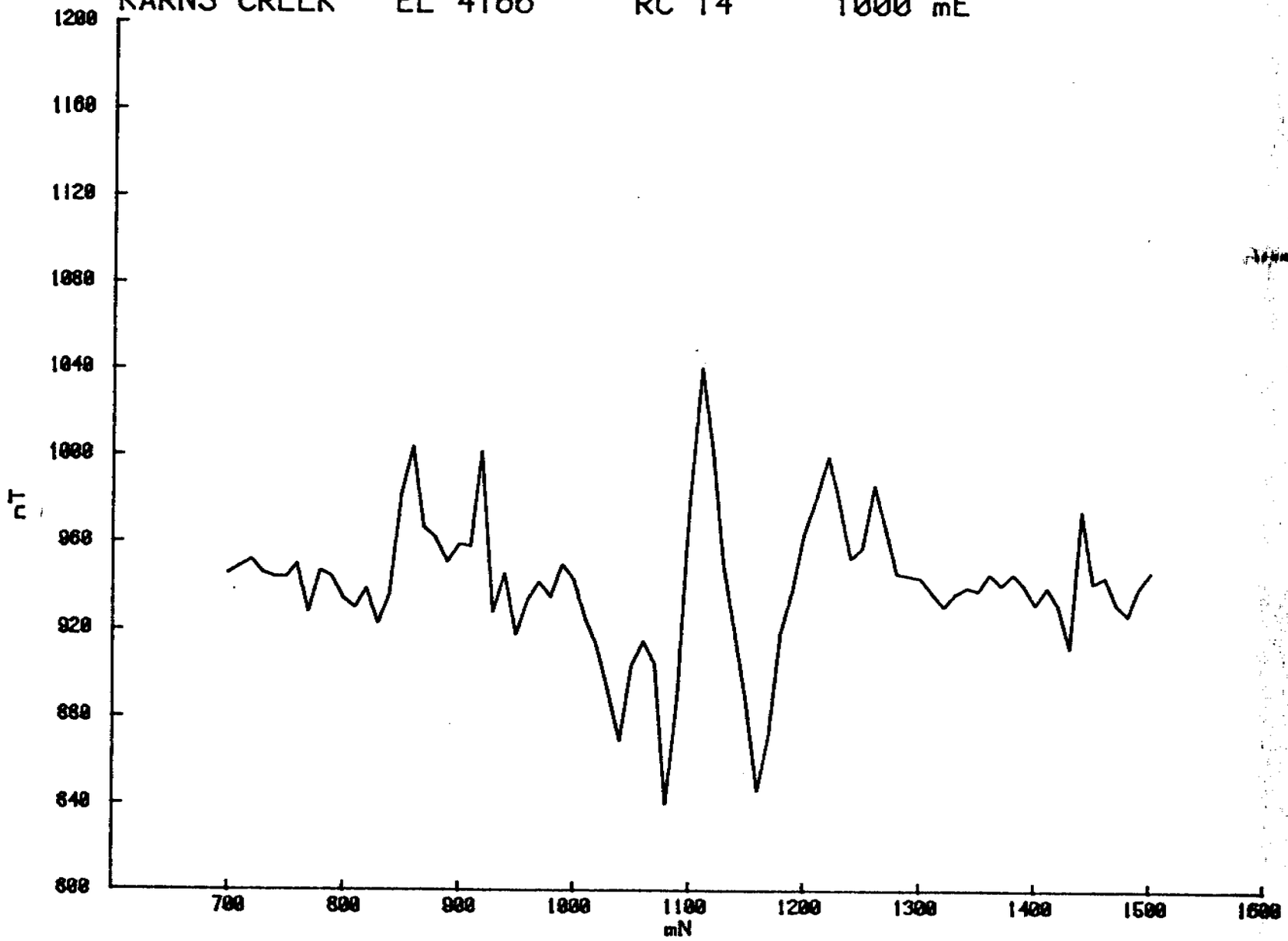
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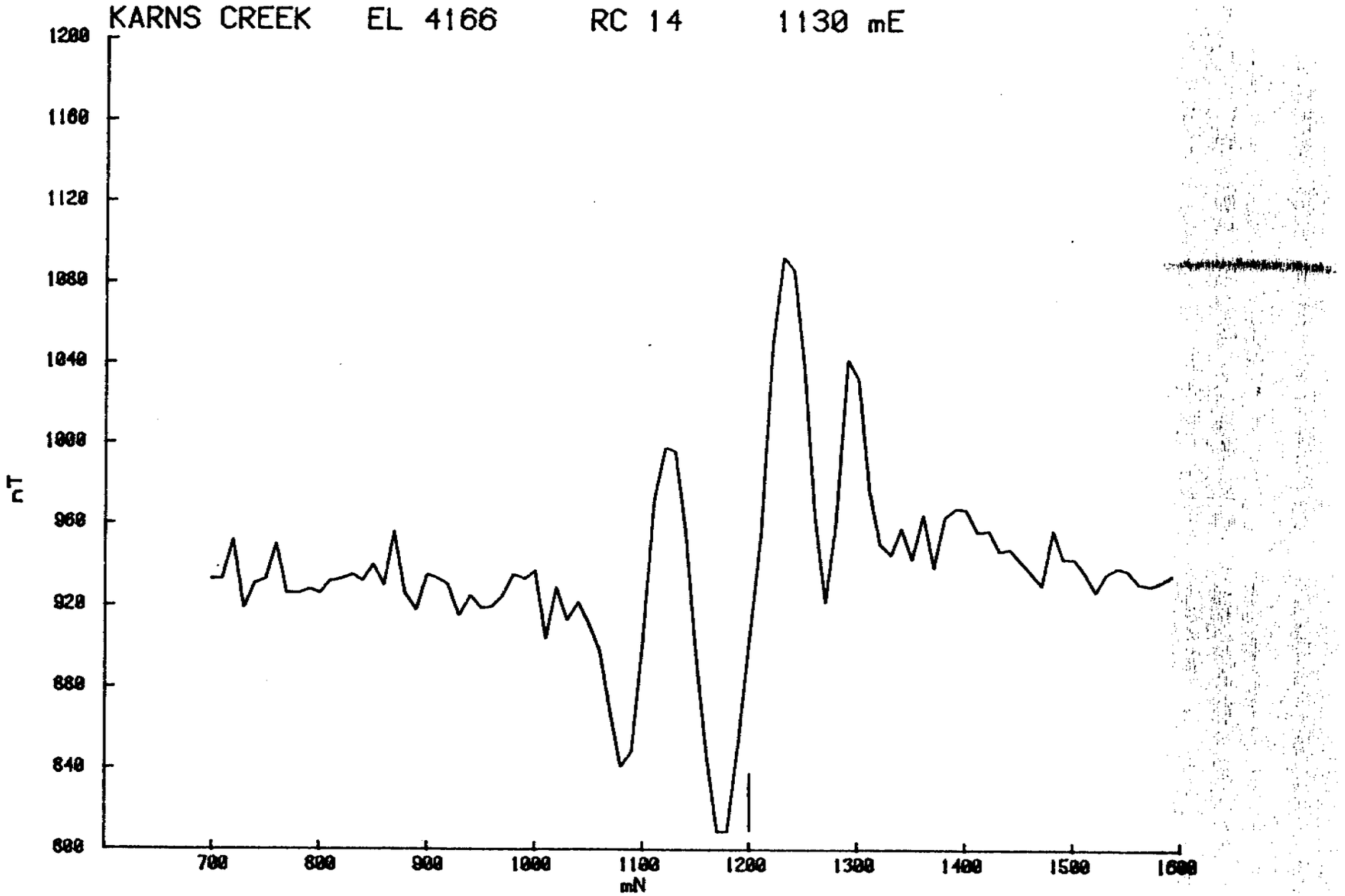
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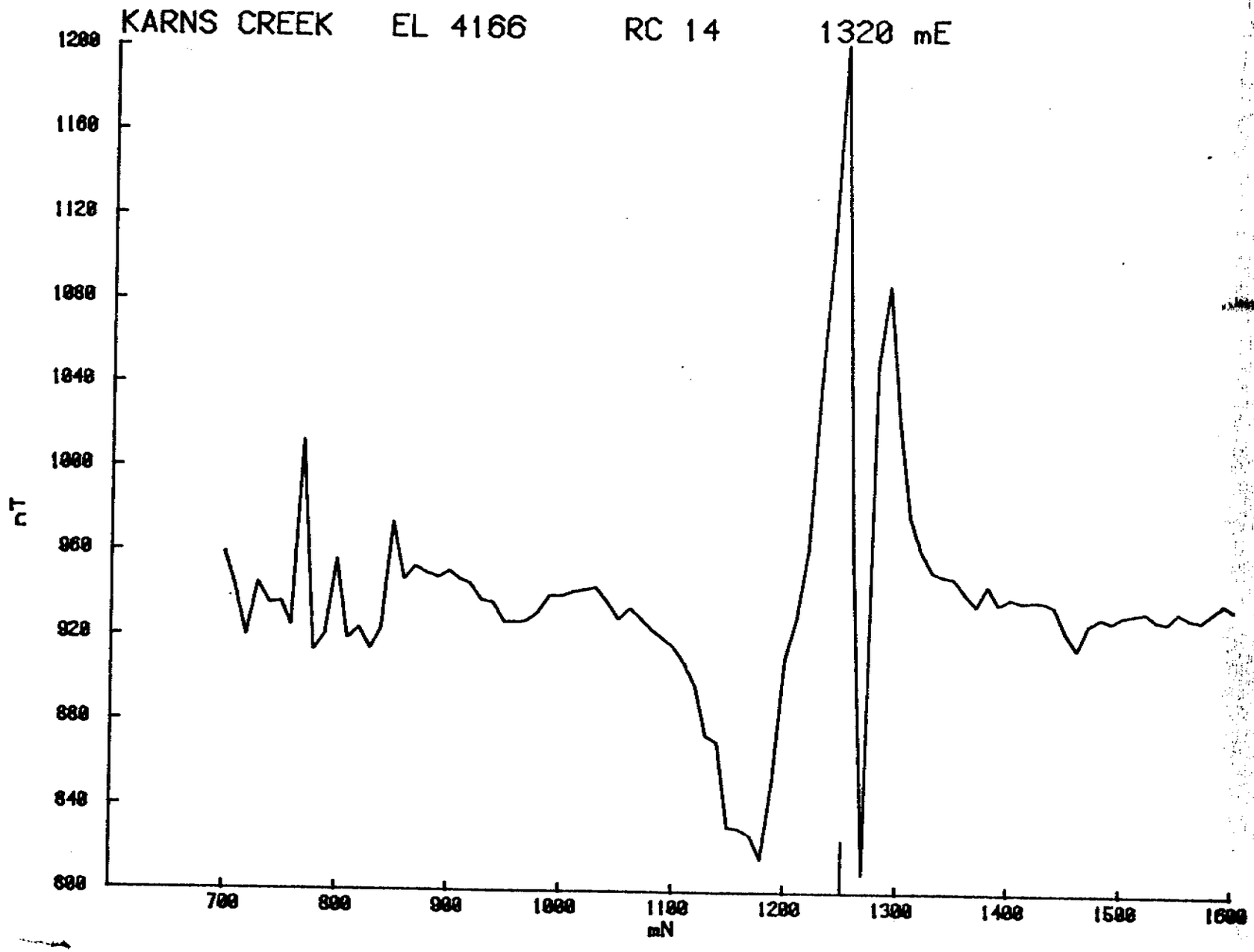
KARNS CREEK EL 4166 RC 14 1320 mE
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1120
1080
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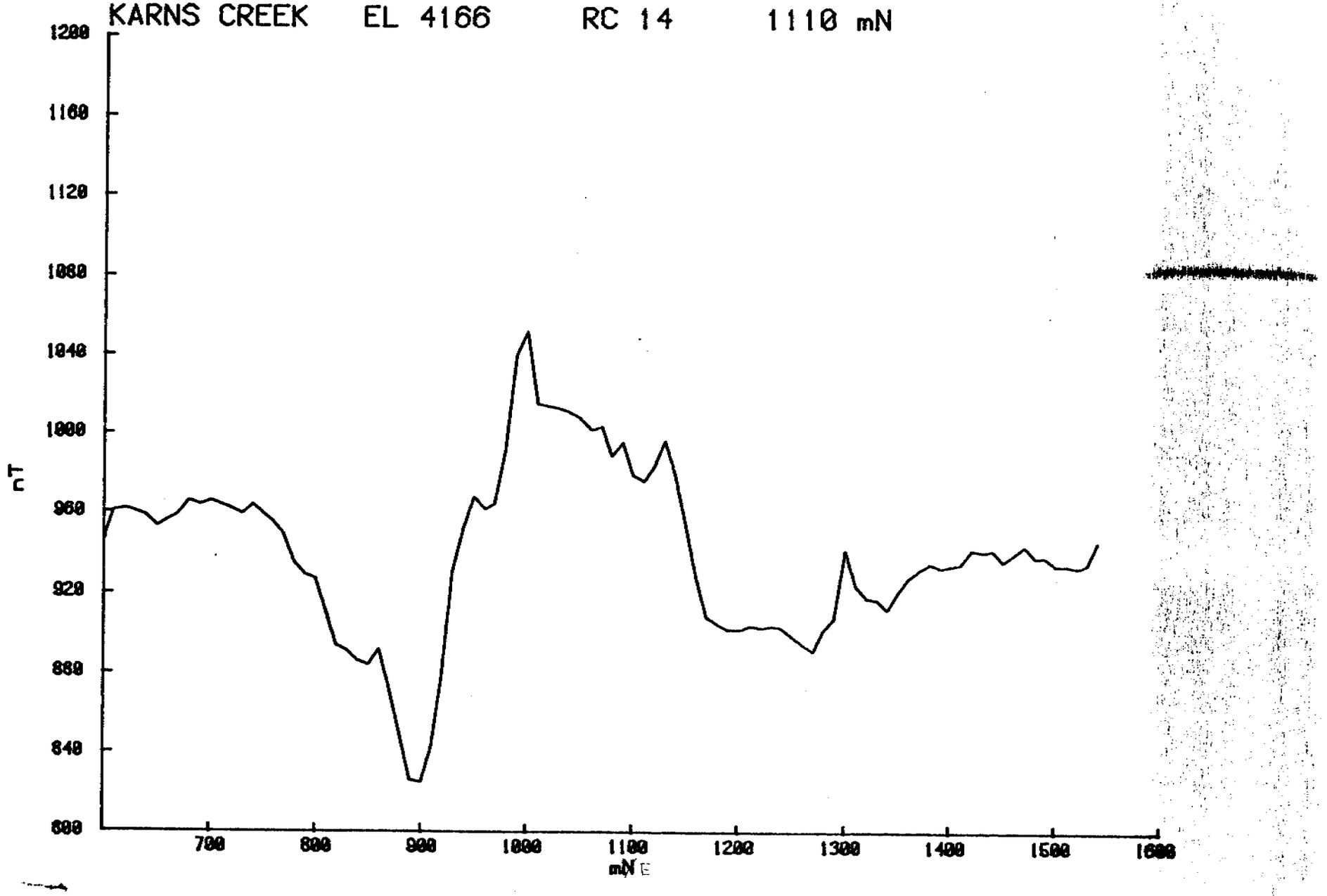
mN


KARNS CREEK EL 4166 RC 14 1110 mN
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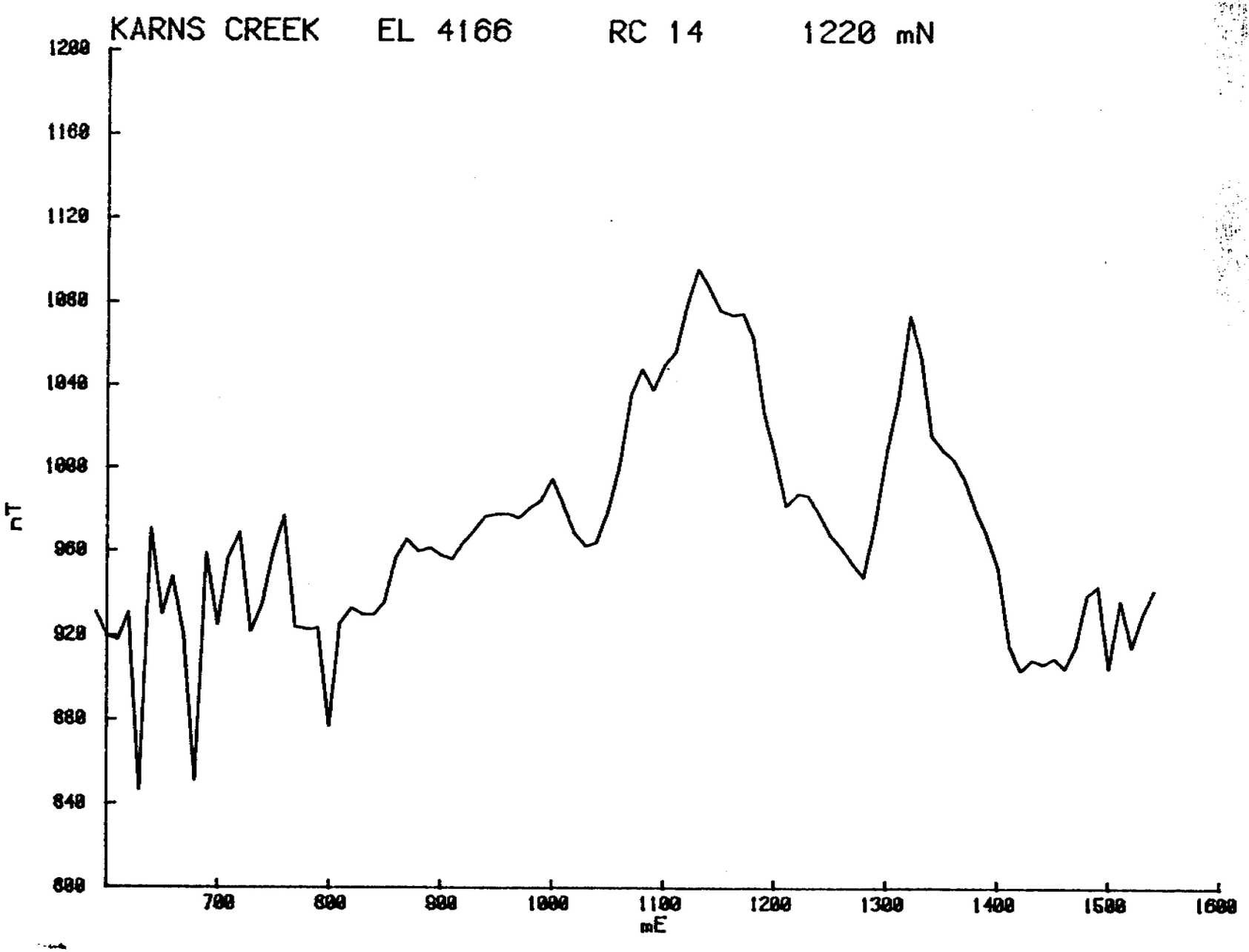
1600
mN E


KARNS CREEK EL 4166 RC 14 1220 mN
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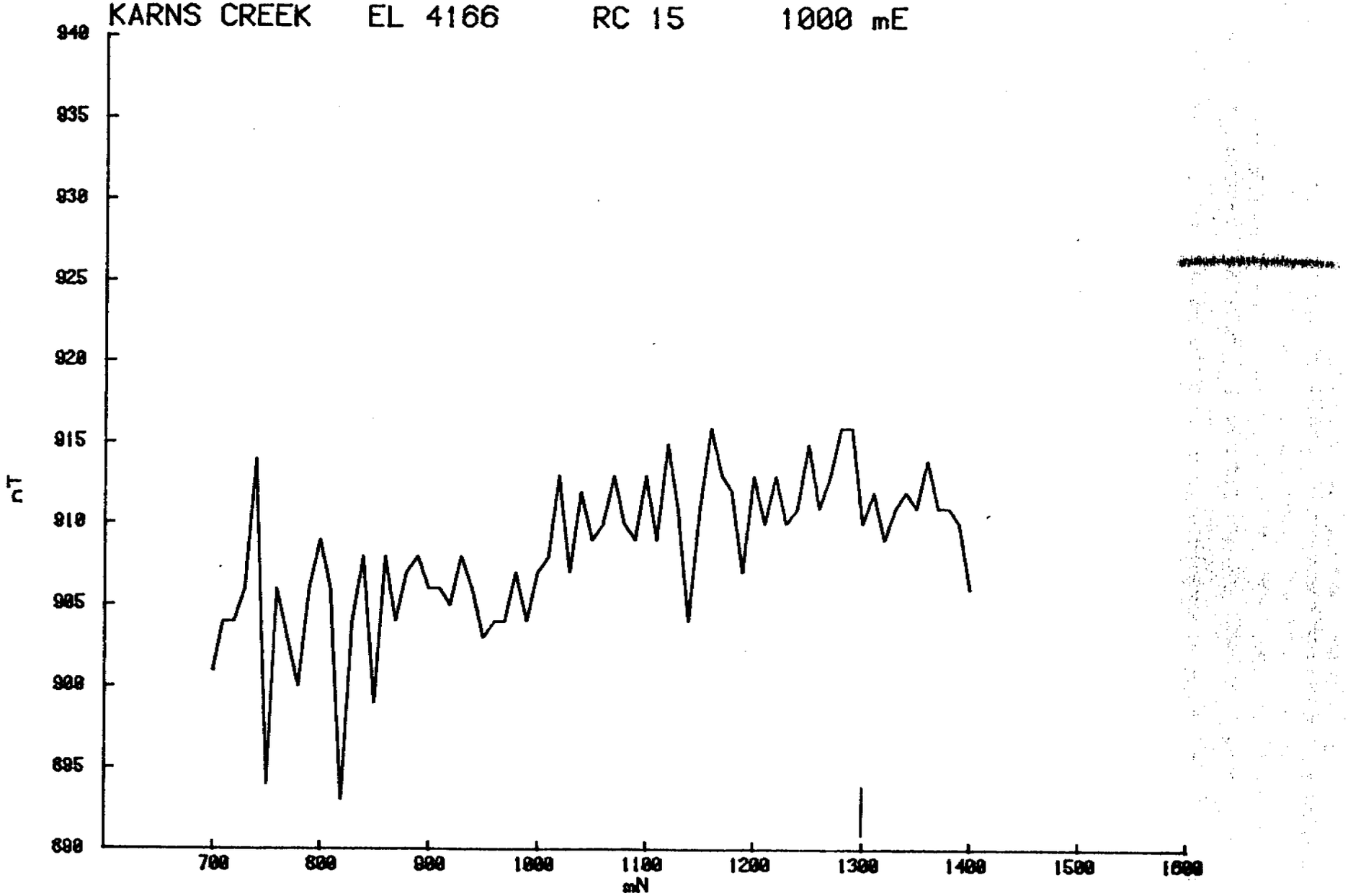
mE


KARNS CREEK EL 4166 RC 15 1000 mE
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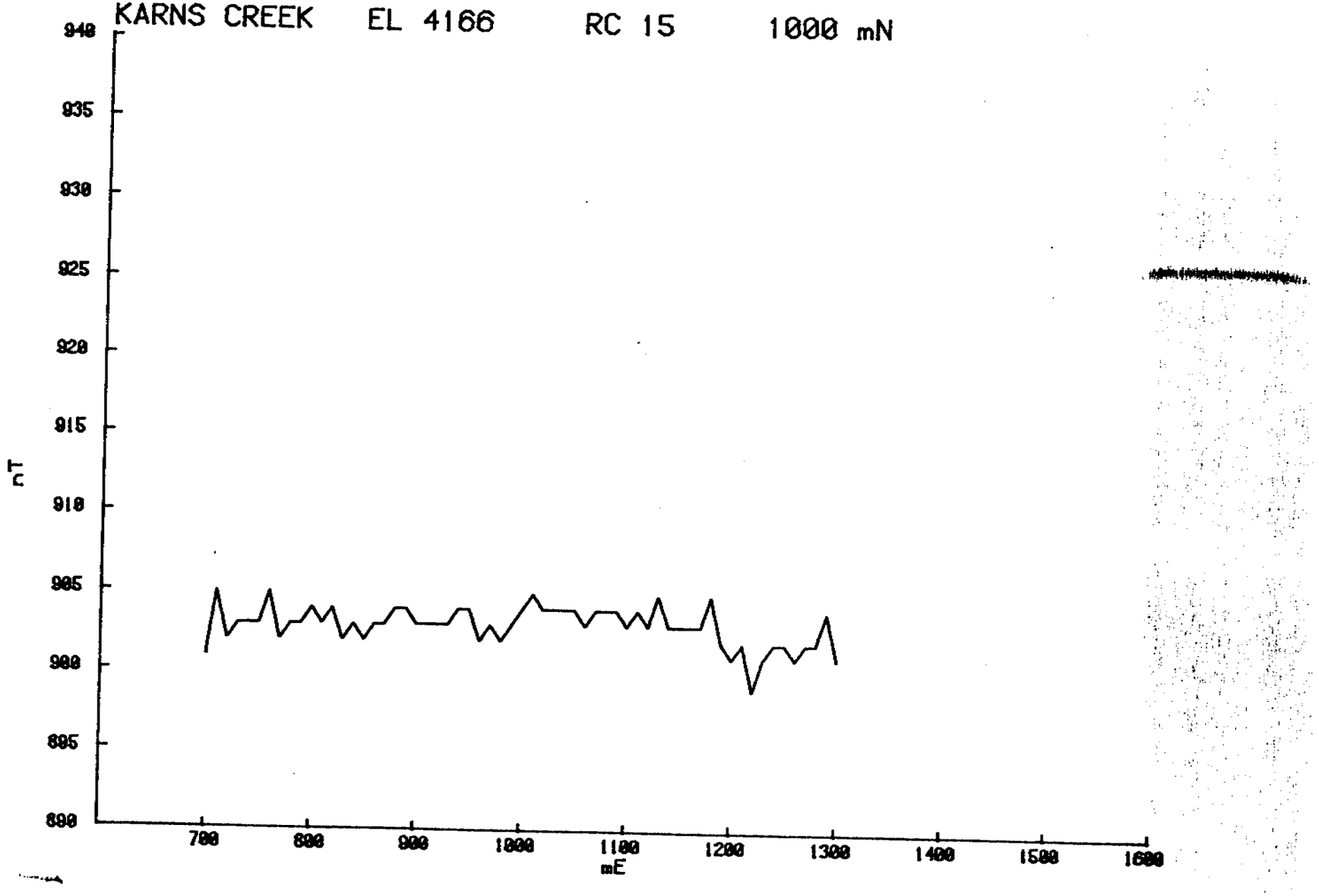
mN


KARNS CREEK EL 4166 RC 15 1000 mN
940
935
930
925
920
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905
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895
890
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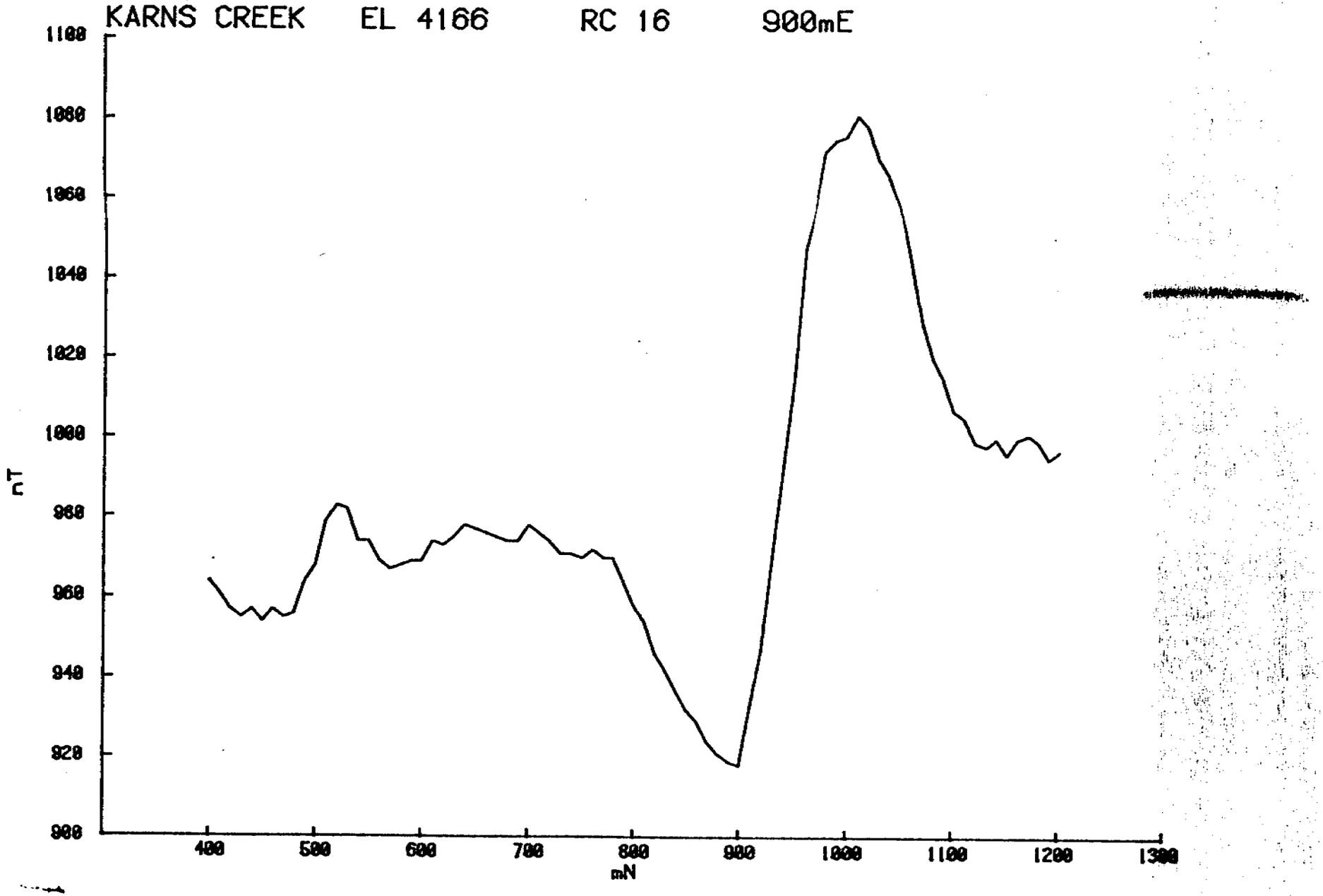
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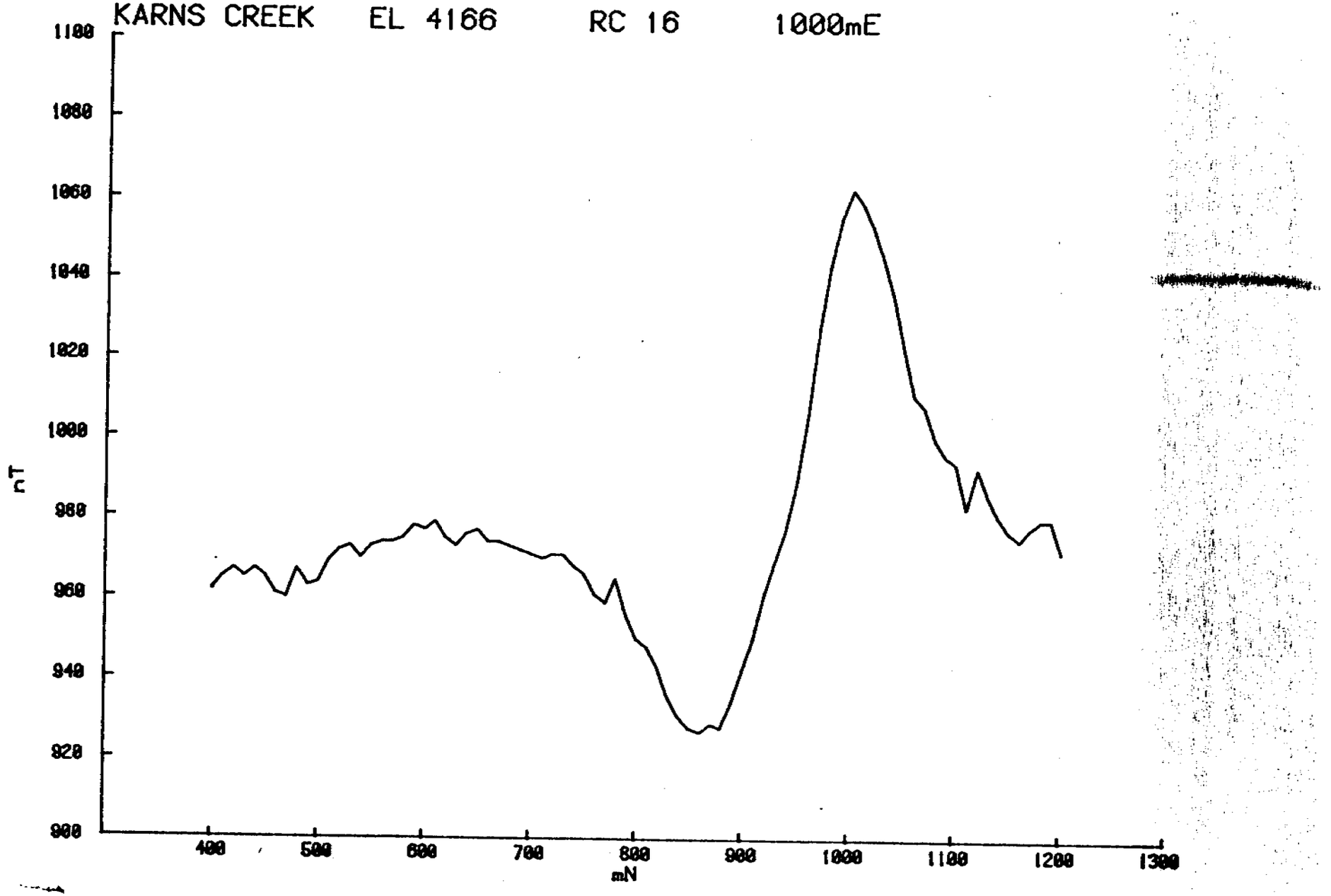
mN


KARNS CREEK EL 4166 RC 16 1000mE
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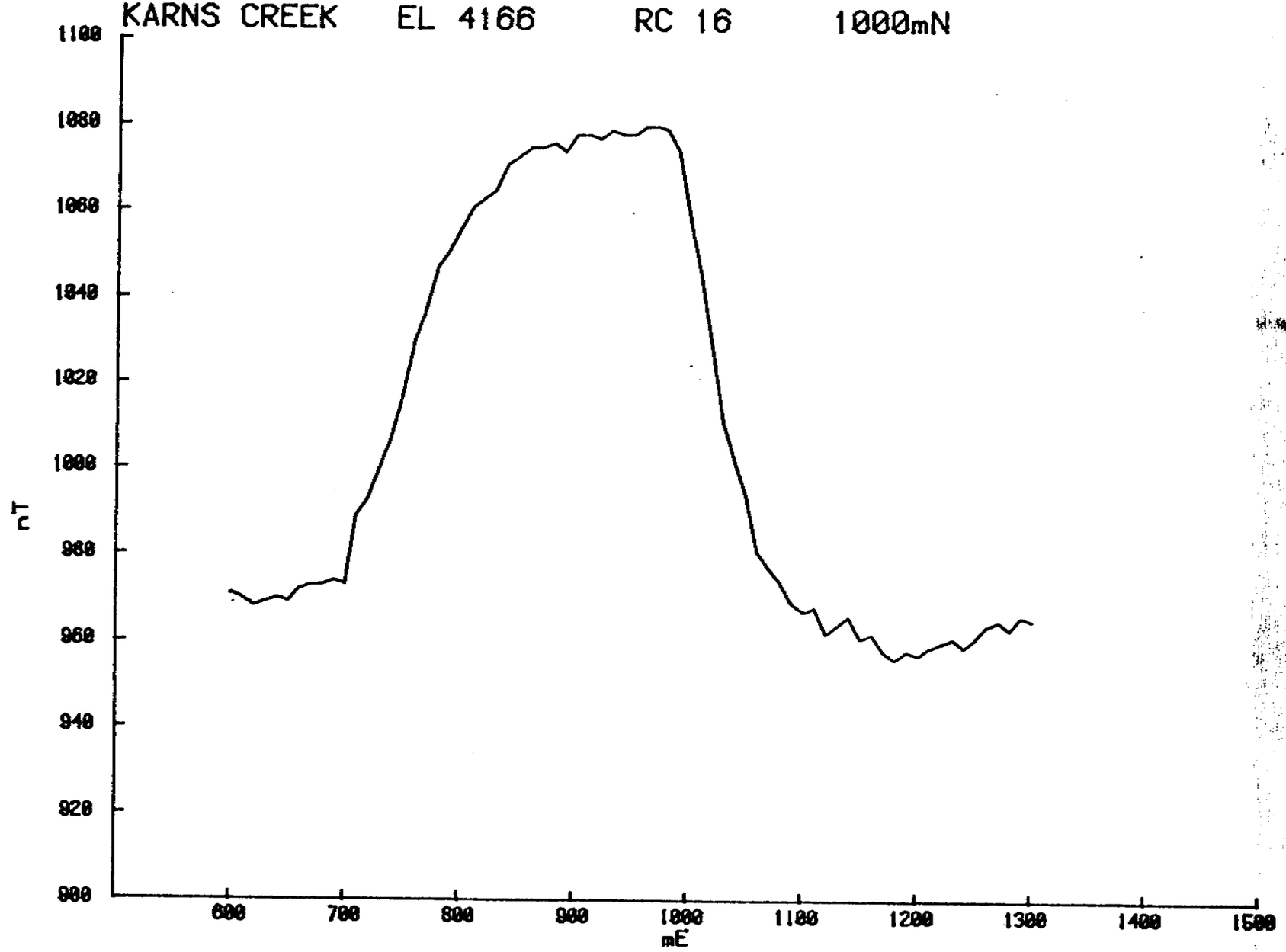
KARNS CREEK EL 4166 RC 16 1000mN
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1080
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1040
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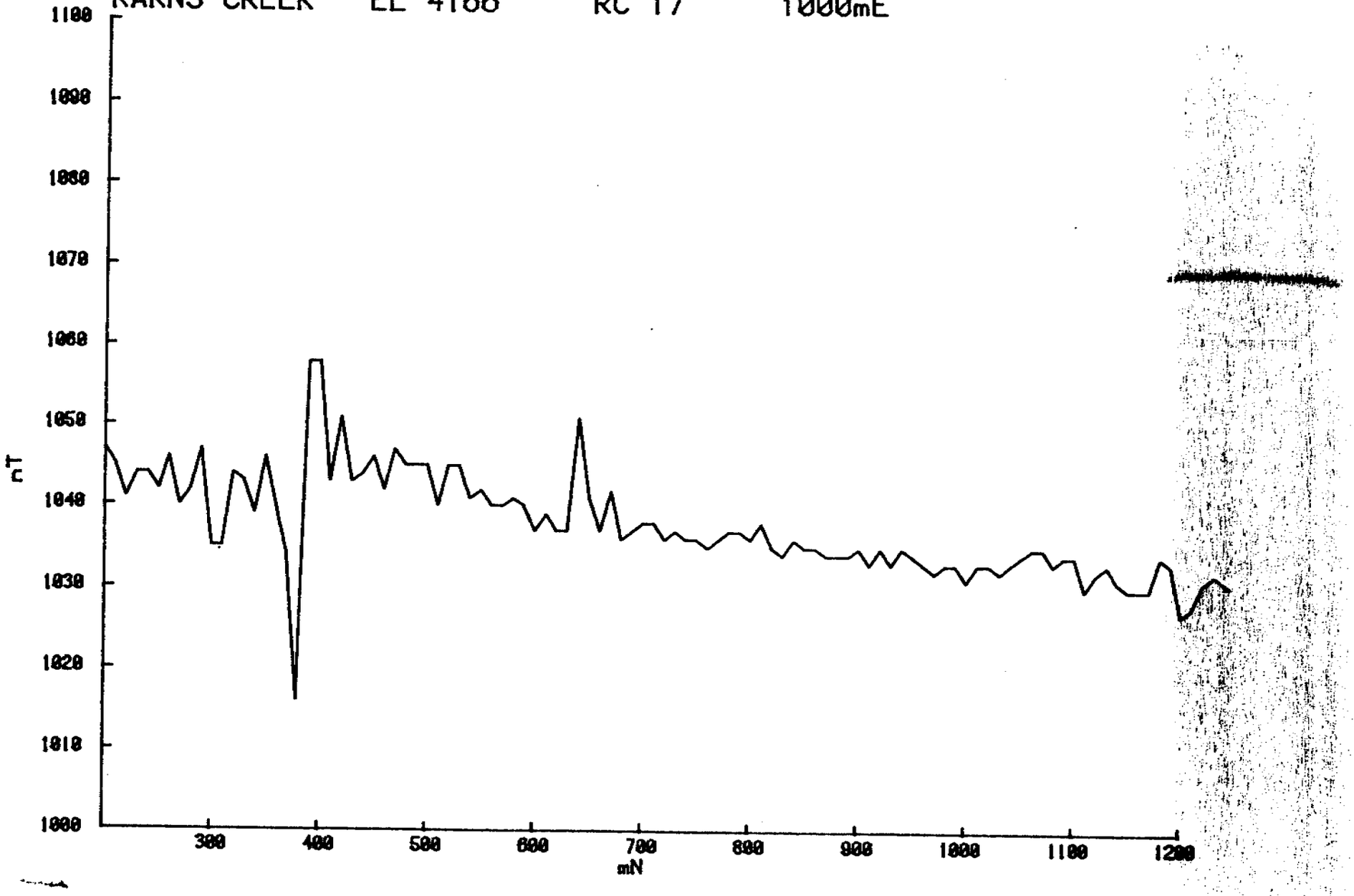
KARNS CREEK EL 4166 RC 17 1000mE
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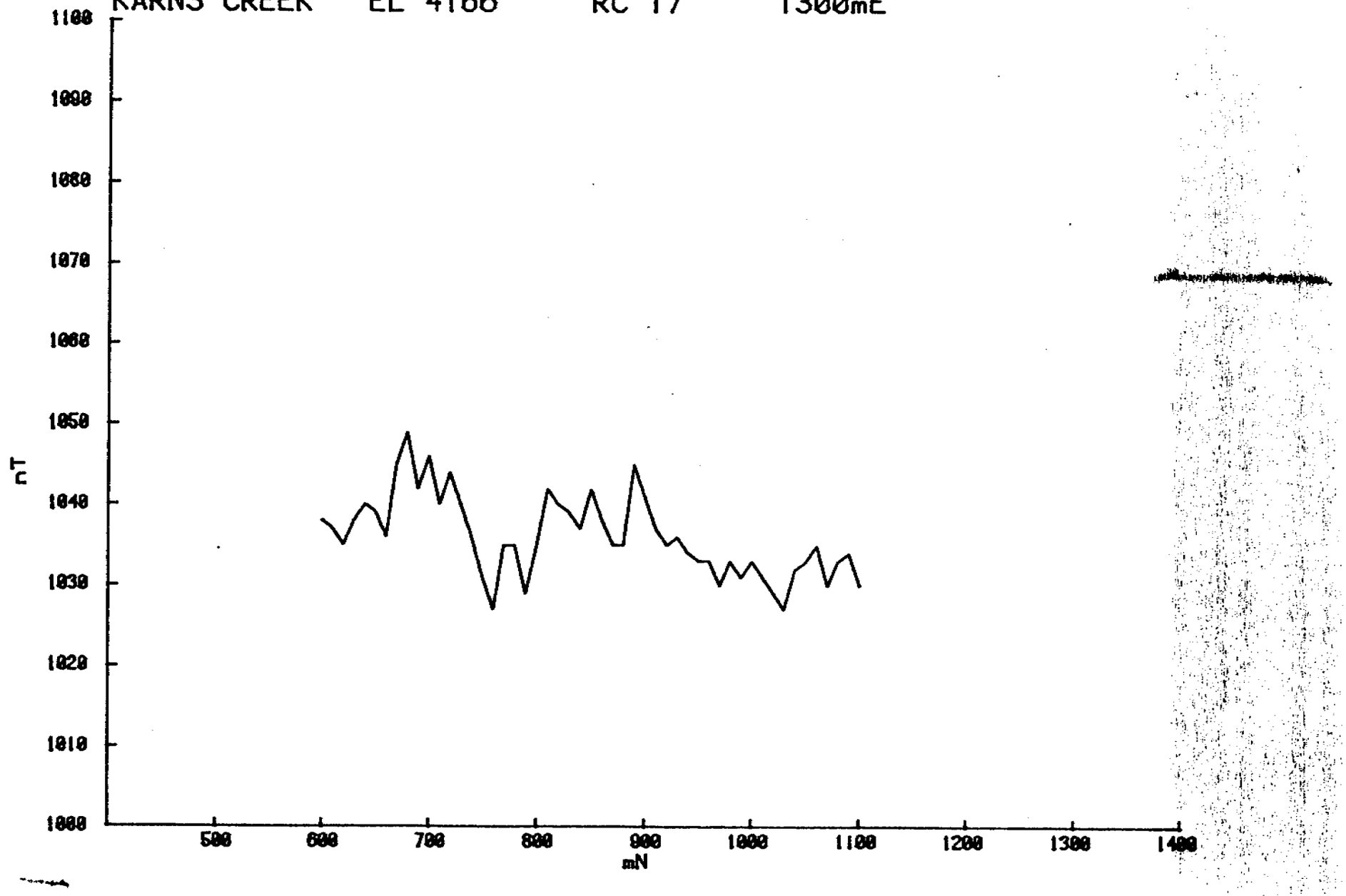
KARNS CREEK EL 4166 RC 17 1300mE
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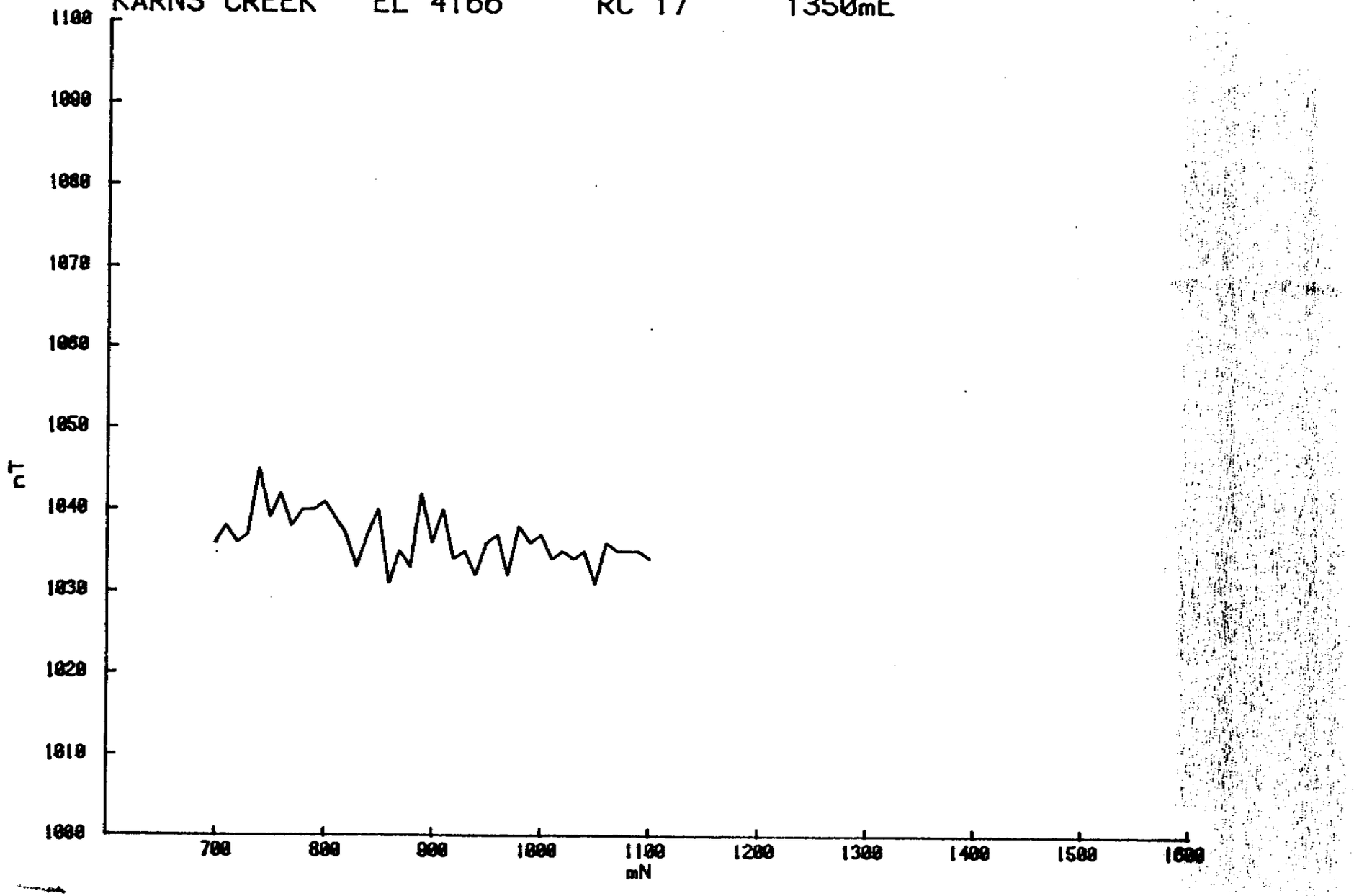
mN


KARNS CREEK EL 4166 RC 17 1350mE
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1060
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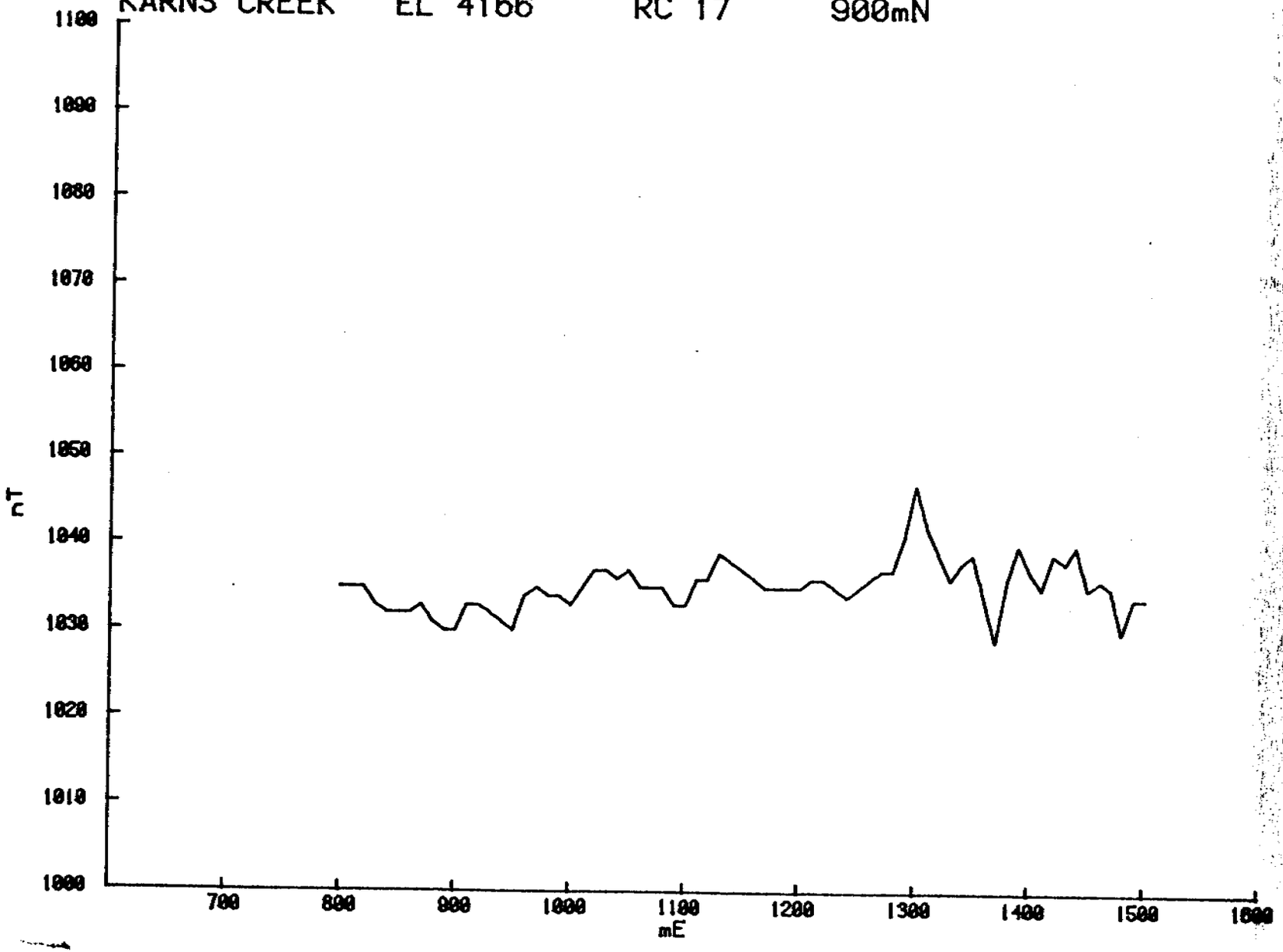
mN


KARNS CREEK EL 4166 RC 17 900mN
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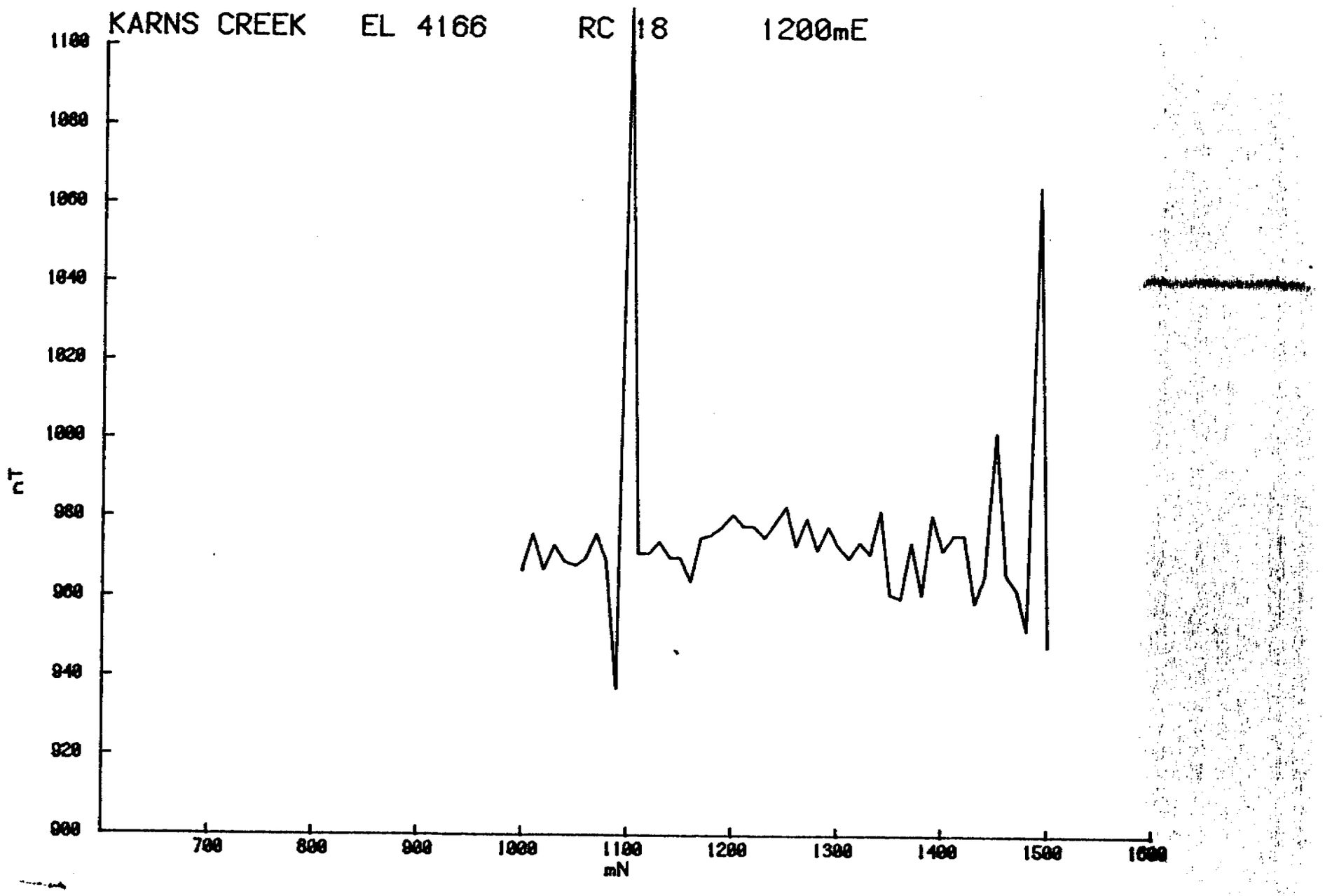
KARNS CREEK EL 4166 RC 18 1200mE
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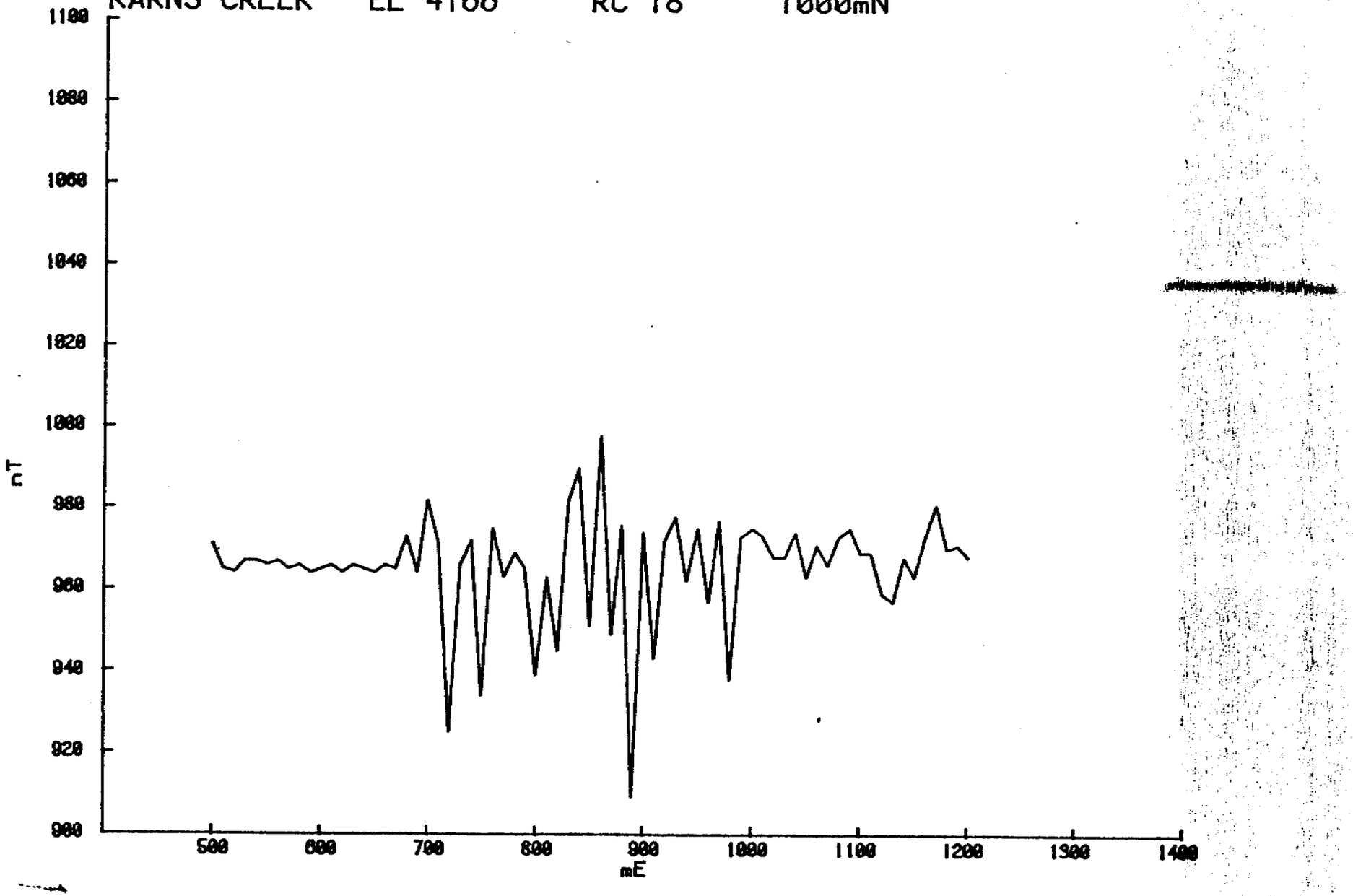
KARNS CREEK EL 4166 RC 18 1000mN
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1080
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1040
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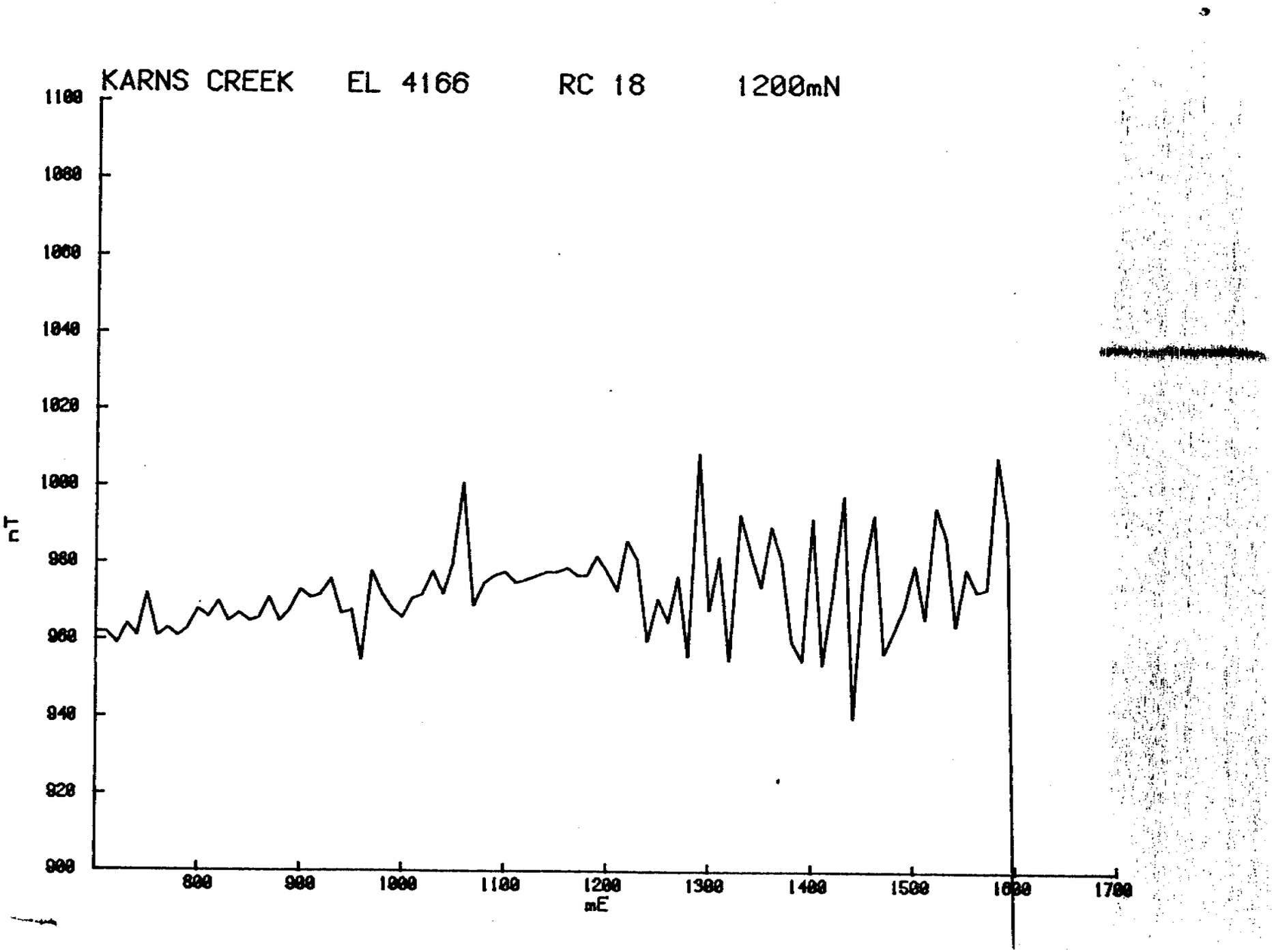
KARNS CREEK EL 4166 RC 18 1200mN
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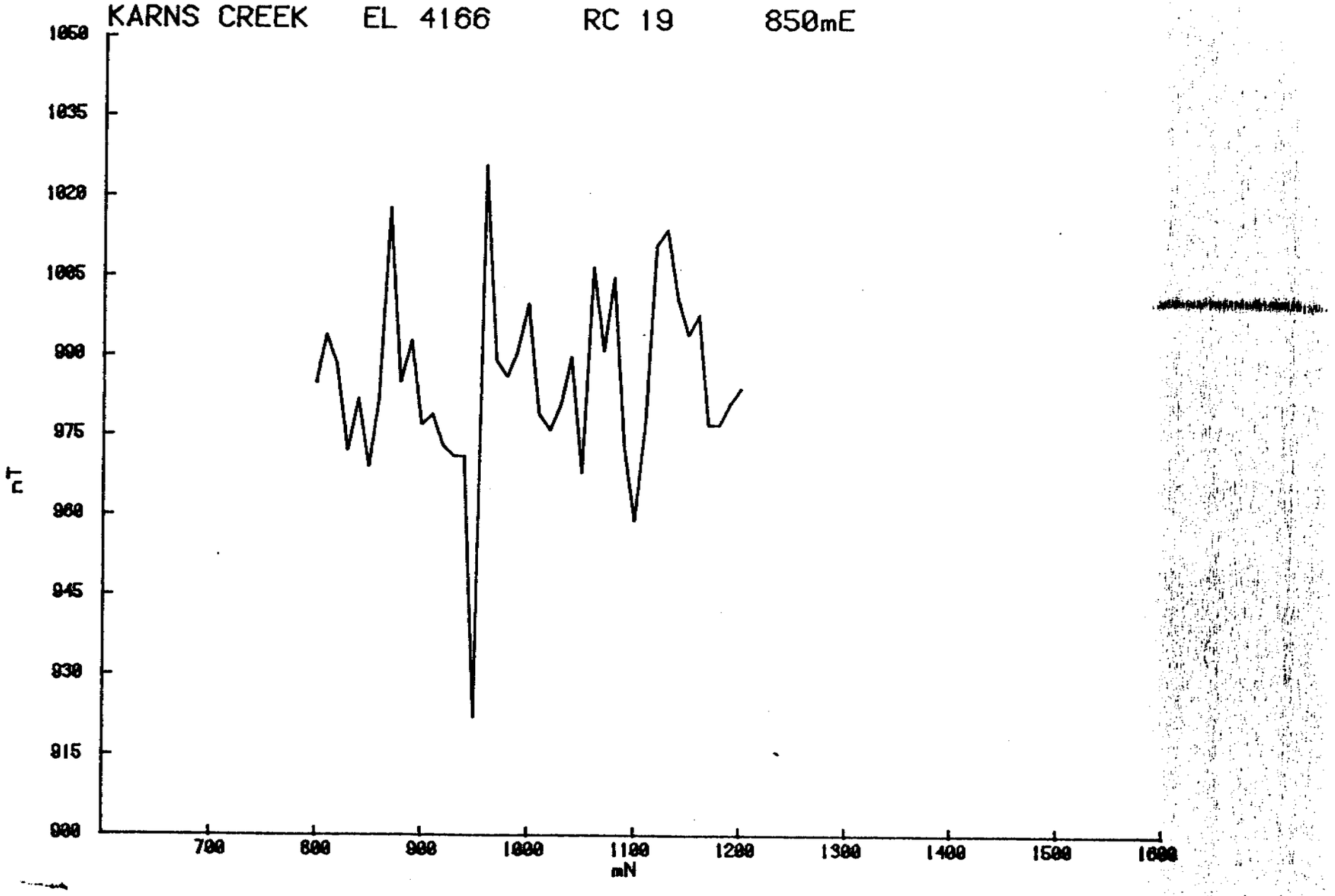
1700
mE


KARNS CREEK EL 4166 RC 19 850mE
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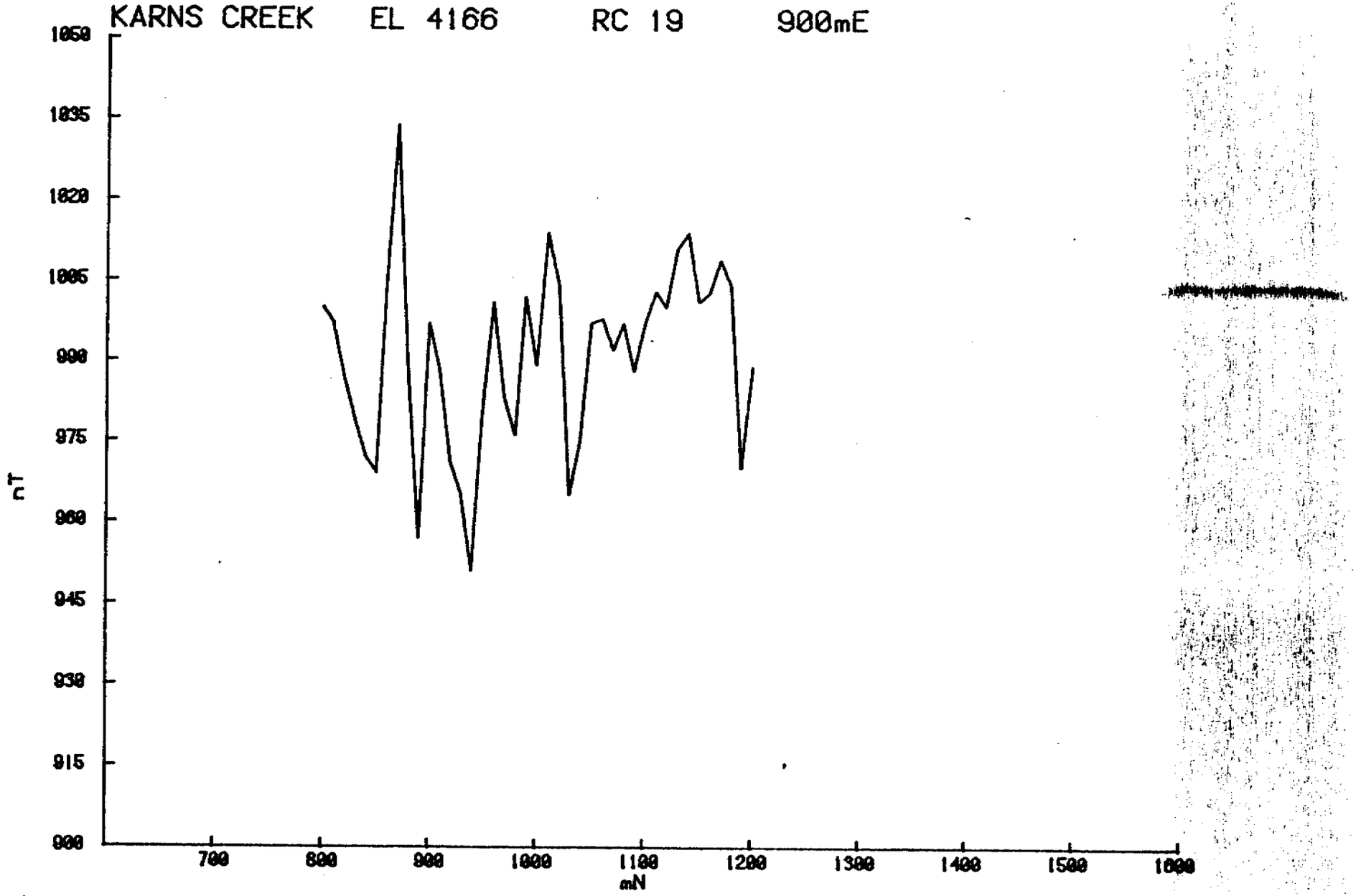
KARNS CREEK EL 4166 RC 19 900mE
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1035
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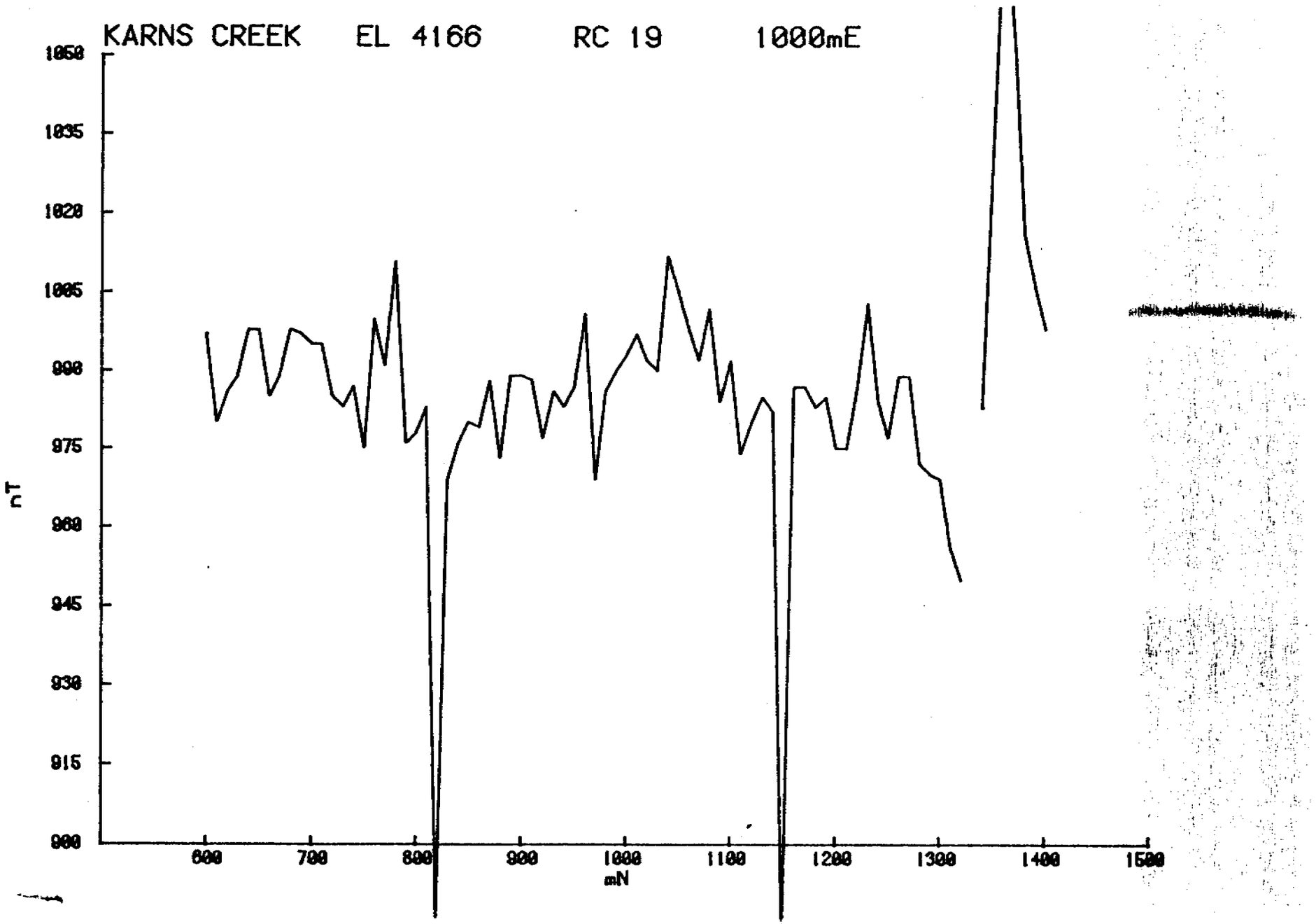
KARNS CREEK EL 4166 RC 19 1000mE
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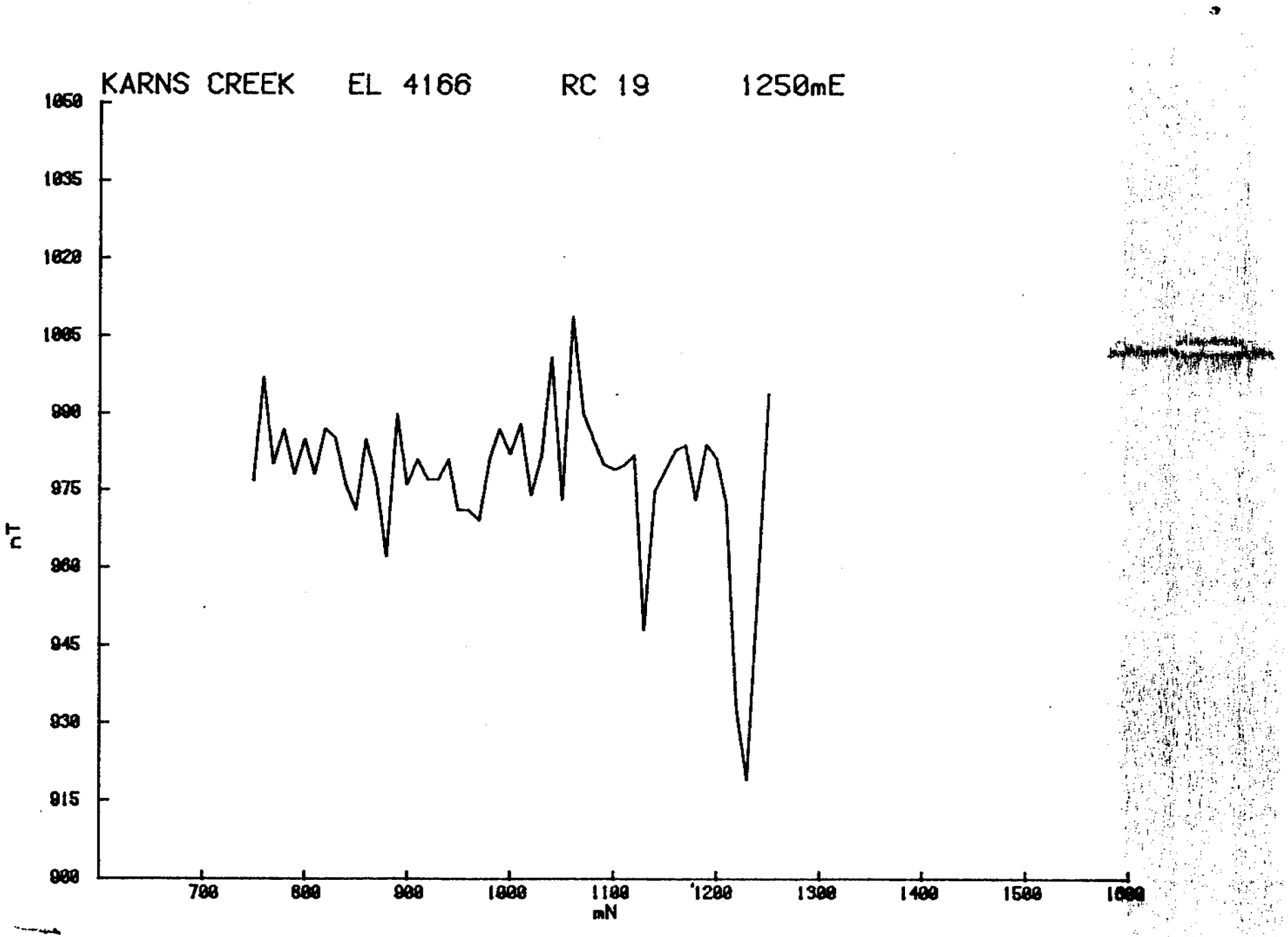
KARNS CREEK EL 4166 RC 19 1250mE
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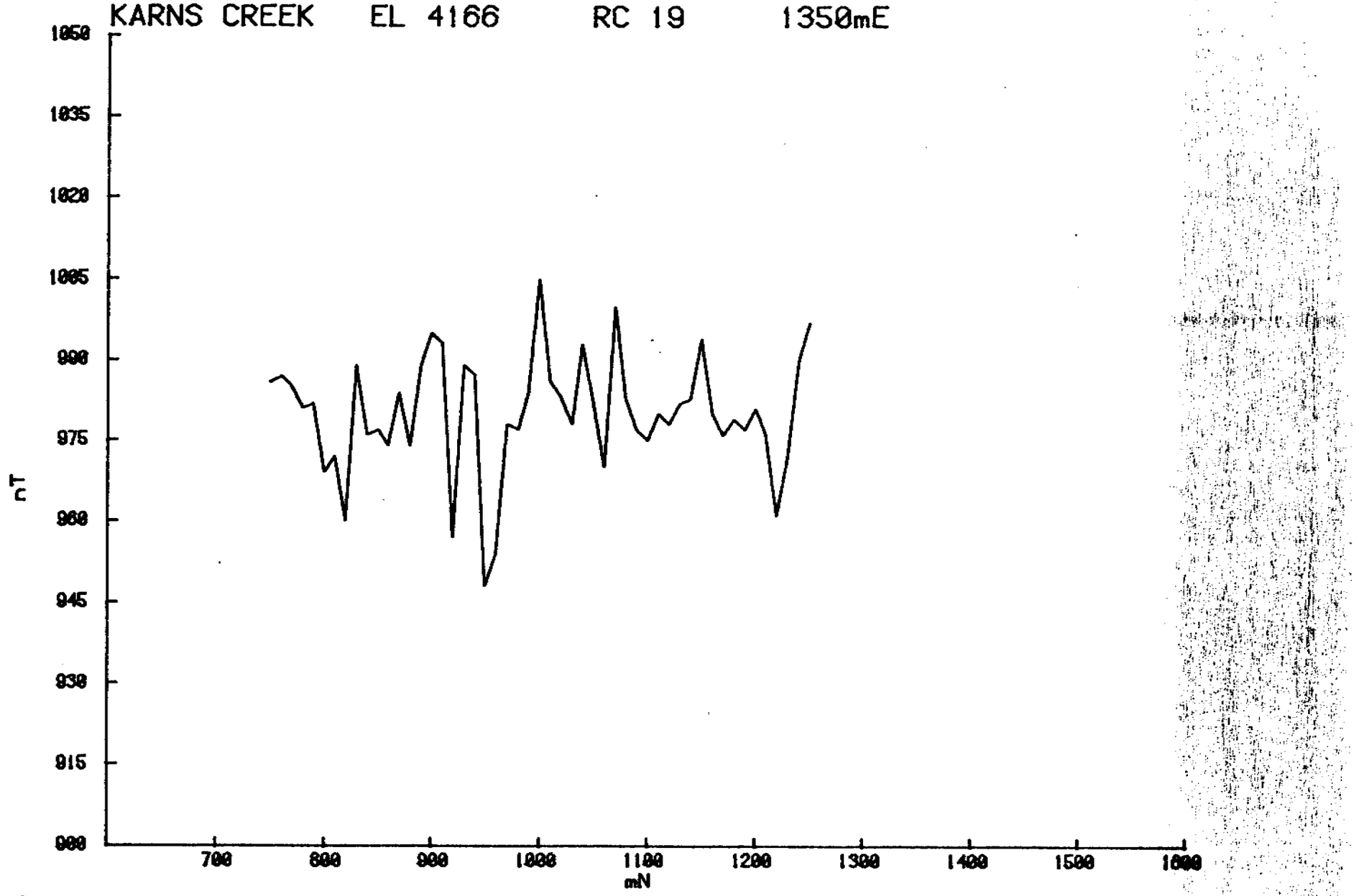
KARNS CREEK EL 4166 RC 19 1350mE
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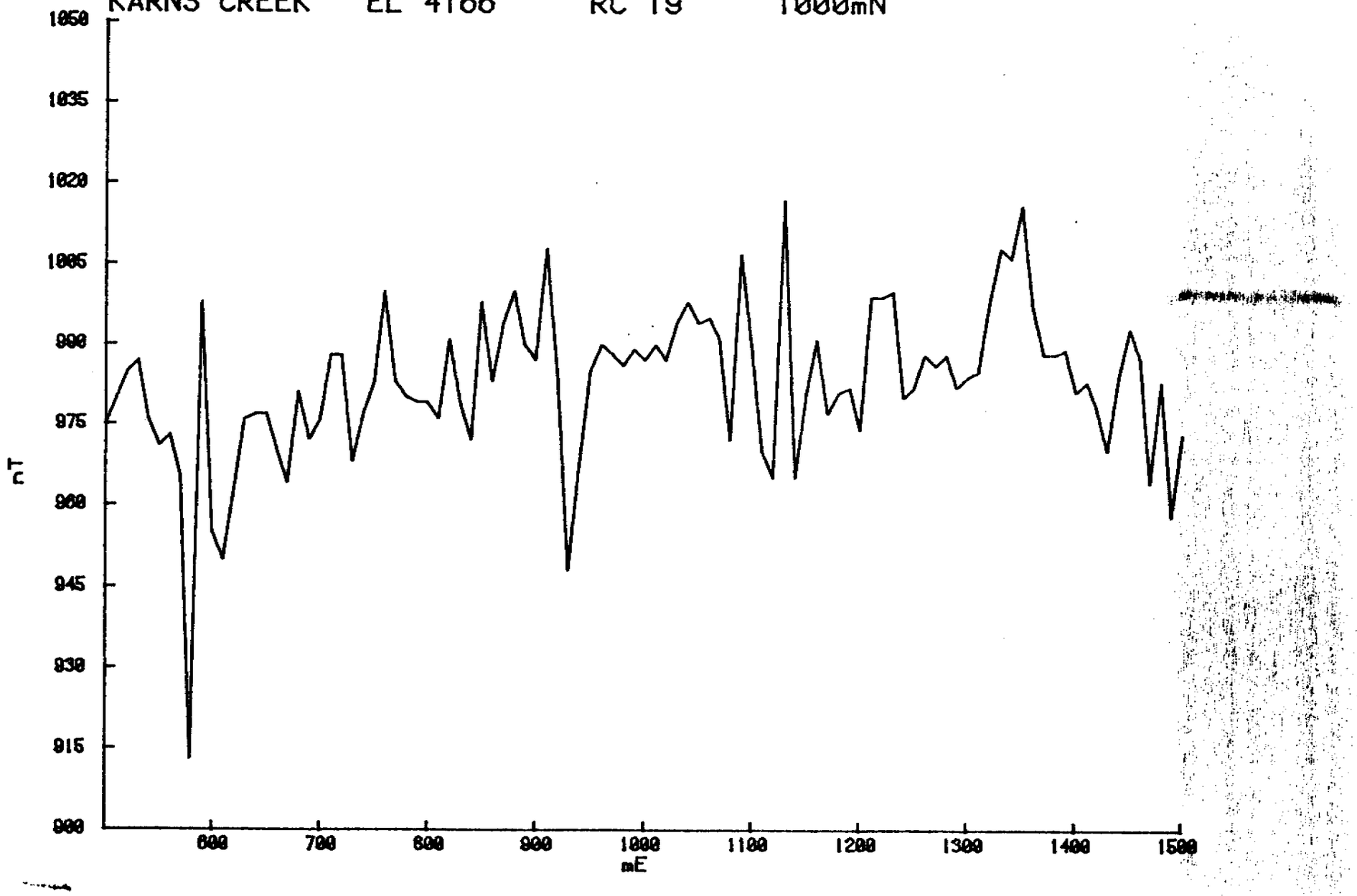
KARNS CREEK EL 4166 RC 19 1000mN
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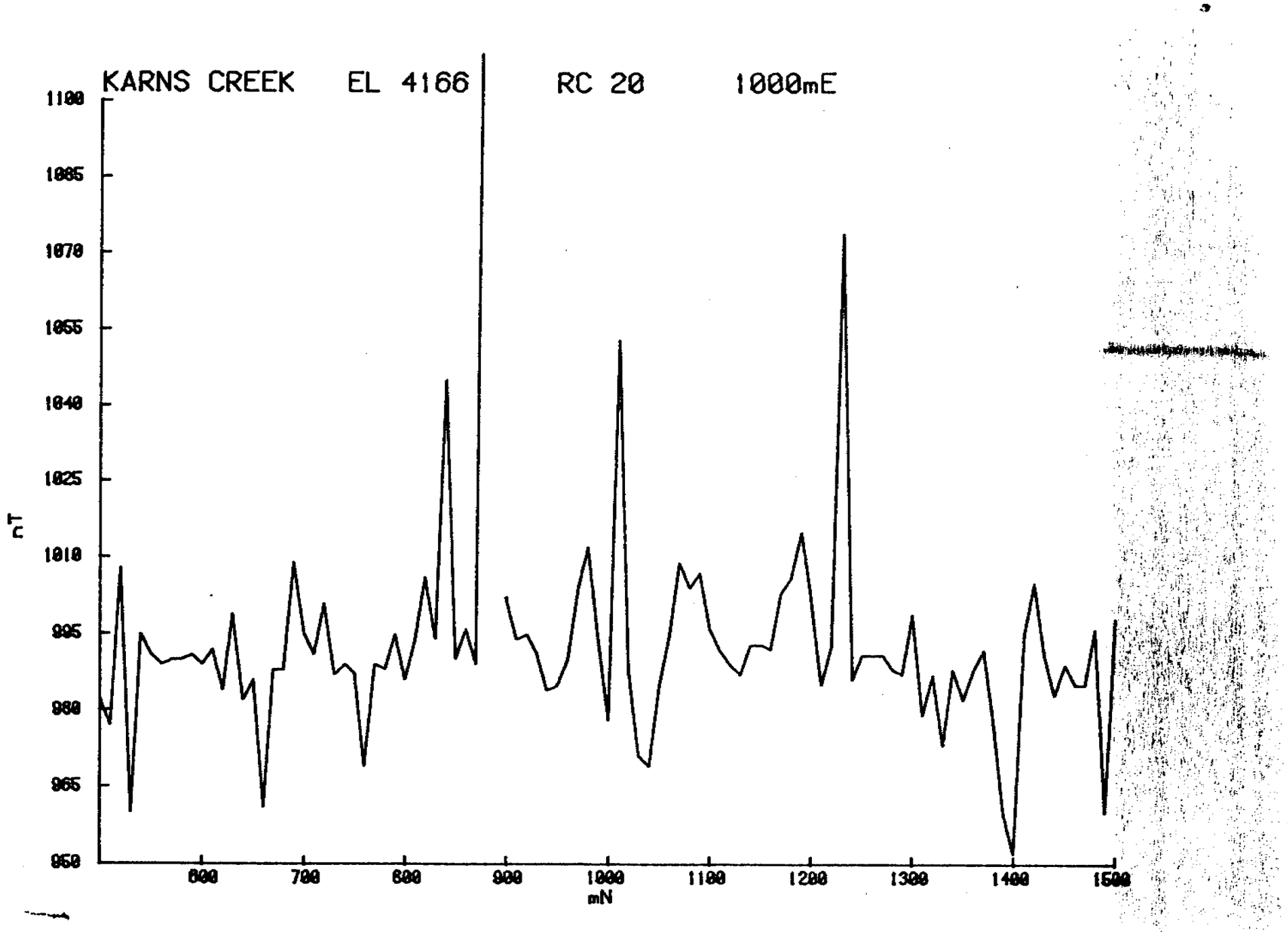
KARNS CREEK EL 4166 RC 20 1000mE
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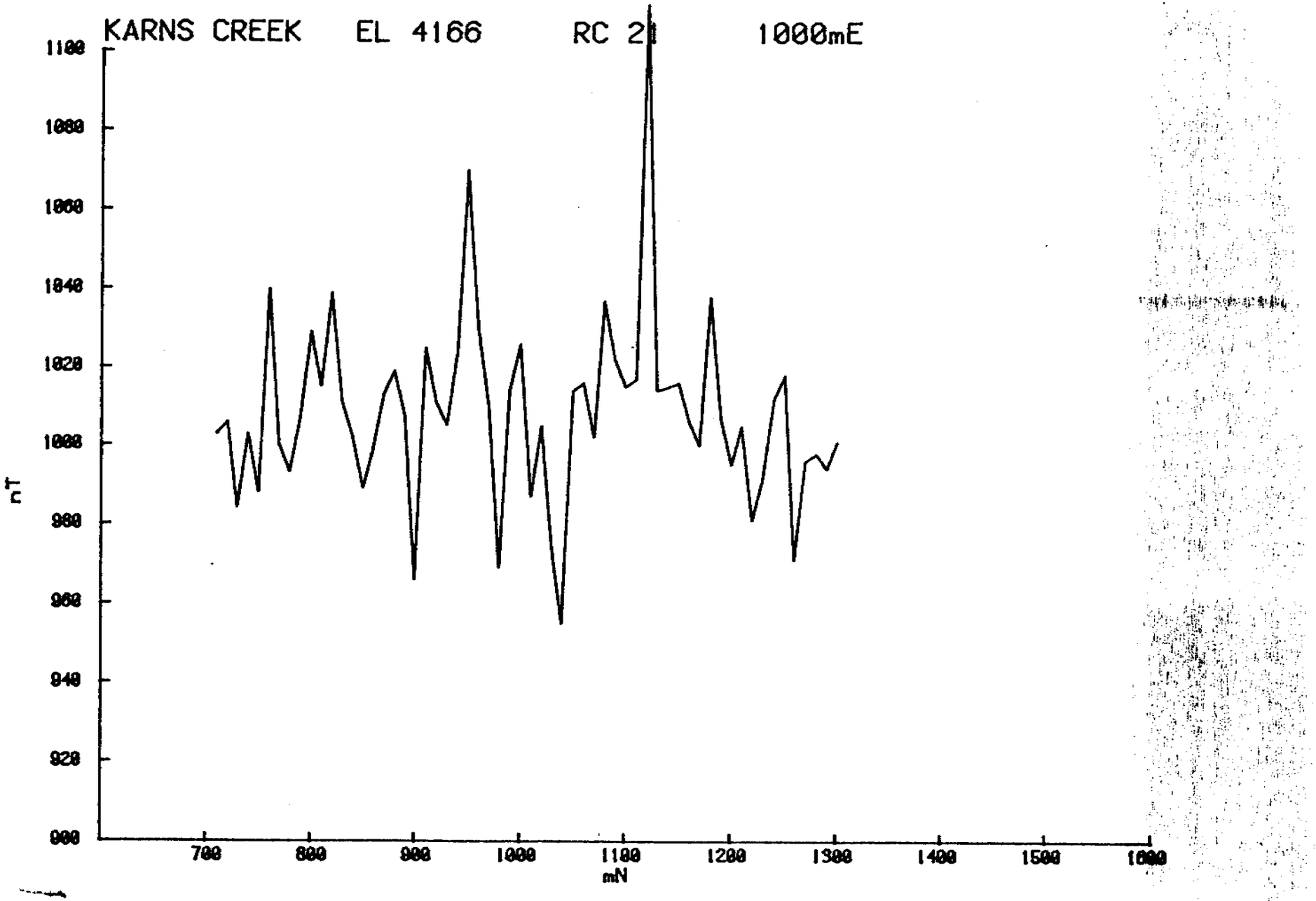
KARNS CREEK EL 4166 RC 21 1000mE
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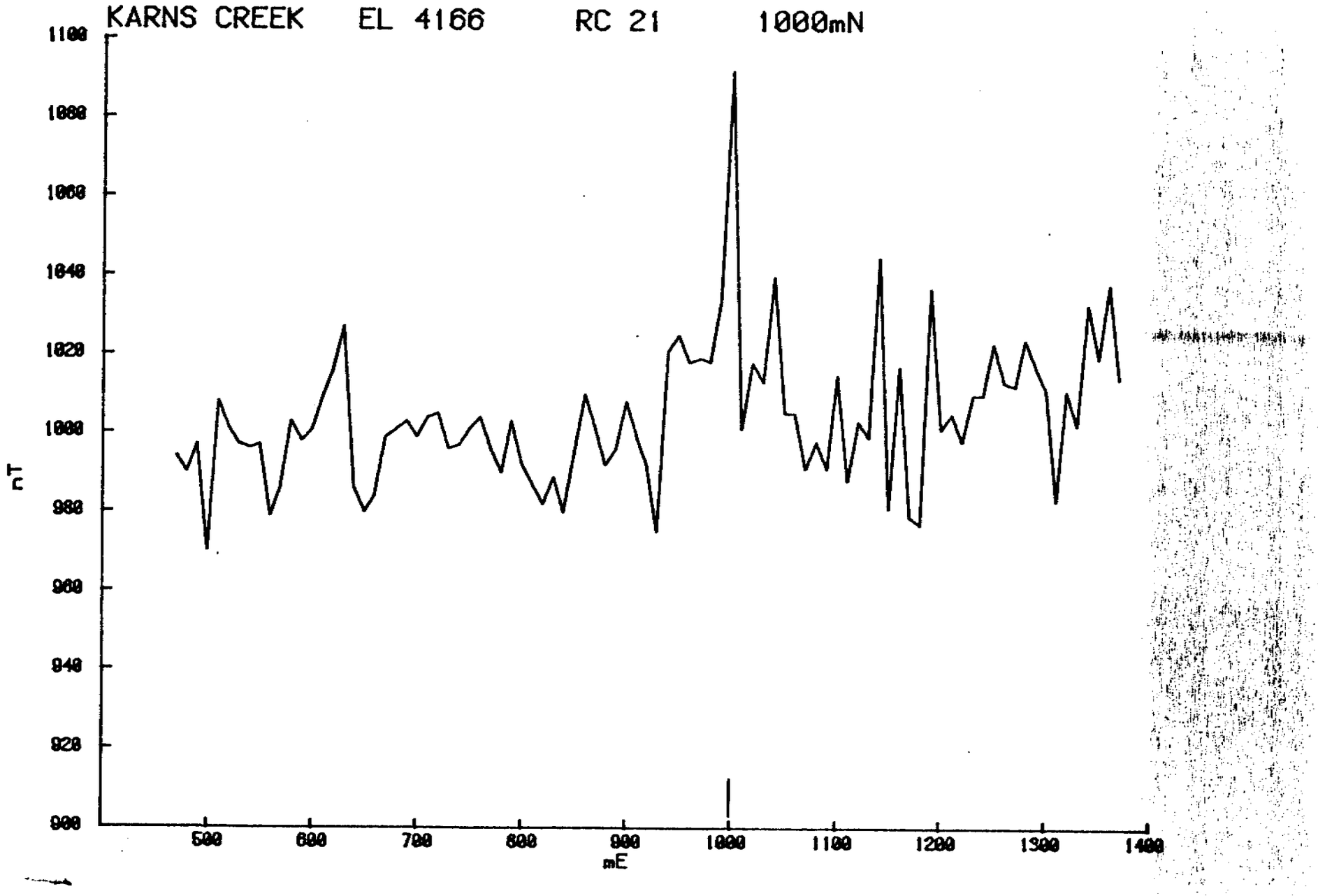
KARNS CREEK EL 4166 RC 21 1000mN
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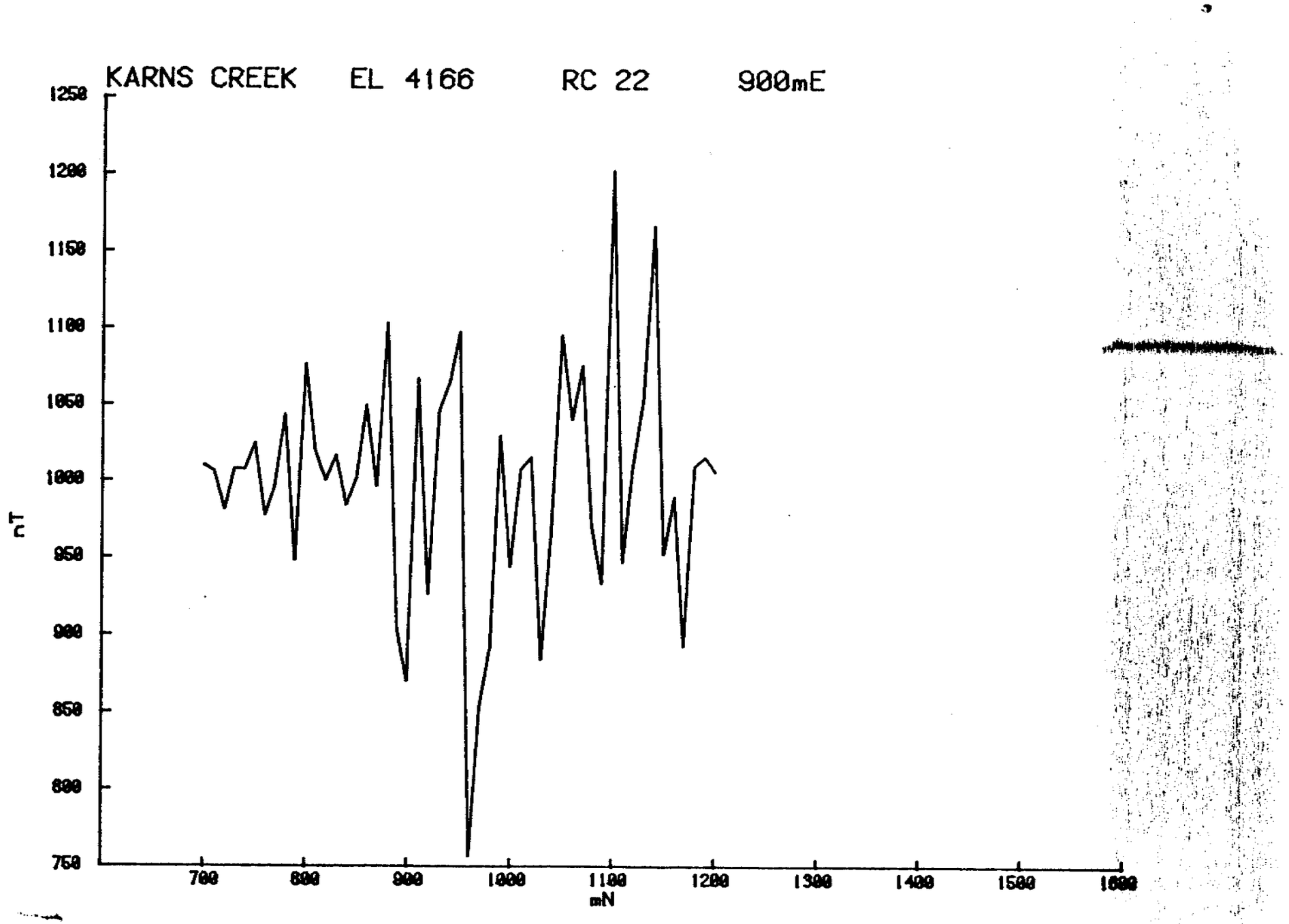
KARNS CREEK EL 4166 RC 22 900mE
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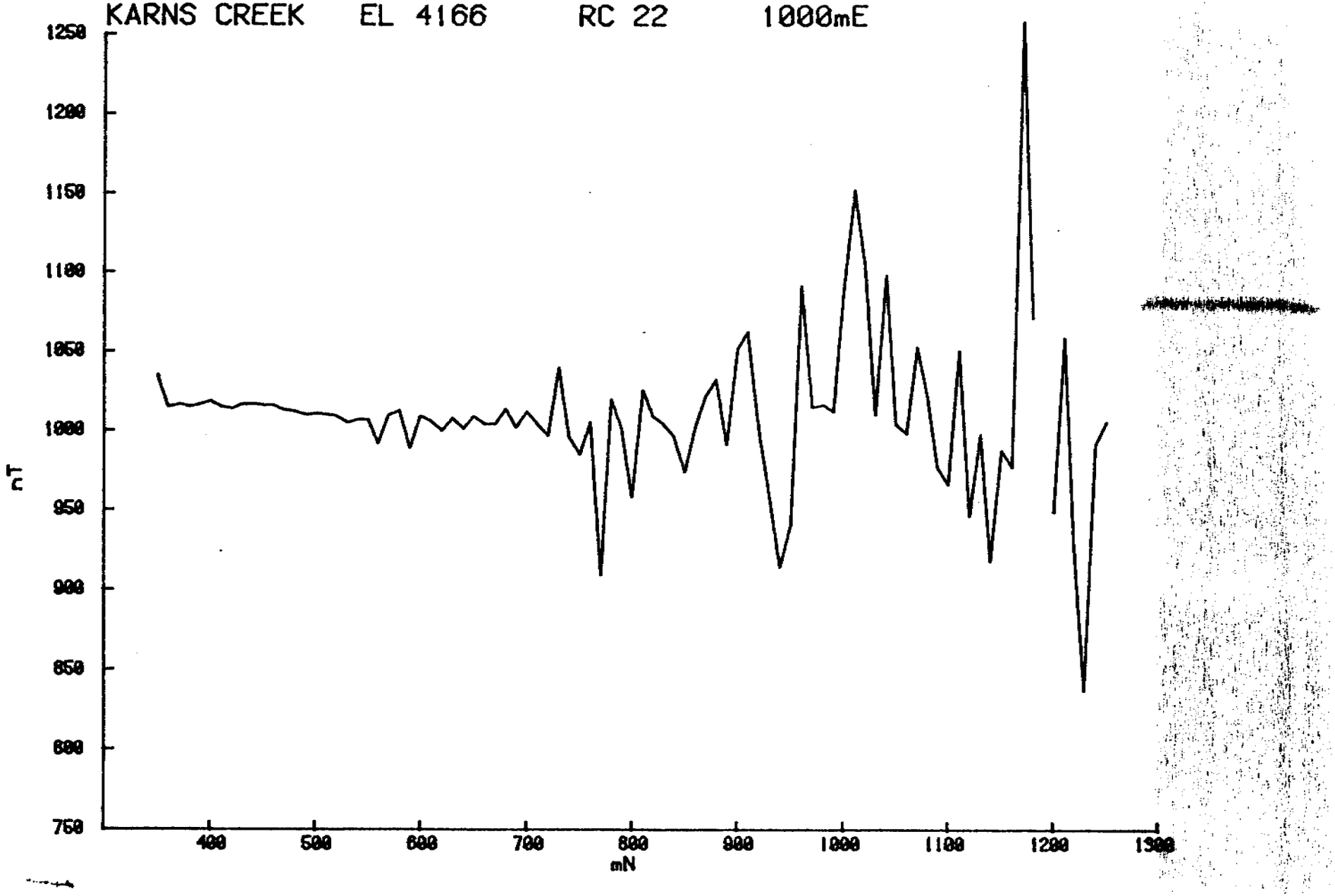
mN


KARNS CREEK EL 4166 RC 22 1000mE
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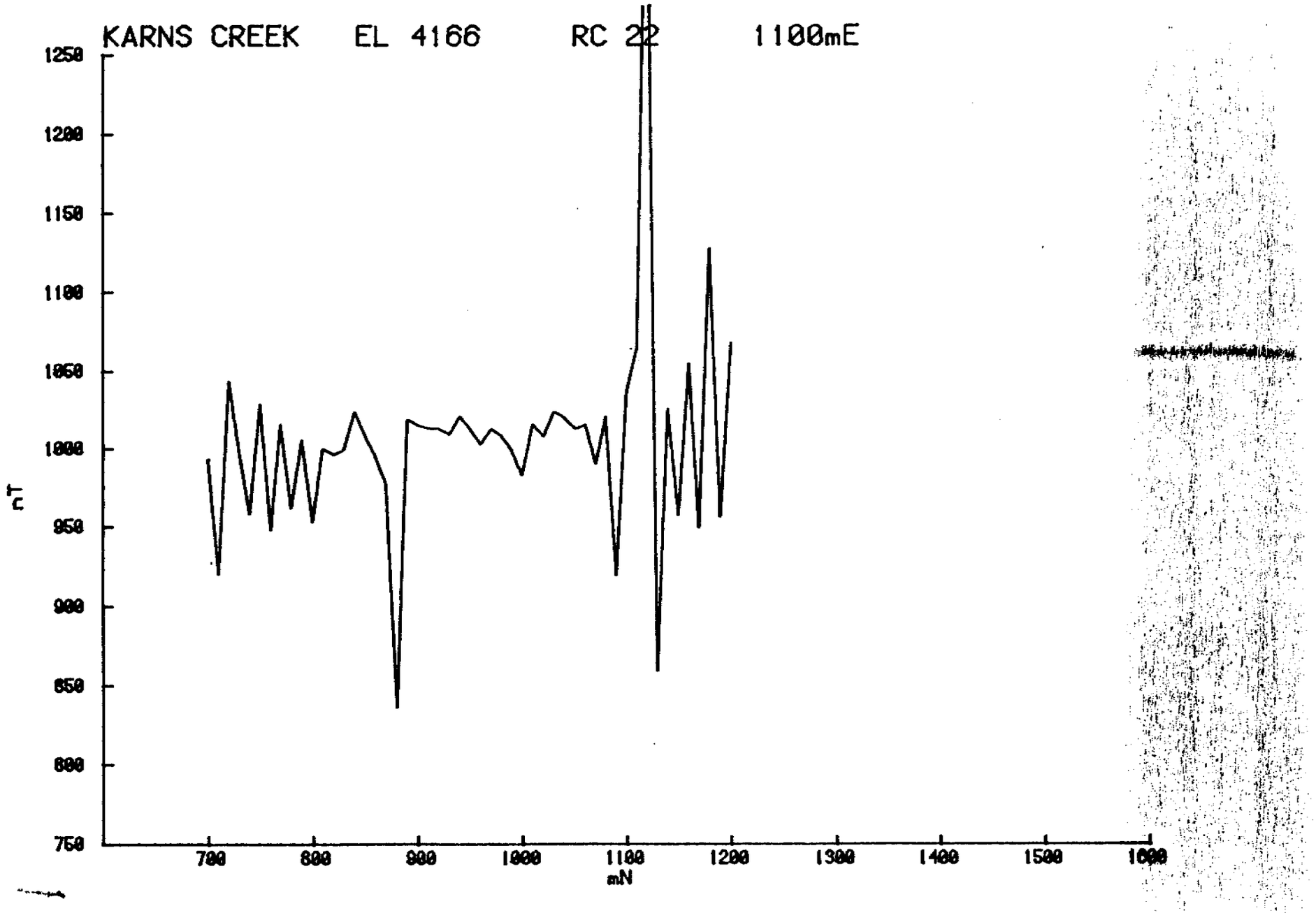
mN


KARNS CREEK EL 4166 RC 22 1100mE
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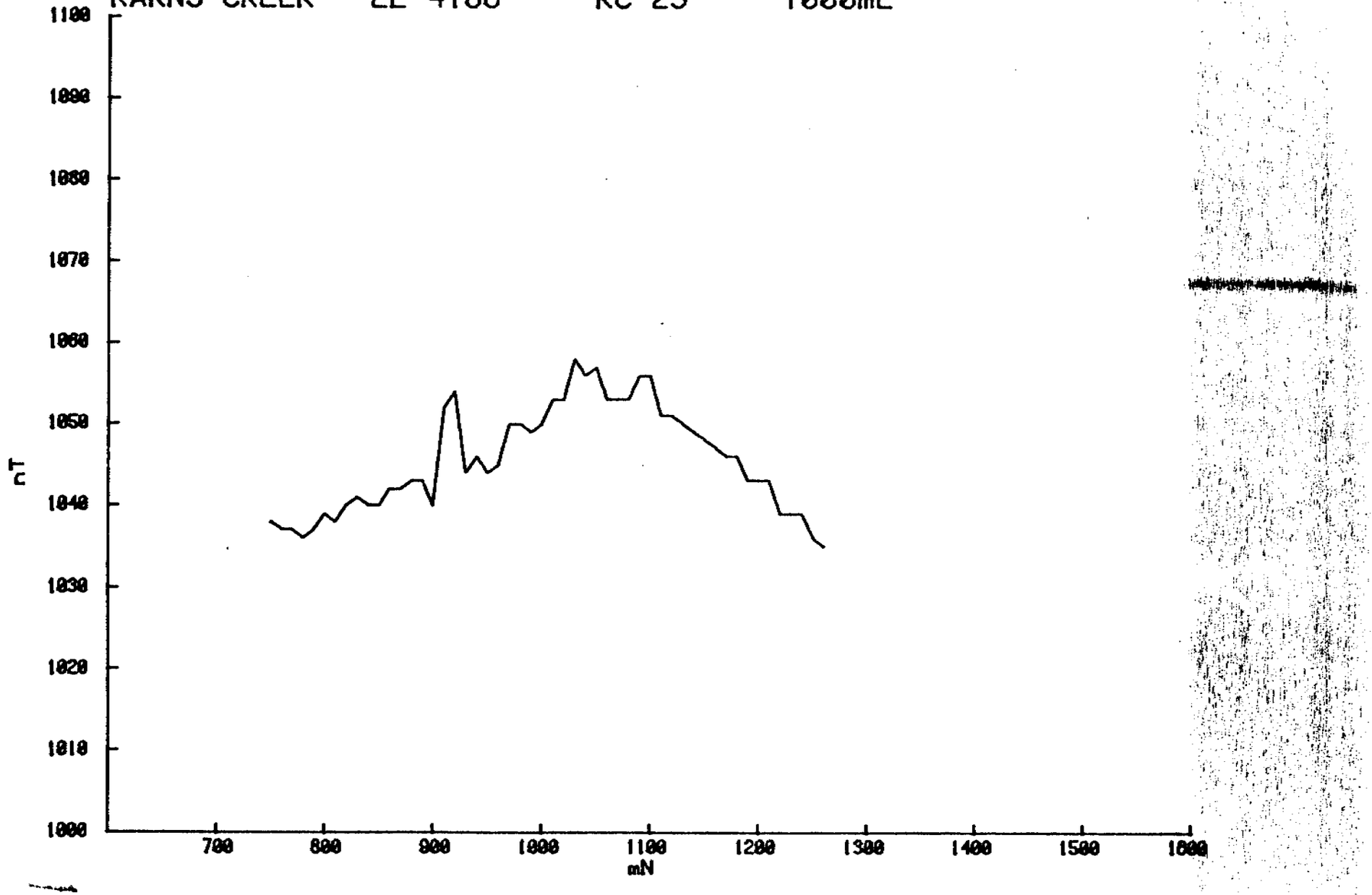
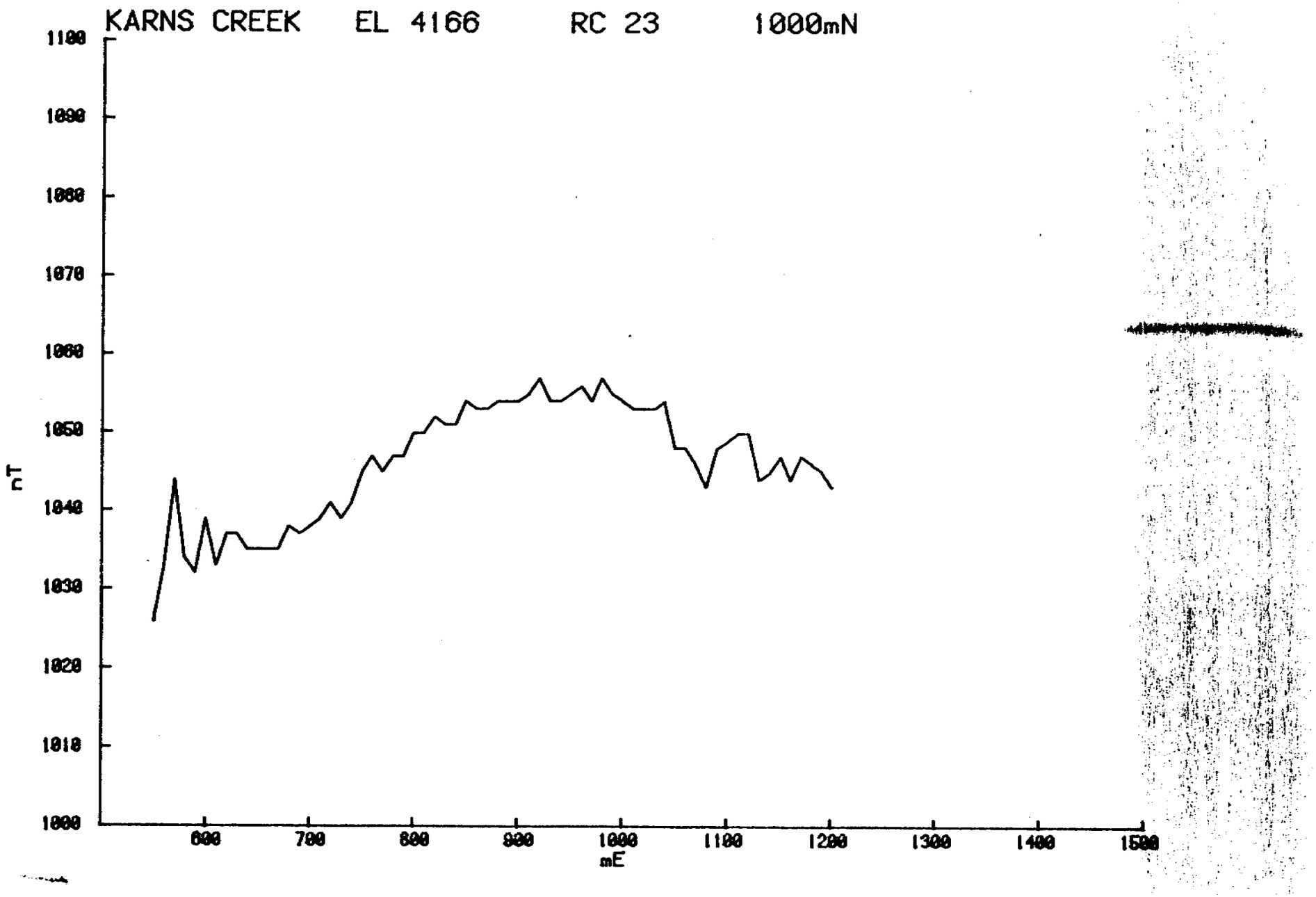
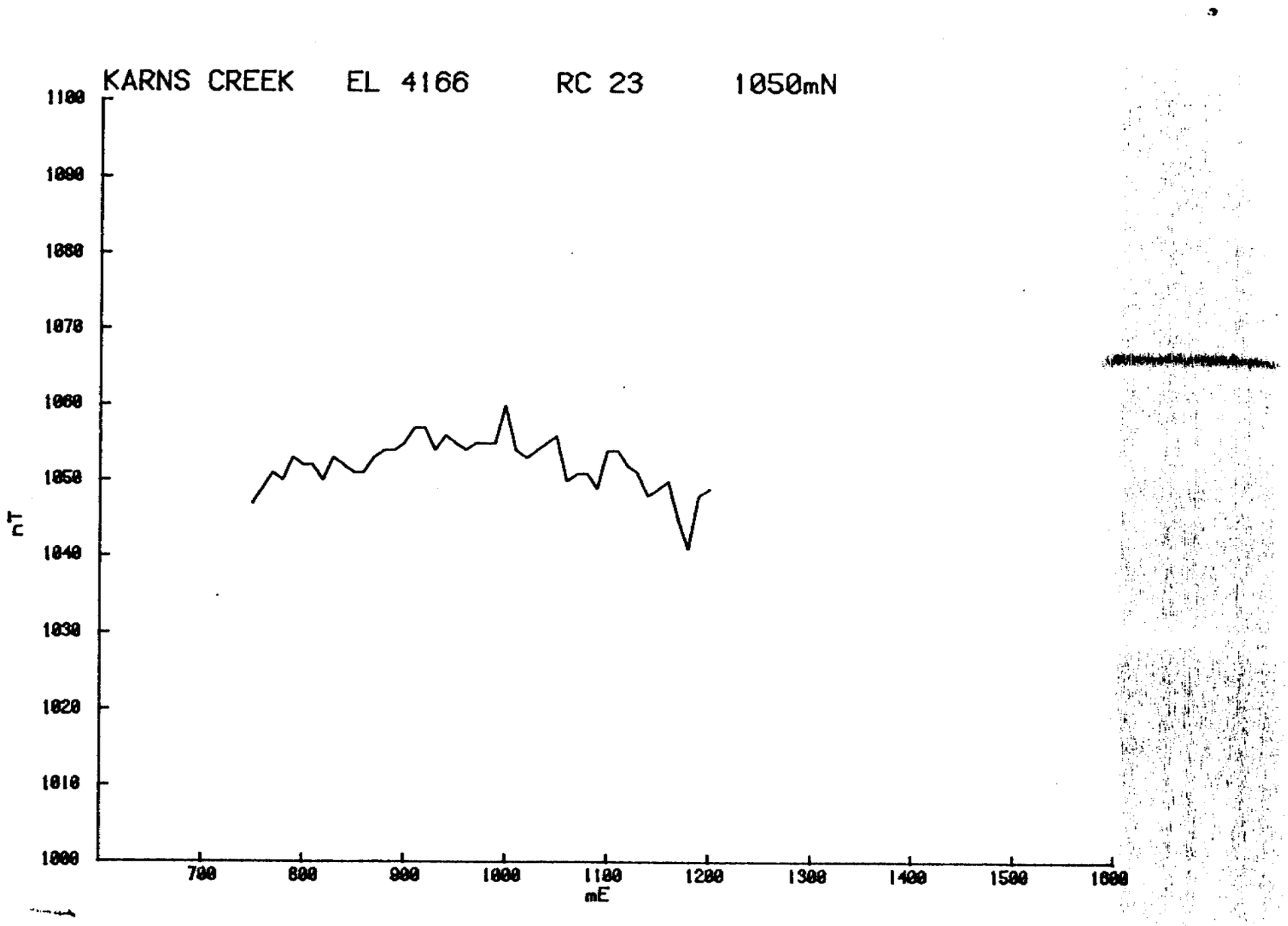
mN


KARNS CREEK EL 4166 RC 23 1000mE
1100
1090
1080
1070
1060
1050
1040
1030
1020
1010
1000
nT
700
800
900
1000
1100
1200
1300
1400
1500
1600
mN


KARNS CREEK EL 4166 RC 23 1000mN
1100
1090
1080
1070
1060
1050
1040
1030
1020
1010
1000
nT
600
700
800
900
1000
1100
1200
1300
1400
1500
mE


KARNS CREEK EL 4166 RC 23 1050mN
1100
1090
1080
1070
1060
1050
1040
1030
1020
1010
1000
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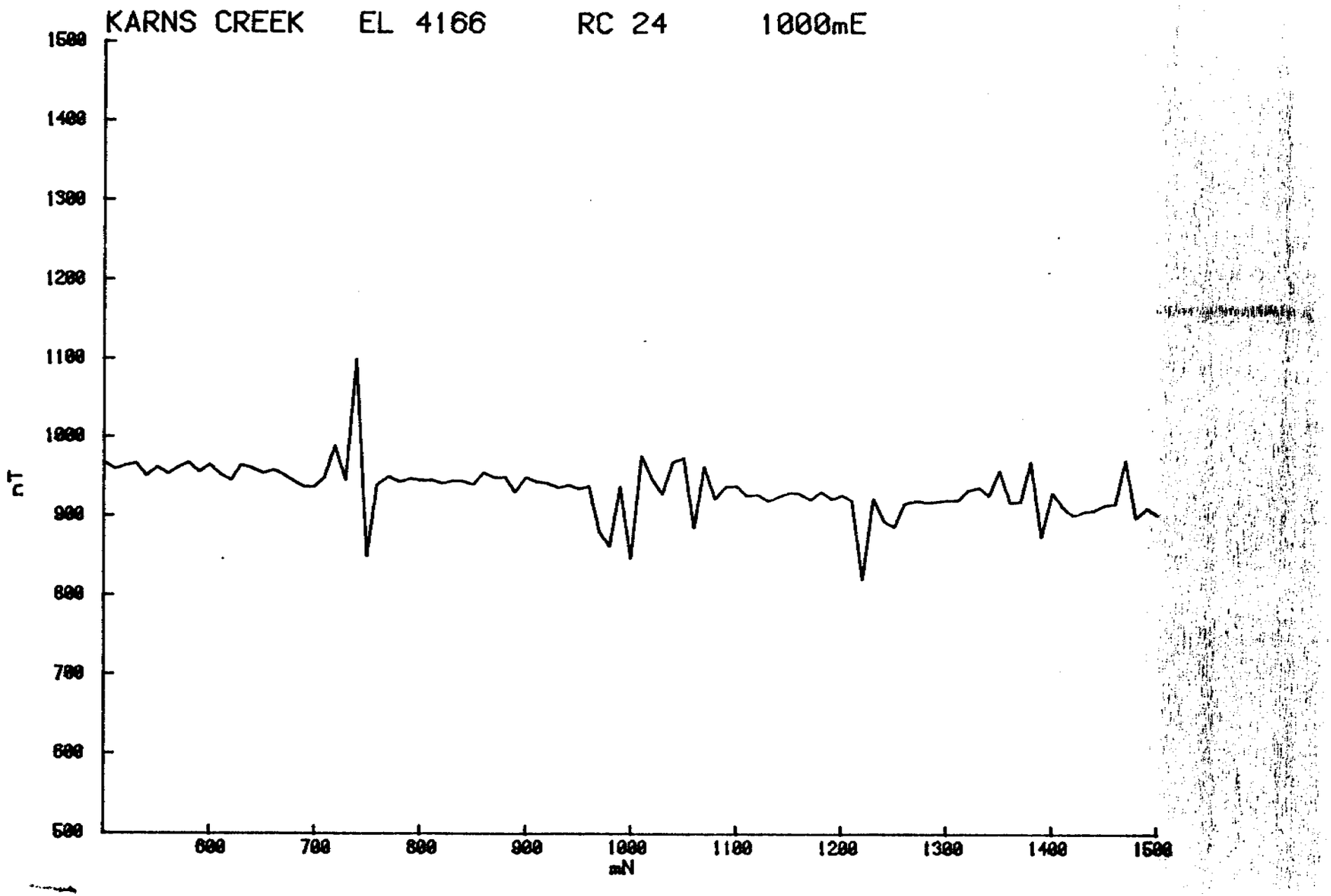
700
800
900
1000
1100
1200
1300
1400
1500
1600
mE


KARNS CREEK EL 4166 RC 24 1000mE
1500
1400
1300
1200
1100
1000
900
800
700
600
500
nT
600
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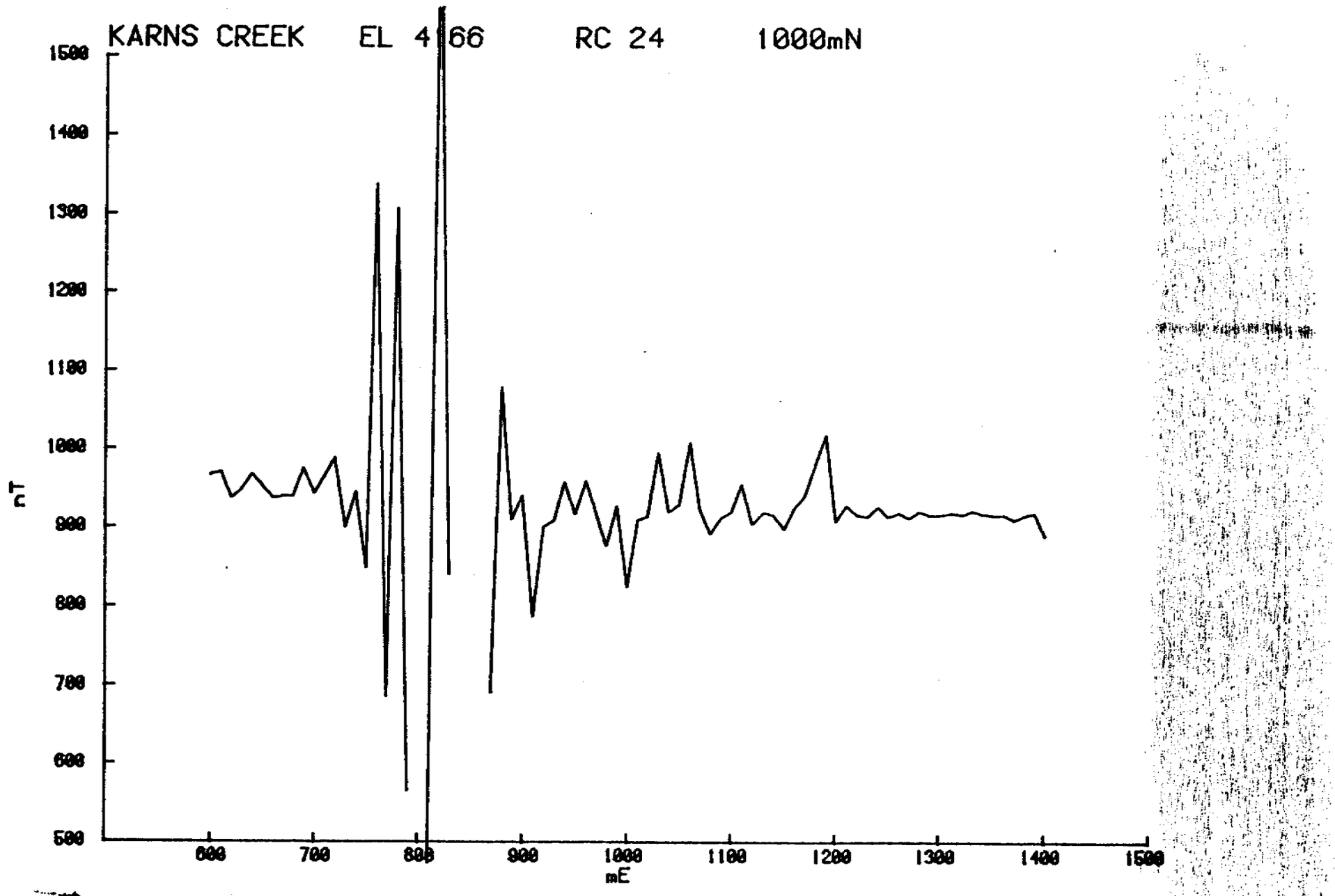
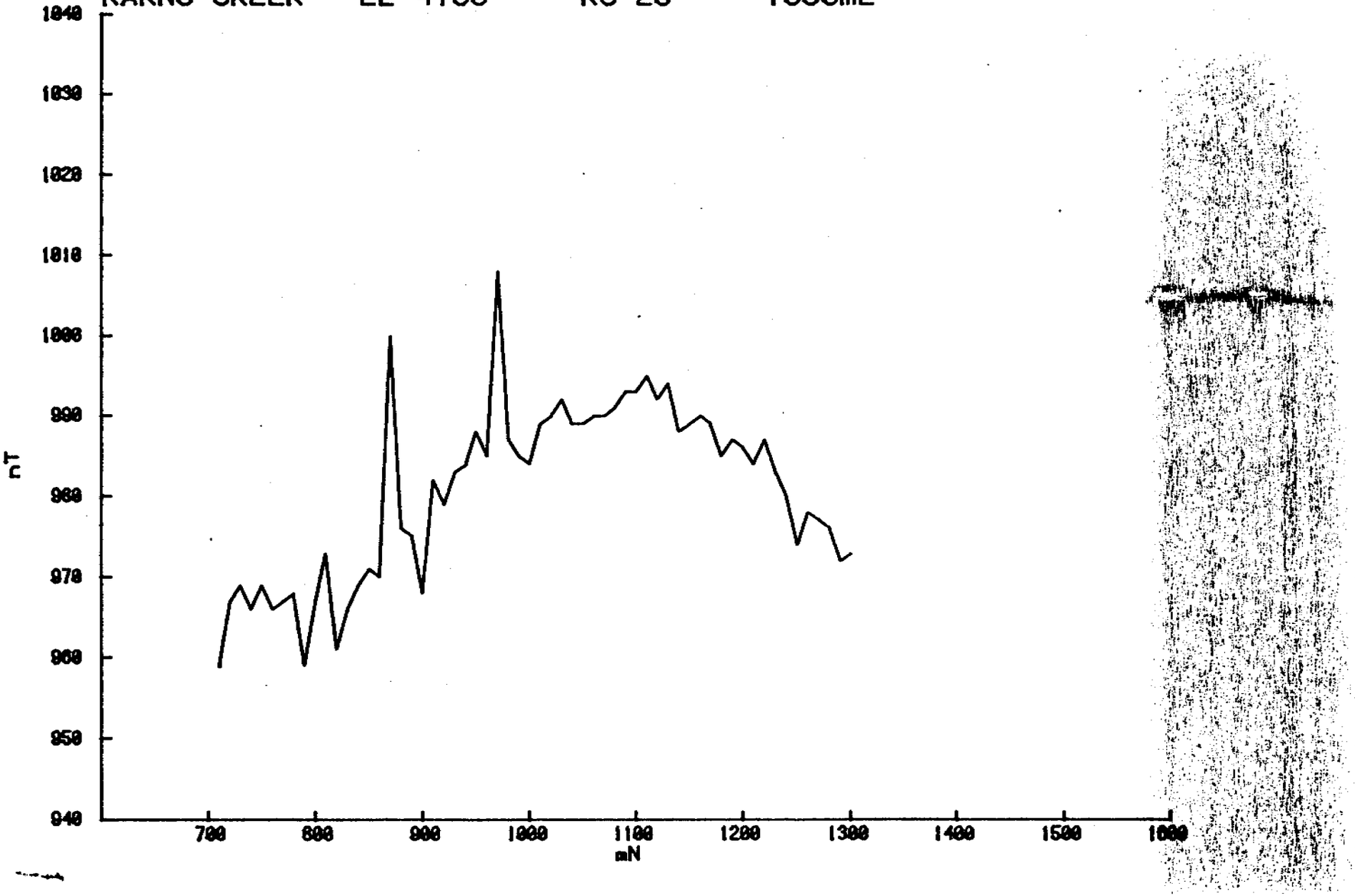
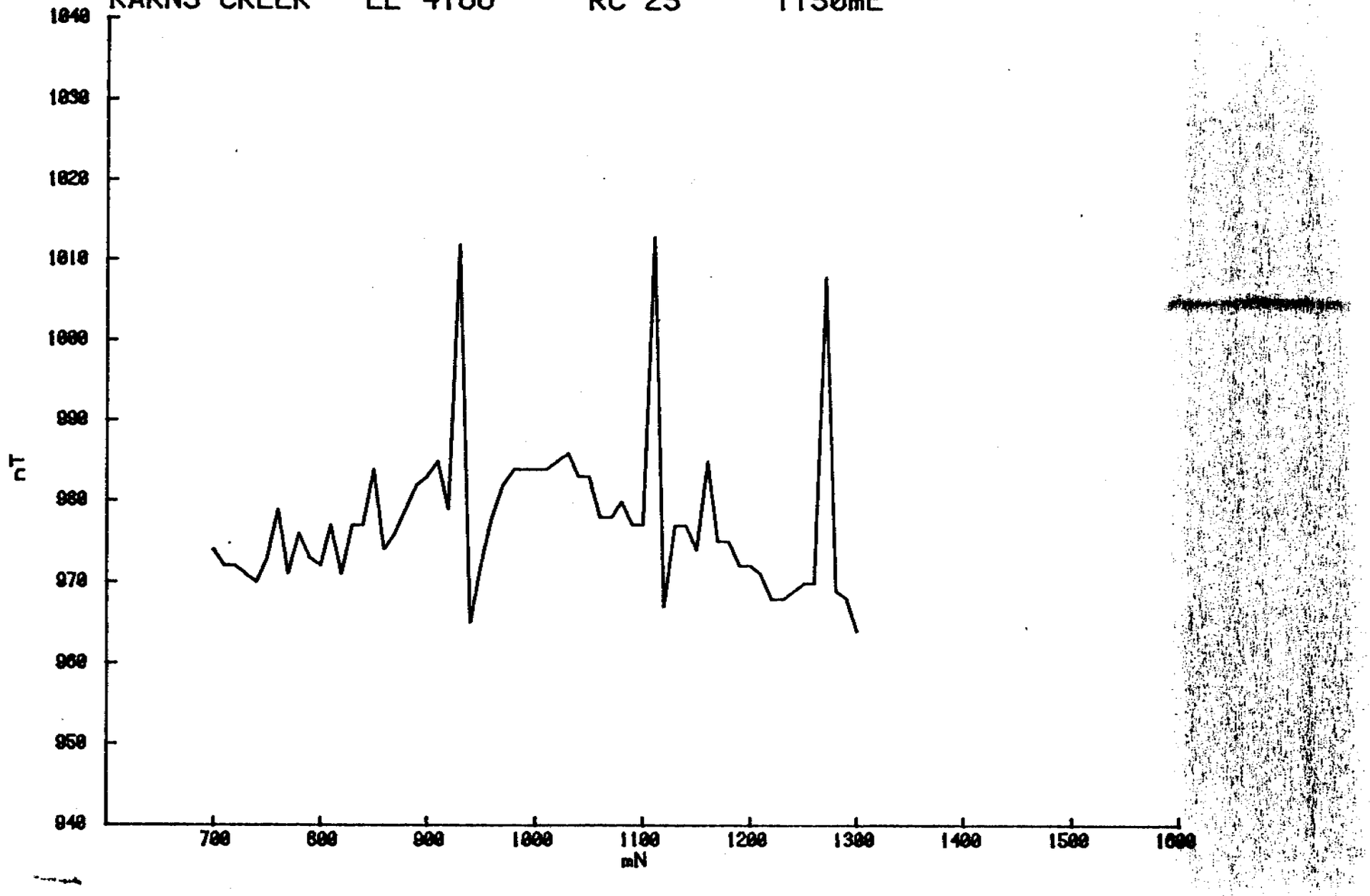
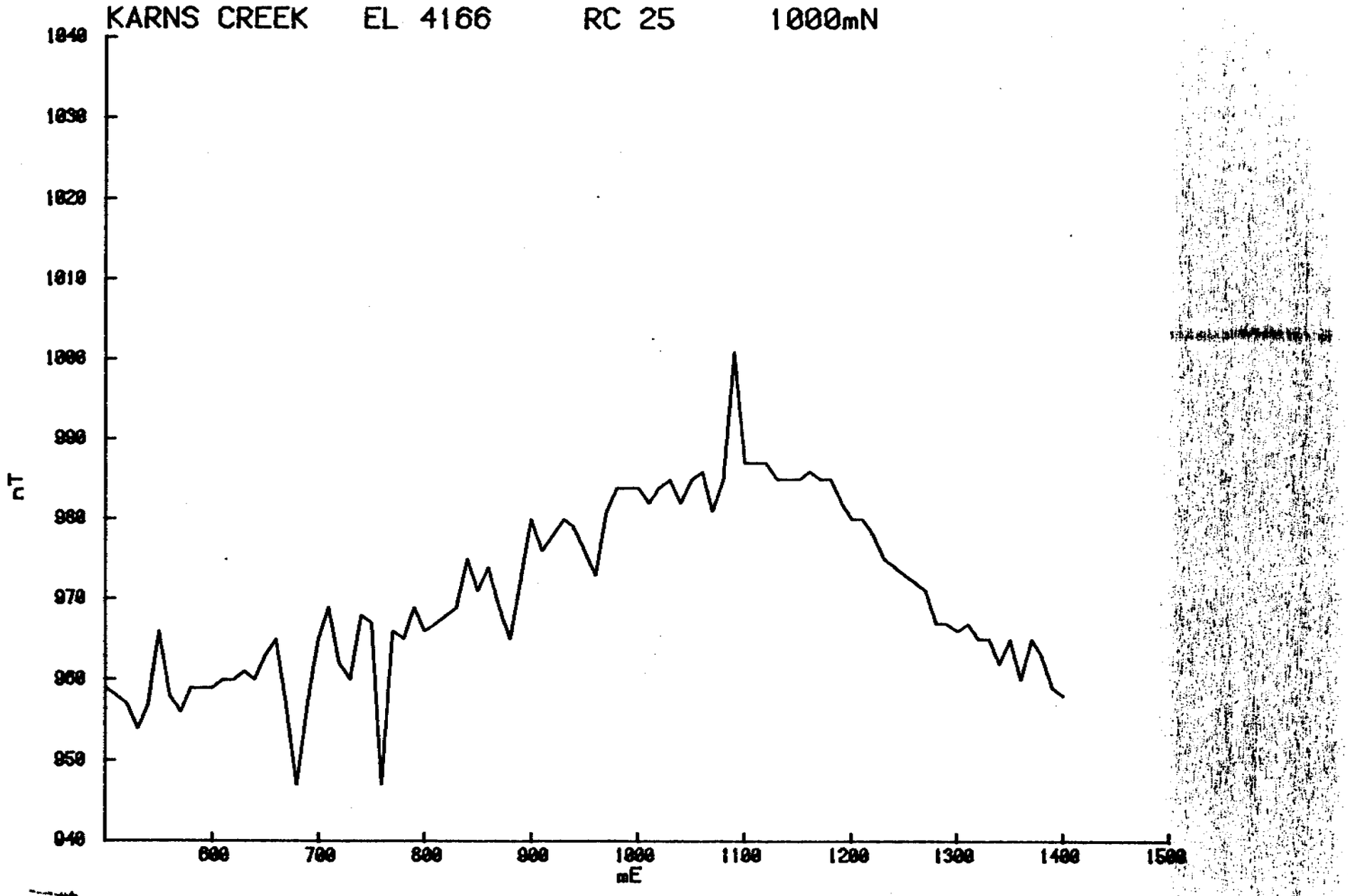
800
900
1000
1100
1200
1300
1400
1500
mN


KARNS CREEK EL 4166 RC 24 1000mN
1500
1400
1300
1200
1100
1000
900
800
700
600
500
nT
600
700
800
900
1000
1100
1200
1300
1400
1500
mE

KARNS CREEK EL 4166 RC 25 1050mE




KARNS CREEK EL 4166 RC 25 1150mE
1040
1030
1020
1010
1000
990
980
970
960
950
940
nT
700
800
900
1000
1100
1200
1300
1400
1500
1600
mN


KARNS CREEK EL 4166 RC 25 1000mN
1040
1030
1020
1010
1000
990
980
970
960
950
940
nT
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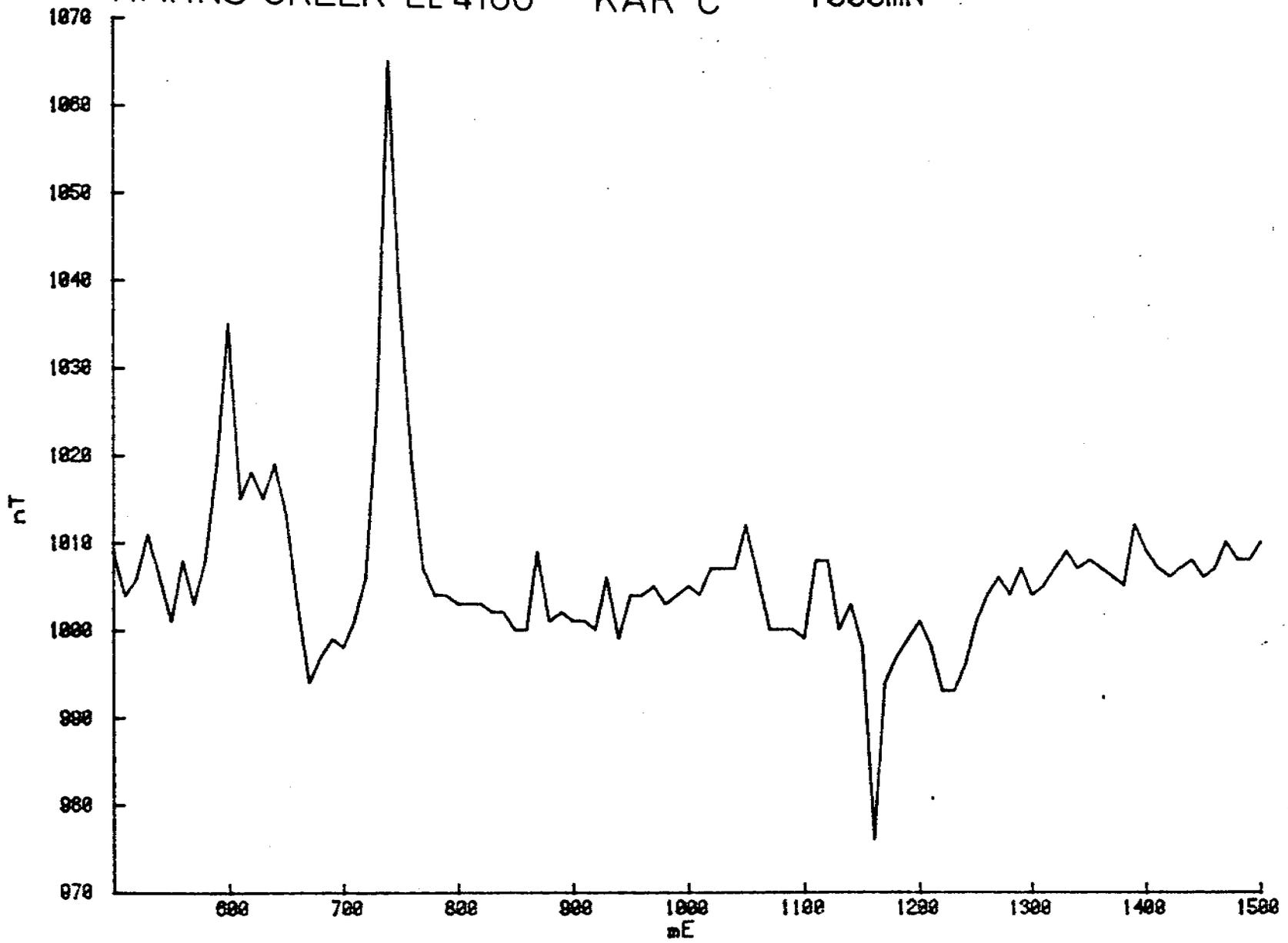
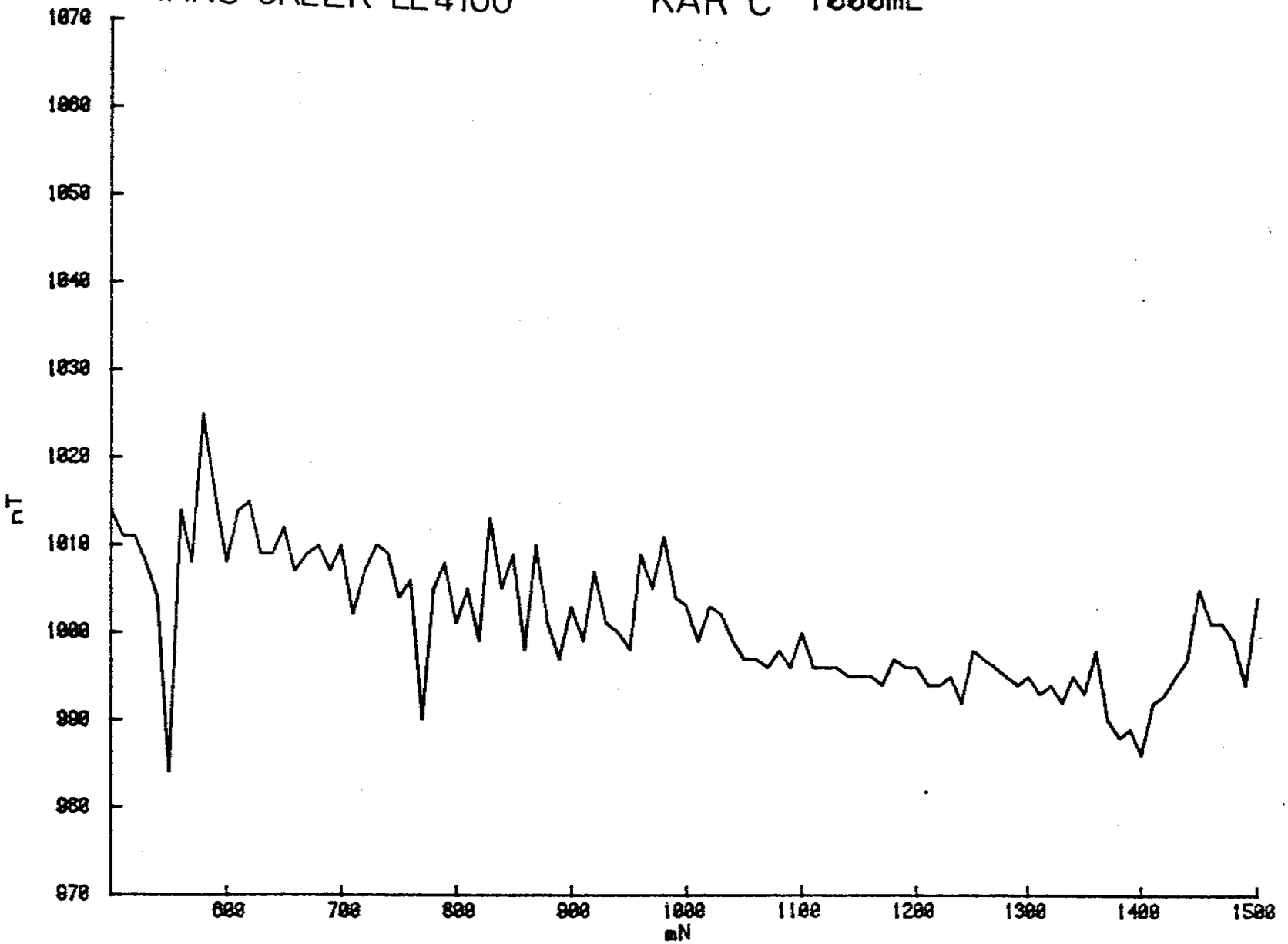
800
900
1000
1100
1200
1300
1400
1500
mE


KARNS CREEK EL 4166 KAR C 1000mN
1070
1060
1050
1040
1030
1020
1010
1000
990
980
970
nT
600
700
800
900
1000
1100
1200
1300
1400
1500
mE


KARNS CREEK EL4166
KAR C 1000mE
1070
1060
1050
1040
1030
1020
1010
1000
990
980
970
nT
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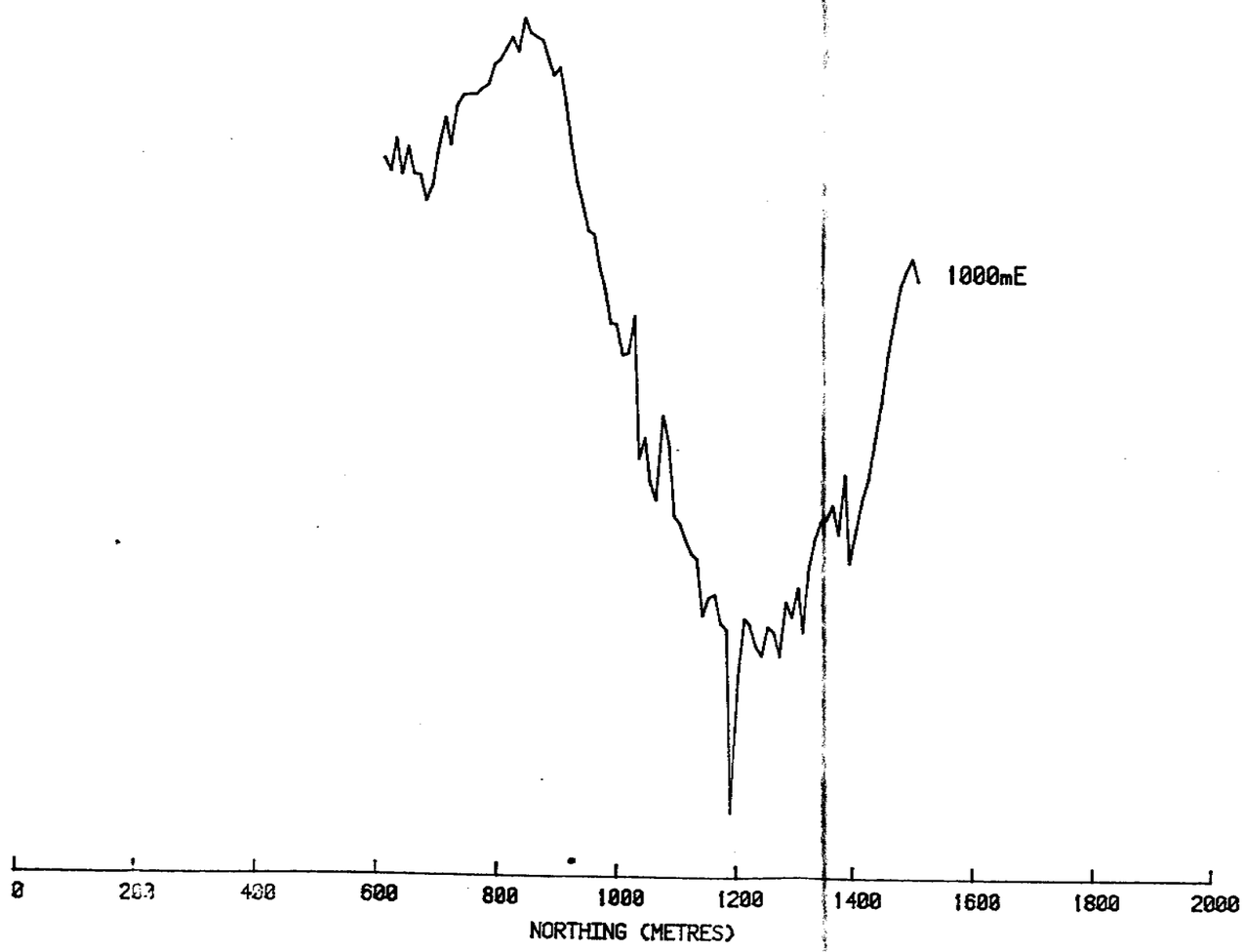
700
800
900
1000
1100
1200
1300
1400
1500
mN



KARNS CREEK EL 4166

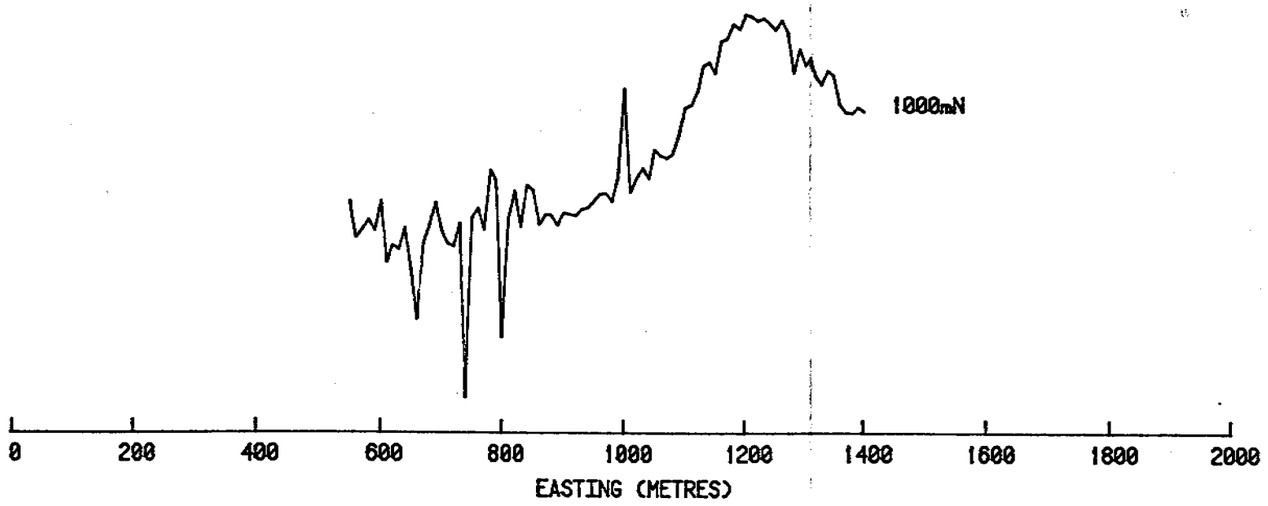
GROUND MAGNETOMETER PROFILES
KAR G
1000mE

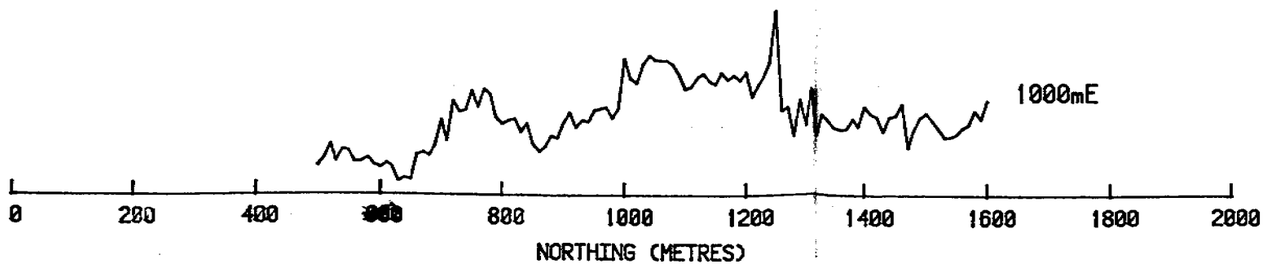
1:100 000 Sheet : SELBY 6464

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction applied
Base station mag : MP3

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 17-OCT-84
Operator : KRA

Scale-horizontal : 1:10000
-vertical : 20 nT/CM





KARNS CREEK EL 4166

GROUND MAGNETOMETER PROFILES
KAR H
1000mE, 1000mN

1:100 000 Sheet : SELBY 6464

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction applied
Base station mag : MP3

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 17-OCT-84
Operator : KRA/DAS

Scale-horizontal : 1:10000
-vertical : 20 nT/CM

KARNS CREEK EL 4166

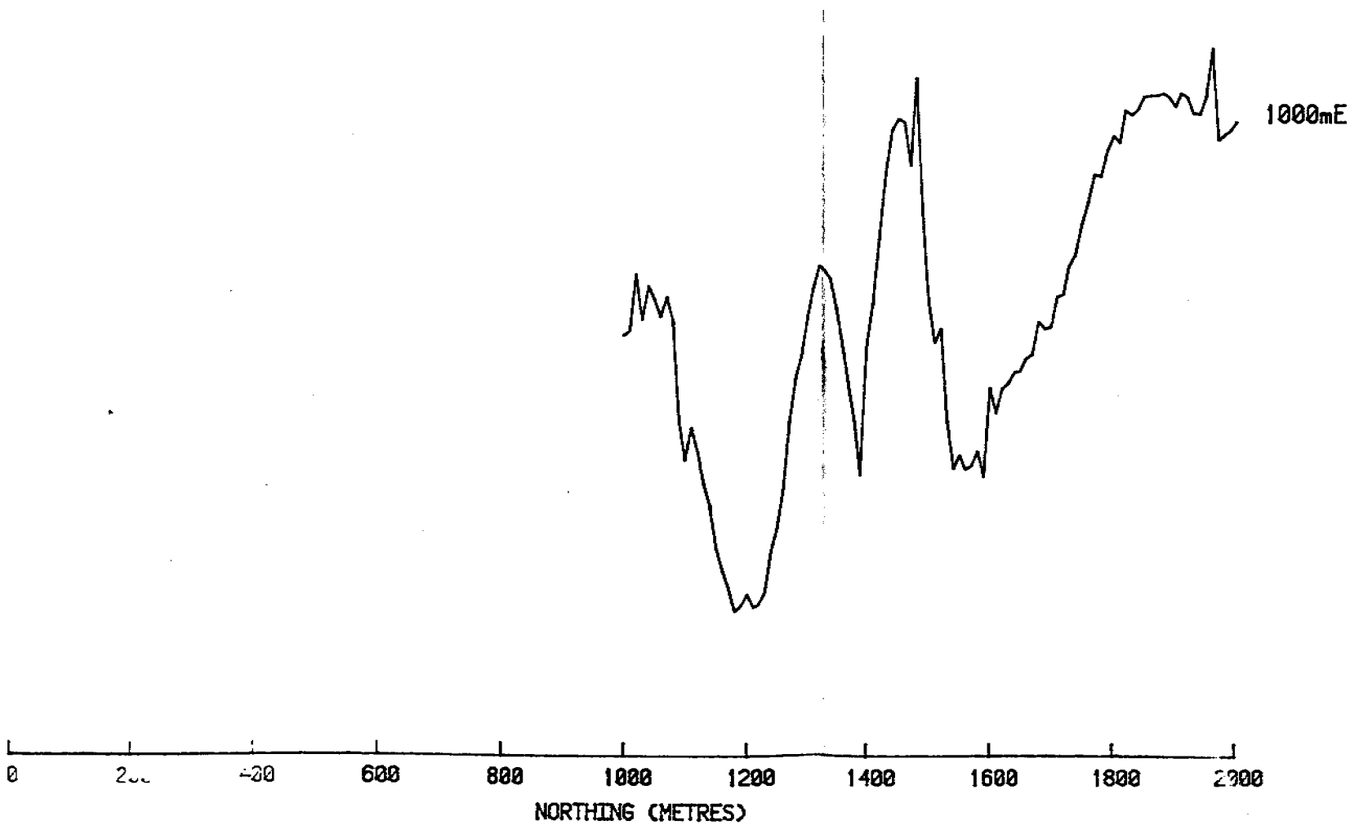
GROUND MAGNETOMETER PROFILES
KAR J
1000mE

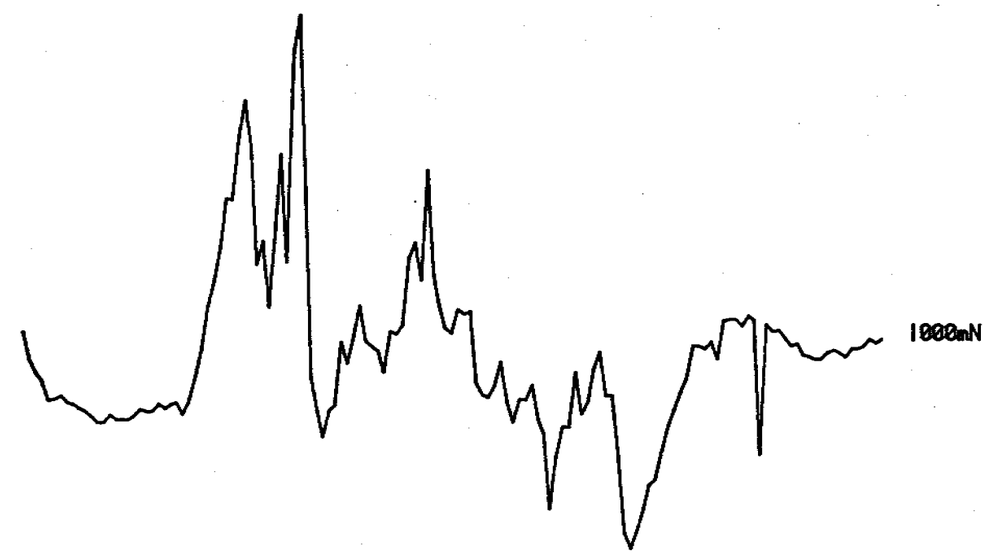
1:100 000 Sheet : SELBY 6464

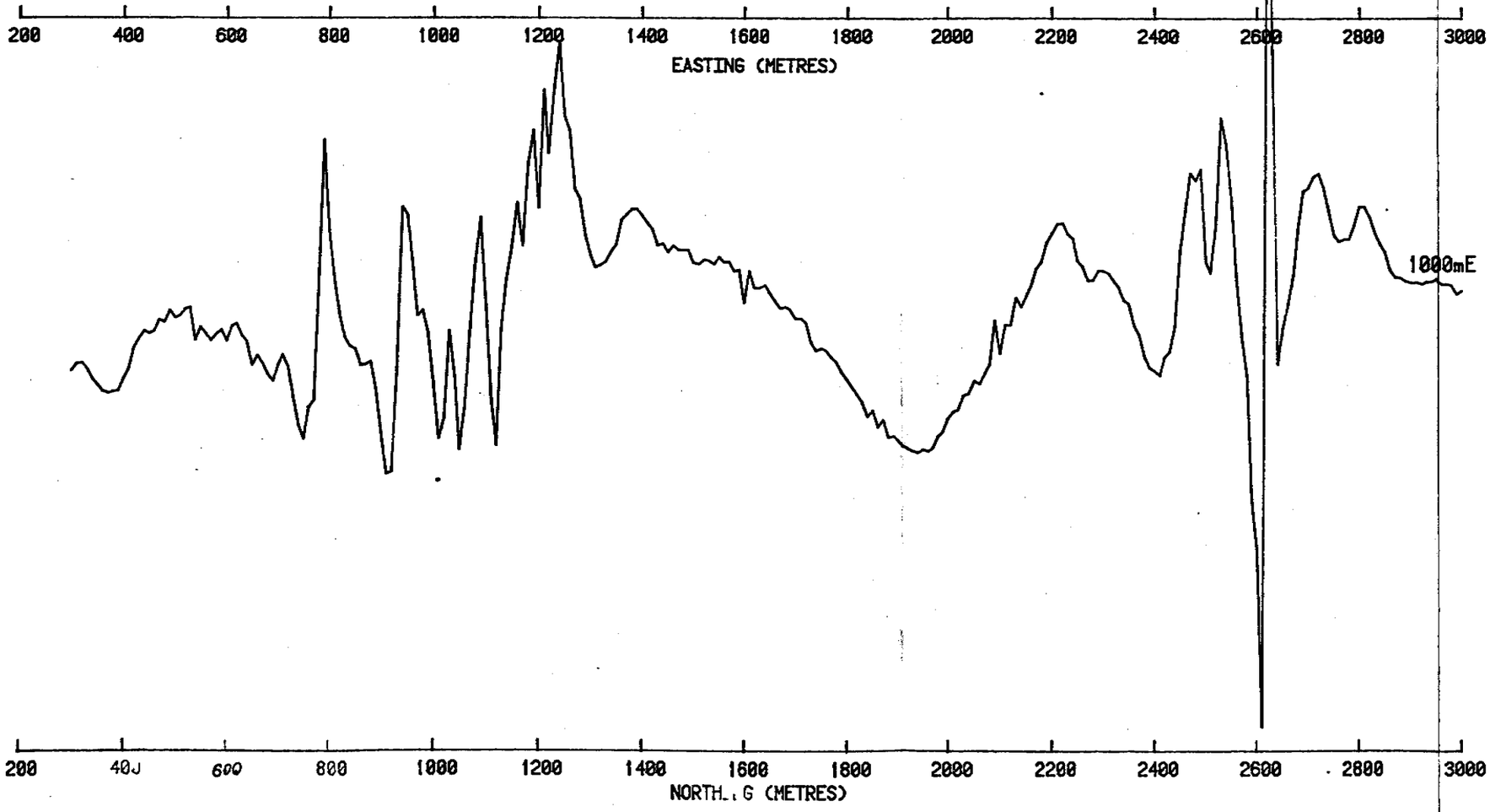
Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction applied
Base station mag : MP3

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 18-OCT-84
Operator : DAS

Scale-horizontal : 1:10000
-vertical : 20 nT/CM







KARNS CREEK EL 4166

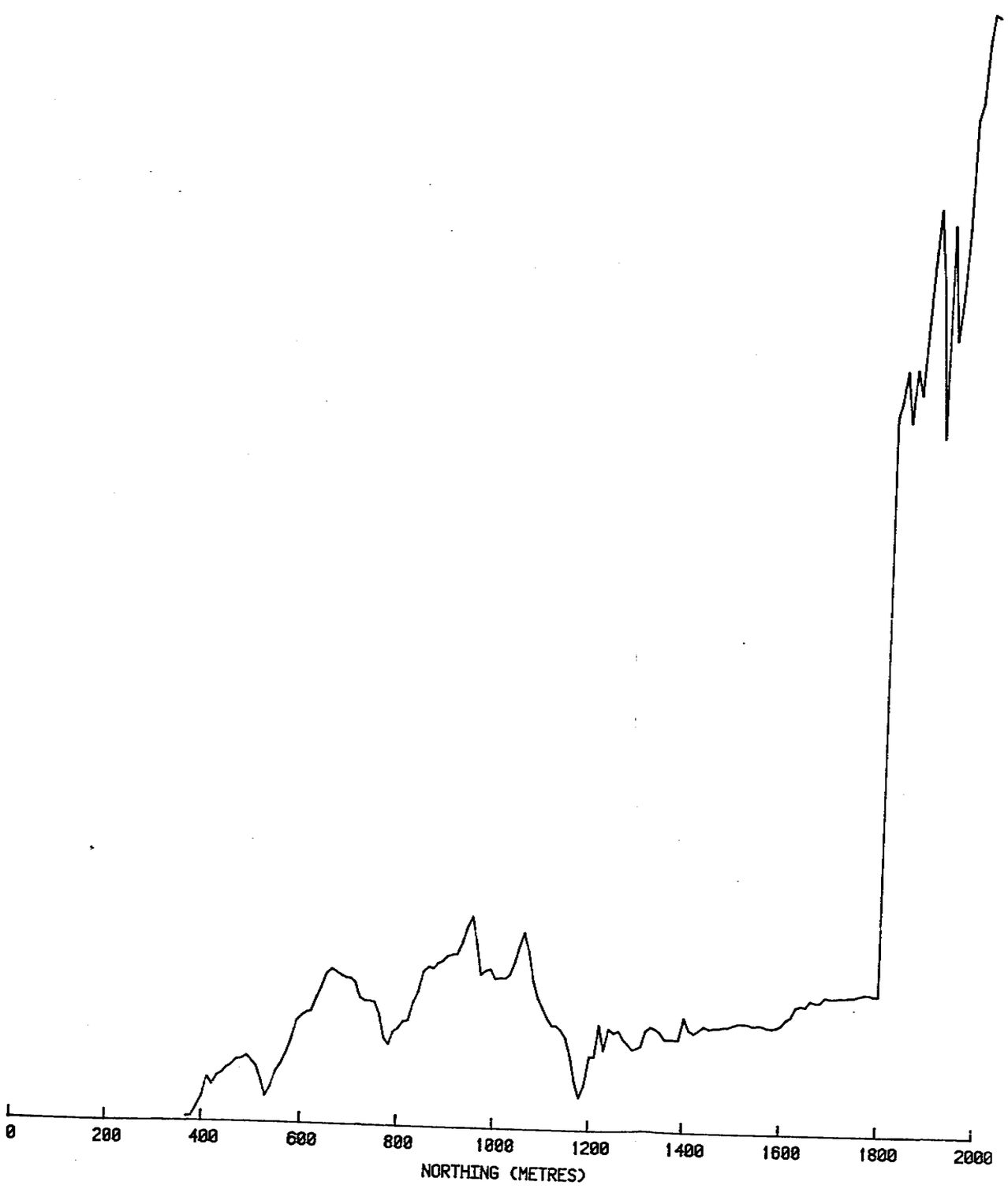
GROUND MAGNETOMETER PROFILES
KAR K
1000mE, 1000mN

1:100 000 Sheet : SELBY 6464

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction applied
Base station mag : MP3

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 18-OCT-84
Operator : DAS/KRA

Scale-horizontal : 1:10000
-vertical : 50 nT/CM



KARNS CREEK EL 4166

GROUND MAGNETOMETER PROFILES

KAR L

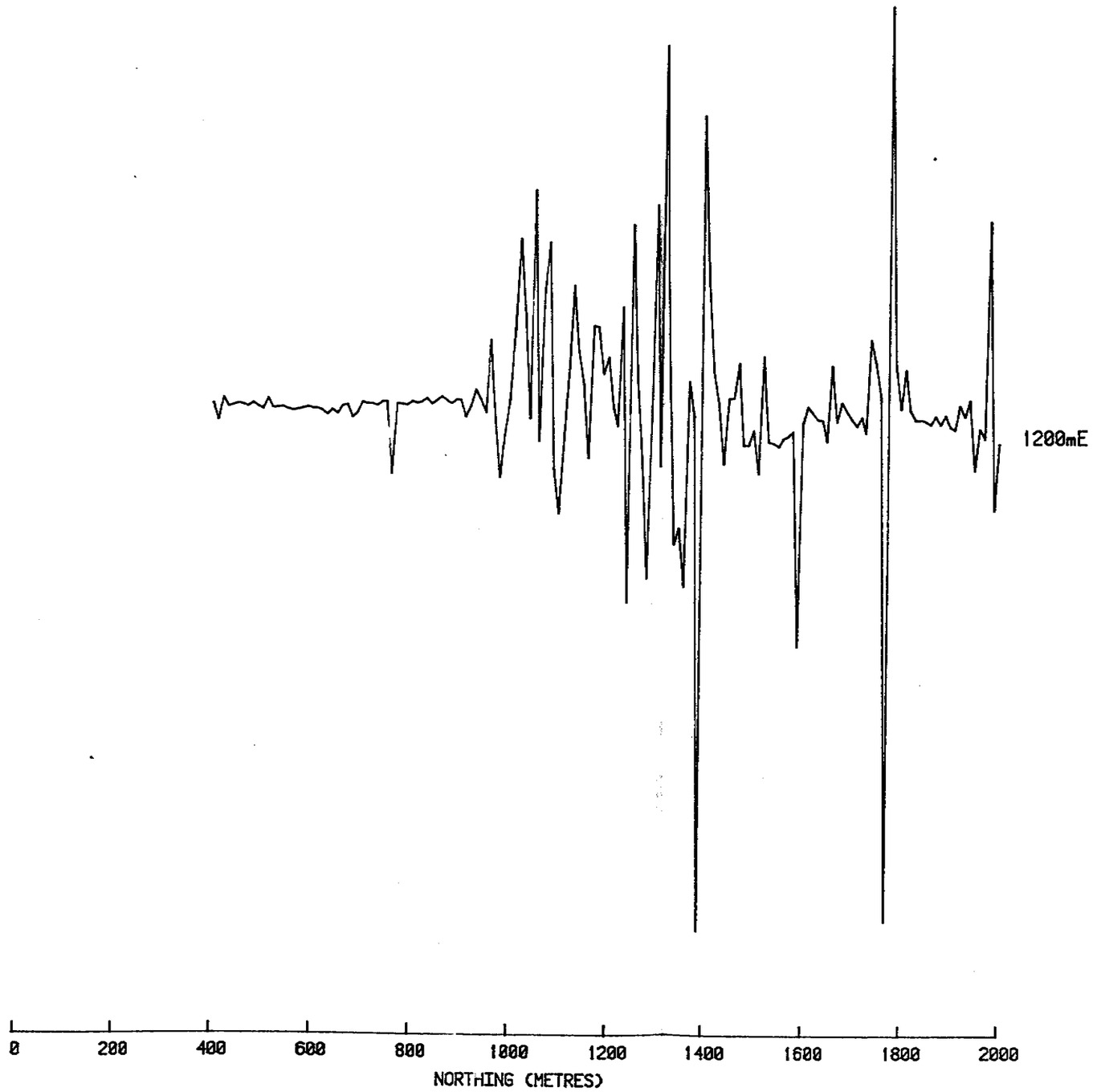
1000mE

1:100 000 Sheet : SELBY 6464

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction applied
Base station mag : MP3

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 19-OCT-84
Operator : DAS

Scale-horizontal : 1:10000
-vertical : 100 nT/CM



KARNS CREEK EL 4166

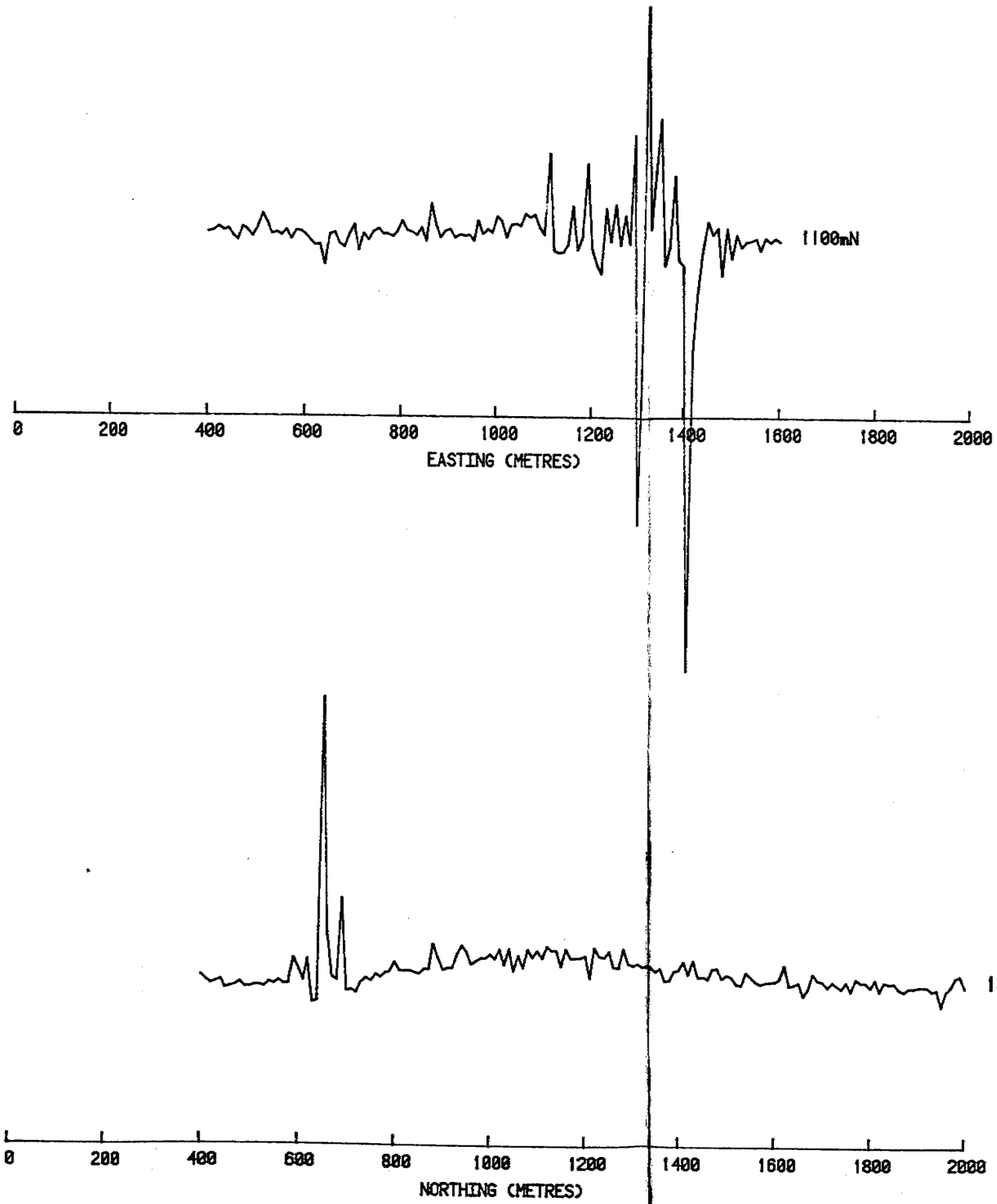
GROUND MAGNETOMETER PROFILES
KAR M
1200mE

1:100 000 Sheet : SELBY 6464

Magnetometer : MP3
Sensitivity : +/-0.1 nT
Sensor Height : 2 metres
Diurnal correction not applied

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 22-OCT-84
Operator : KRA

Scale-horizontal : 1:10000
-vertical : 20 nT/CM



KARNS CREEK EL 4166

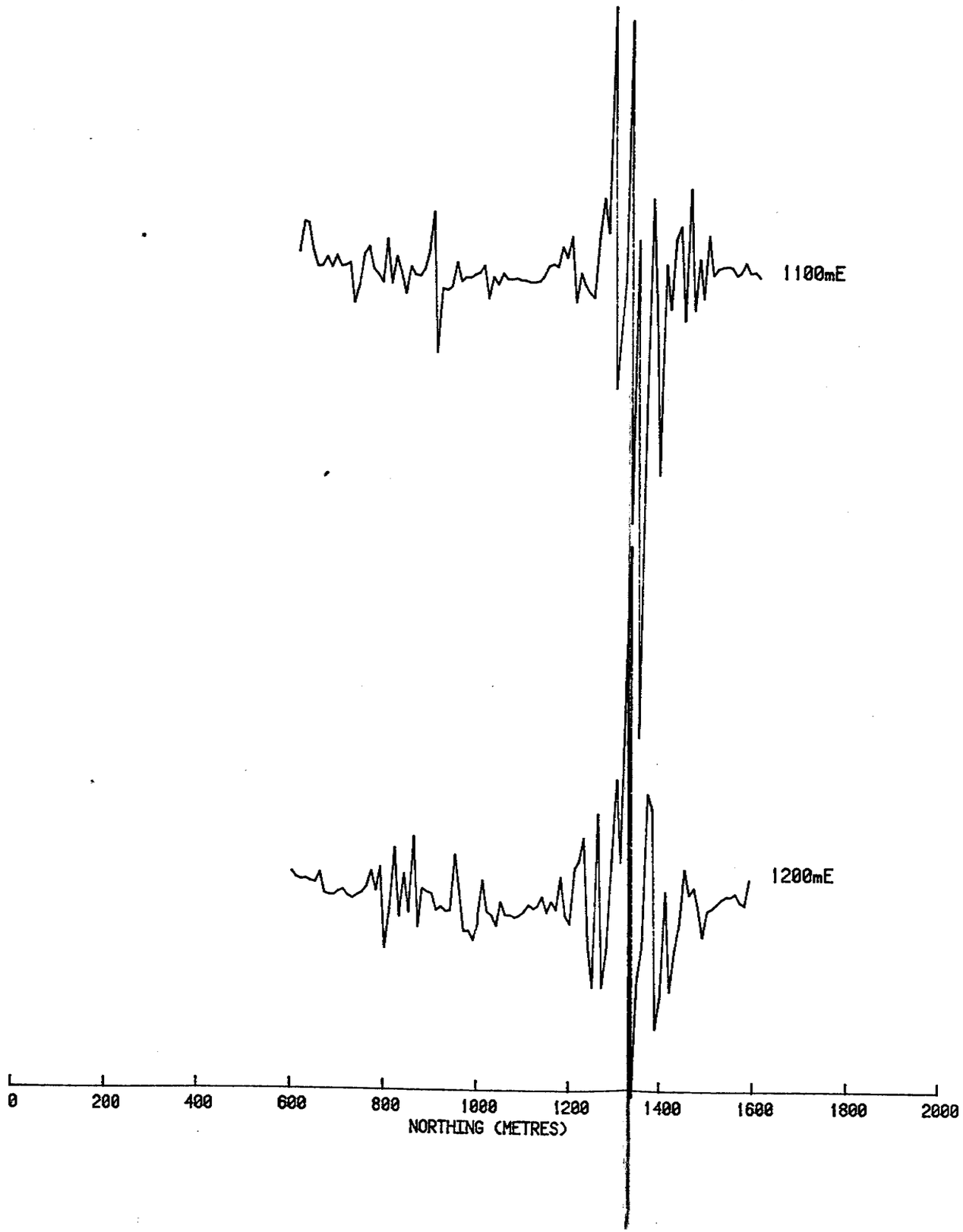
GROUND MAGNETOMETER PROFILES
KAR N
1000mE, 1100mN

1:100 000 Sheet : SELBY 6464

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction not applied

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 22-OCT-84
Operator : DAS

Scale-horizontal : 1:10000
-vertical : 50 nT/CM



KARNS CREEK EL 4166

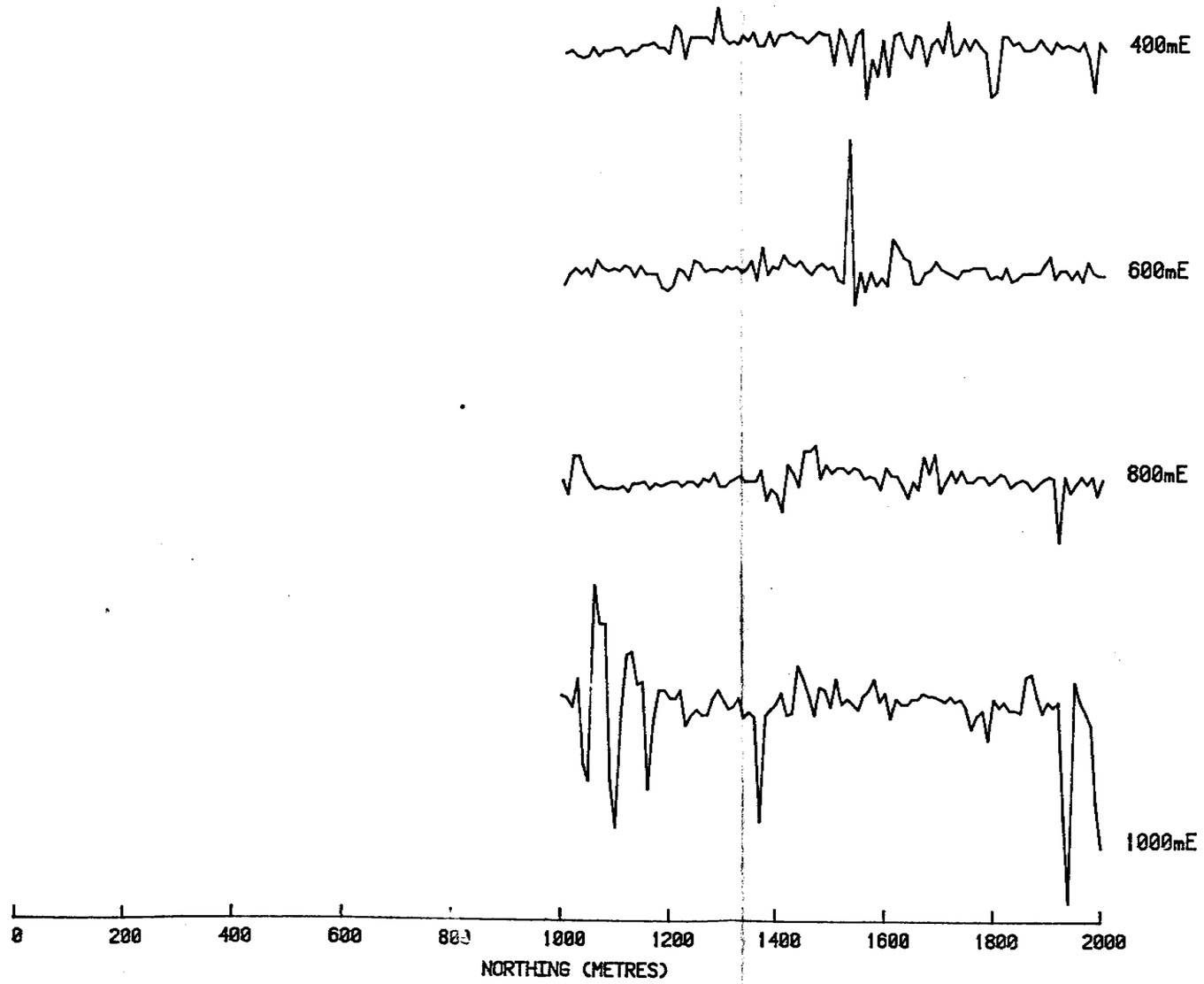
GROUND MAGNETOMETER PROFILES
KAR 0
1100mE, 1200mE

1:100 000 Sheet : SELBY 6464

Magnetometer : MP3
Sensitivity : +/-0.1 nT
Sensor Height : 2 metres
Diurnal correction not applied

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 22-OCT-84
Operator : KRA

Scale-horizontal : 1:10000
-vertical : 25 nT/CM



KARNS CREEK EL 4166

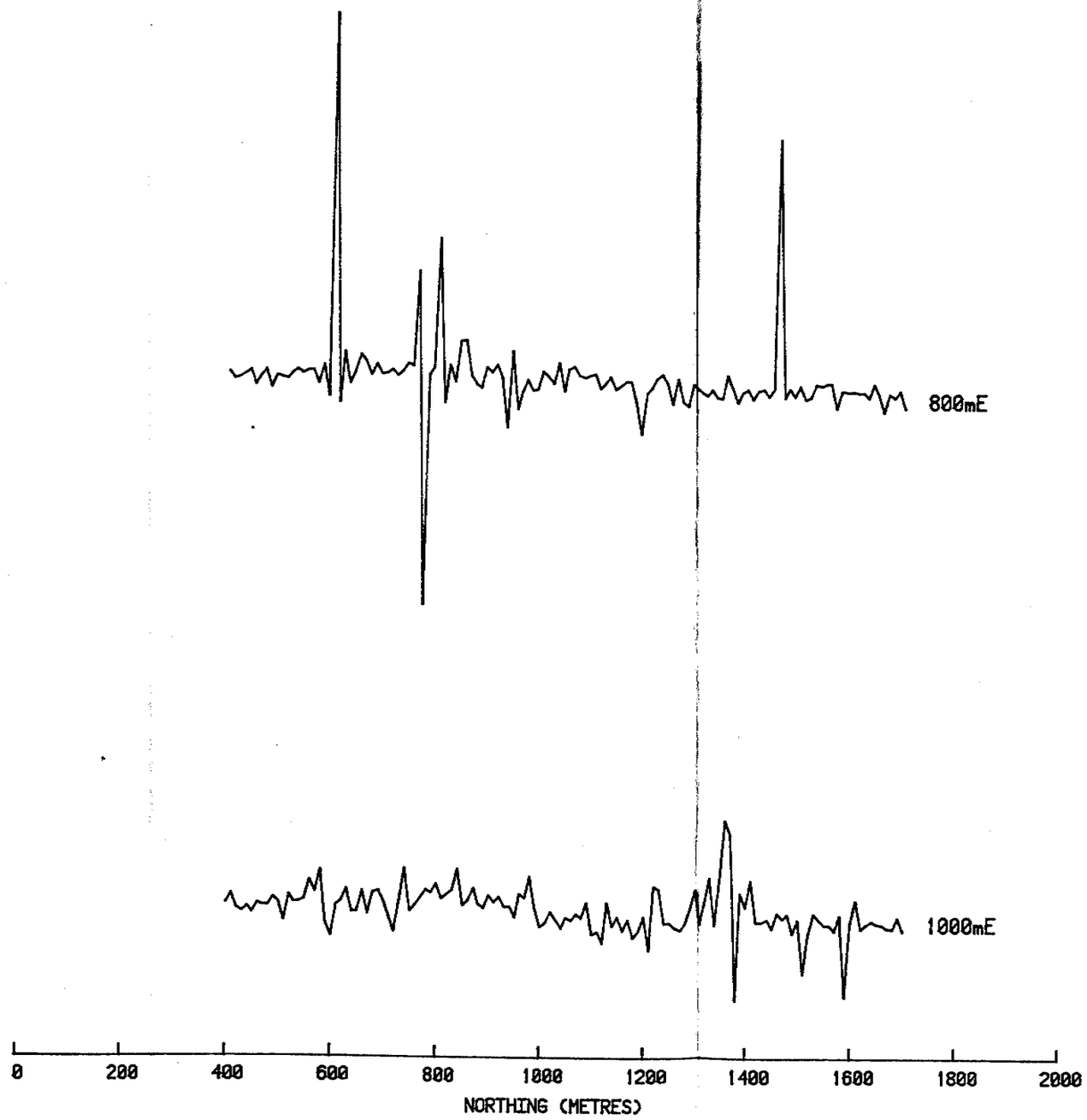
GROUND MAGNETOMETER PROFILES
KAR P
400mE, 600mE, 800mE, 1000mE

1:100 000 Sheet : SELBY 6464

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction not applied

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 23-OCT-84
Operator : GJB

Scale-horizontal : 1:10000
-vertical : 20 nT/CM



KARNS CREEK EL 4166

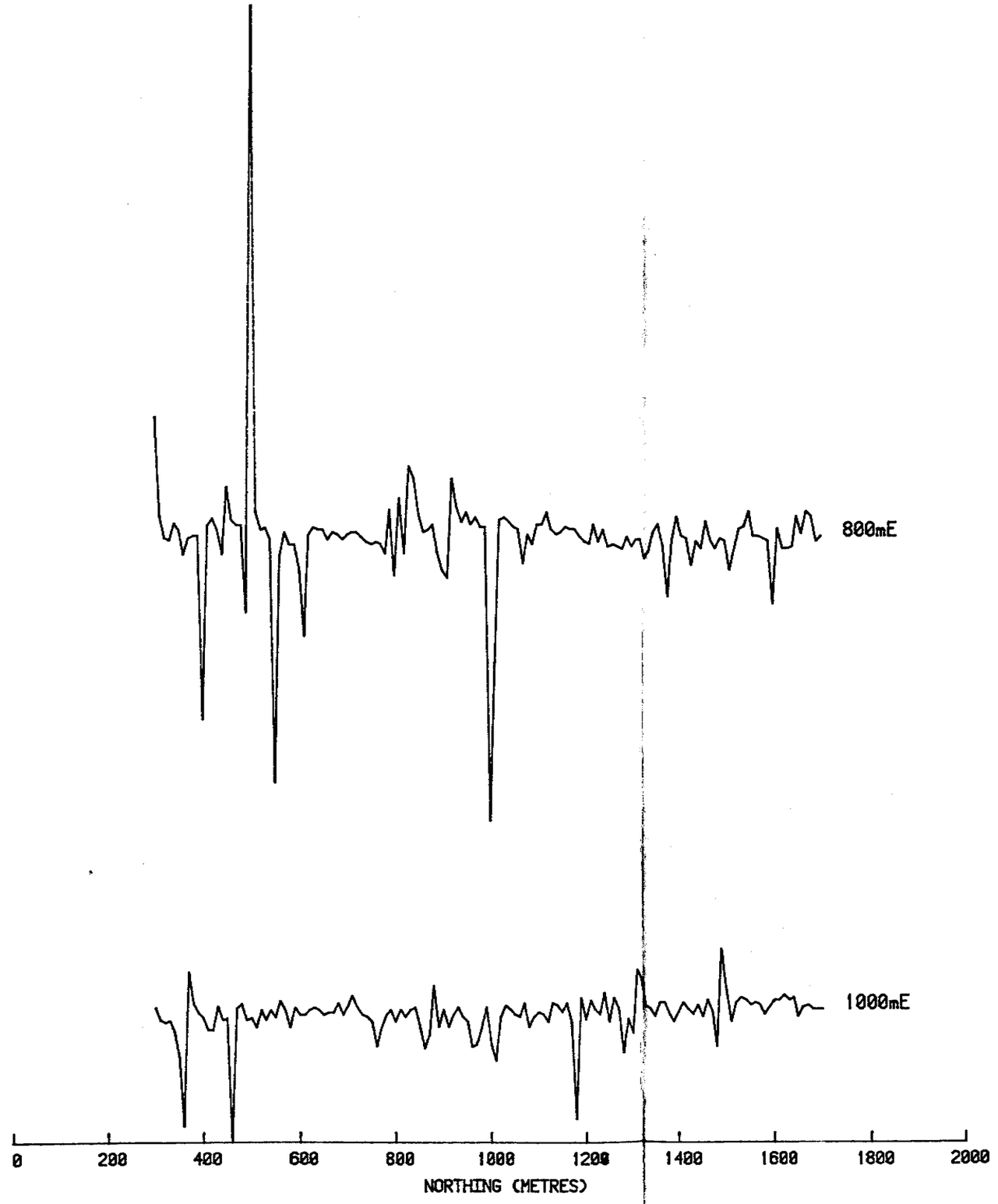
GROUND MAGNETOMETER PROFILES
KAR Q
800mE, 1000mE

1:100 000 Sheet : PUNGALINA 6364

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction applied
Base station mag : MP3

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 23-OCT-84
Operator : DAS

Scale-horizontal : 1:10000
-vertical : 20 nT/CM



KARNS CREEK EL 4166

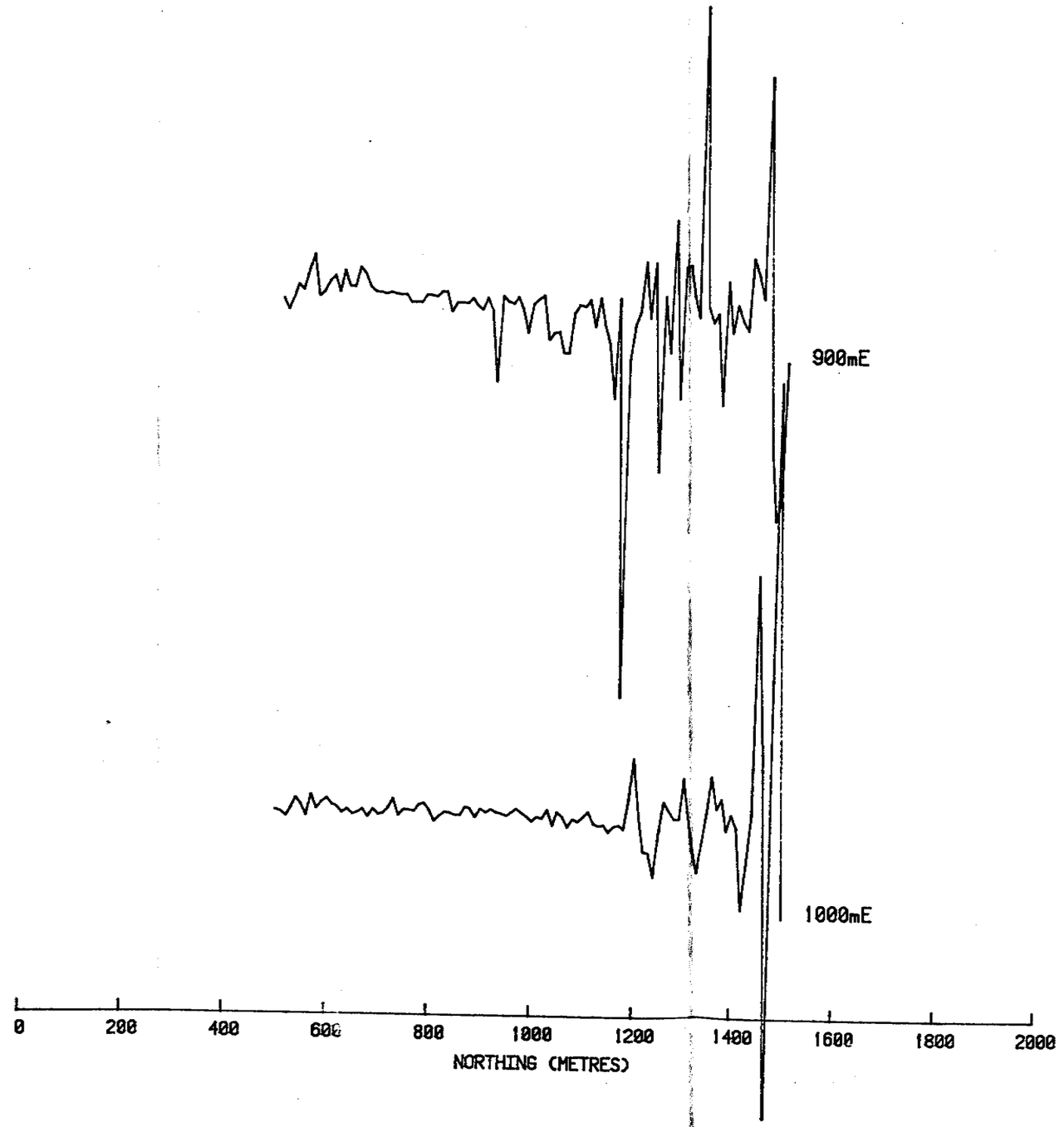
GROUND MAGNETOMETER PROFILES
KAR R
800mE, 1000mE

1:100 000 Sheet : SELBY 6464

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction not applied

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 24-OCT-84
Operator : DAS

Scale-horizontal : 1:10000
-vertical : 20 nT/CM



KARNS CREEK EL 4166

GROUND MAGNETOMETER PROFILES

KAR S

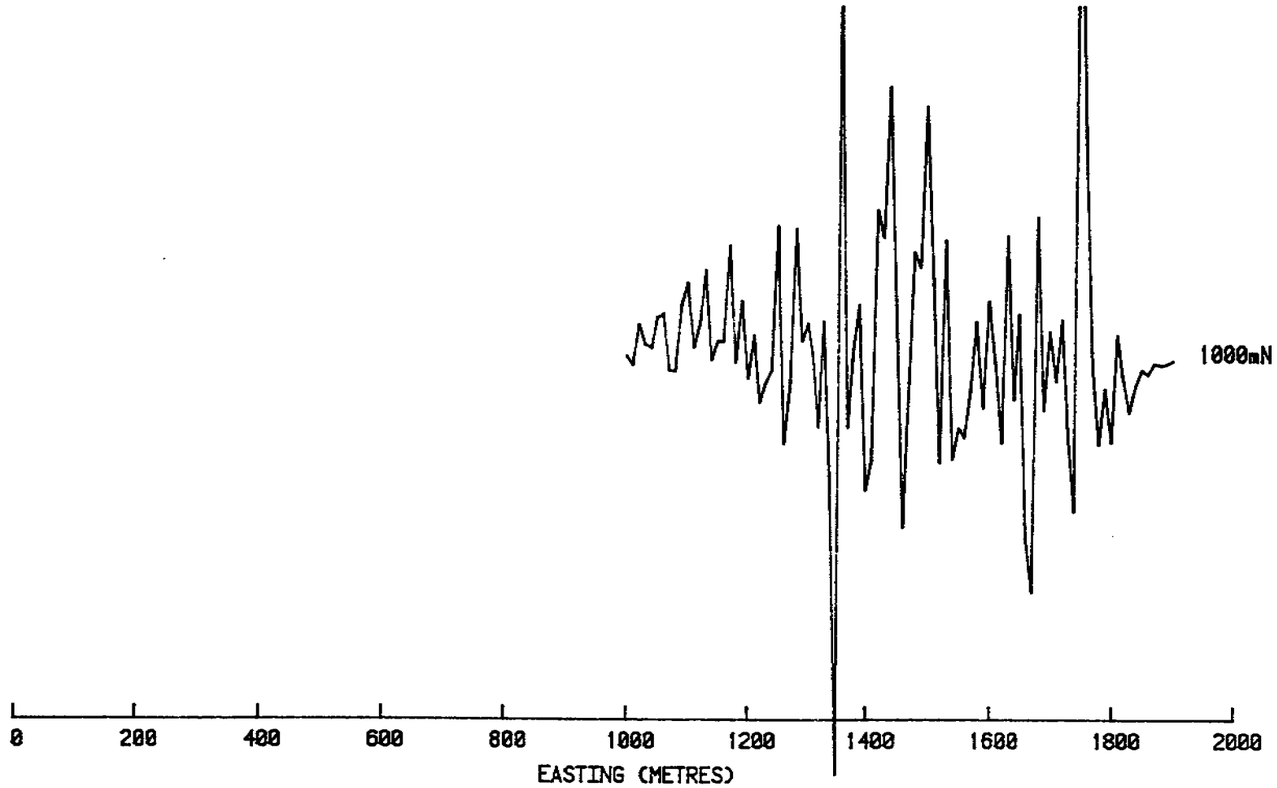
900mE, 1000mE

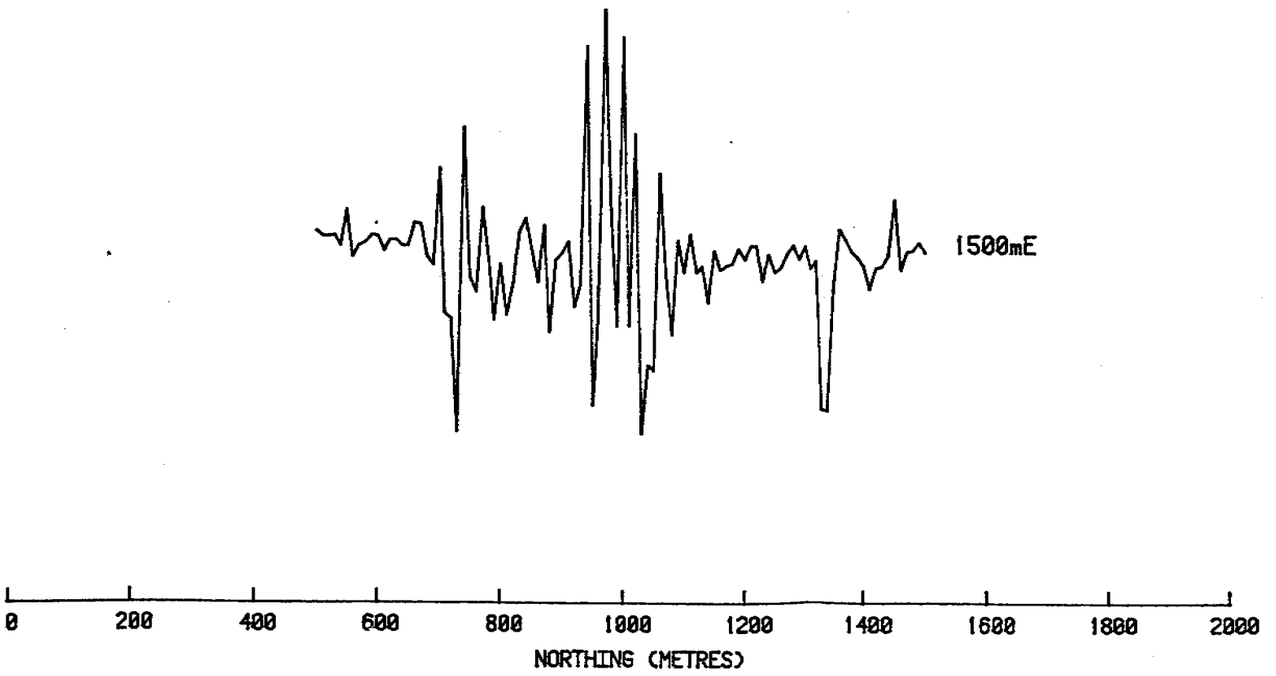
1:100 000 Sheet : SELBY 6464

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction not applied

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 24-OCT-84
Operator : DAS

Scale-horizontal : 1:10000
-vertical : 50 nT/CM





KARNS CREEK EL 4166

GROUND MAGNETOMETER PROFILES
KAR T
1500mE, 1000mN

1:100 000 Sheet : SELBY 6464

Magnetometer : MP2
Sensitivity : +/-1.0 nT
Sensor Height : 2 metres
Diurnal correction not applied

Grid North : 000 MAG
Station spacing : 10 metres
Survey date : 24-OCT-84
Operator : KRA

Scale-horizontal : 1:10000
-vertical : 50 nT/CM

Appendix 8

DRILL LOGS: DD84KC-1
KAR P (Auger)

C14 MAG GRID

DIAMOND **DRILL CORE LOG**

CO-ORDINATES 1130E 1200N | AZIMUTH | DRILLERS GADEN | COMMENCED 18.8.84 | PROJECT

RL COLLAR | INCLINATION VERTICAL | DRILL TYPE WARMAN 1000 | COMPLETED 19.8.84 | CASING LEFT 6mPVC | DPO No(s) 20750, 20925

DEPTH FROM(M) | DEPTH TO(M) | CORE REC. (M) | CORE SIZE | GRAPHIC LOG | CORE DESCRIPTION | SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION | SAMPLE No. | FROM (M) | TO (M) | REC (M) | ASSAY VALUES

FROM(M)	TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	6		P.C.		Red brown weathered volcanic (?) possible tuff med to fine grained, high clay content. Rounded to angular grains of qtz, feldspar and opaques in red brown clay matrix	MAG. SUSC. (x10^{-5} SI) ANOM; RAD (BGS-2)	970924	6	17.4		Pb 20 Zn 24 Cu 24 Ni 20 Co 18 Cr 6 Mn 2200; Rb 80 Sr 42 Ba 270 Y 26 La 30 Ce 80 Zr 280 Nb 14
						800-1600 NIL					
6	17.4	10.4	NQ		Red-brown weathered volcanic as above						Th 20 U 4 V 70
						800-1600 NIL					
17.4	17.7	.3	NQ		Chert + silicified dolomite	<20 NIL					
17.7	18.0	.3	NQ		Red brown weathered volcanic	800-1600 NIL					
18.0	45.1	4.0			Chert & silicified dolomite - very cavernous, extremely poor core recovery						KI Mic
							970928	0	1		NIL NIL
							970929	1	2		NIL NIL
							970930	2	3		NIL NIL
45.1					E O H		970931	3	4		NIL NIL
							970932	4	5		NIL NIL
							933	5	6		NIL NIL
							970924 cont.				FeO 5.70 MnO 0.39 TiO 0.85 CaO 0.10 K 0 0.81 P 0 0.06 SiO 74.2; Al O 11.70 MgO 0.15 Na O 0.01 LOI 5.80
							970939 BORE # ONE				
							940				
							941				
							942 BORE # TWO				
							943				
							944				
							945 BORE # THREE				
							946				
							947				

SUMMARY AND SPECIAL COMMENTS: Magnetic target intersected; weathered volcanic. This volcanic is anomalous in sequence. IB in Karns Dolomite?

LOGGED BY D.A. Sims DATE 19.8.84

SHEET 1 OF 1

AMG Co-ORDINATES OF ORIGIN 757000mE 81543mN

ANOMALY KAR P LOCAL GRID ORIGIN 1000mE 1000mN

CO-ORDINATES _____ AZIMUTH _____

RL COLLAR _____ INCLINATION _____

C.R.A. EXPLORATION PTY. LIMITED

AUGER DRILL CORE LOG

DRILLERS G.COLLINS, M.TUDEHOPE

DRILL TYPE GEMCO

PROJECT KARNS CREEK EL 4166

COMMENCED 31.10.84

COMPLETED 31.10.84

DEPTH 9.5m

CASING LEFT _____

HOLE No. KAR P

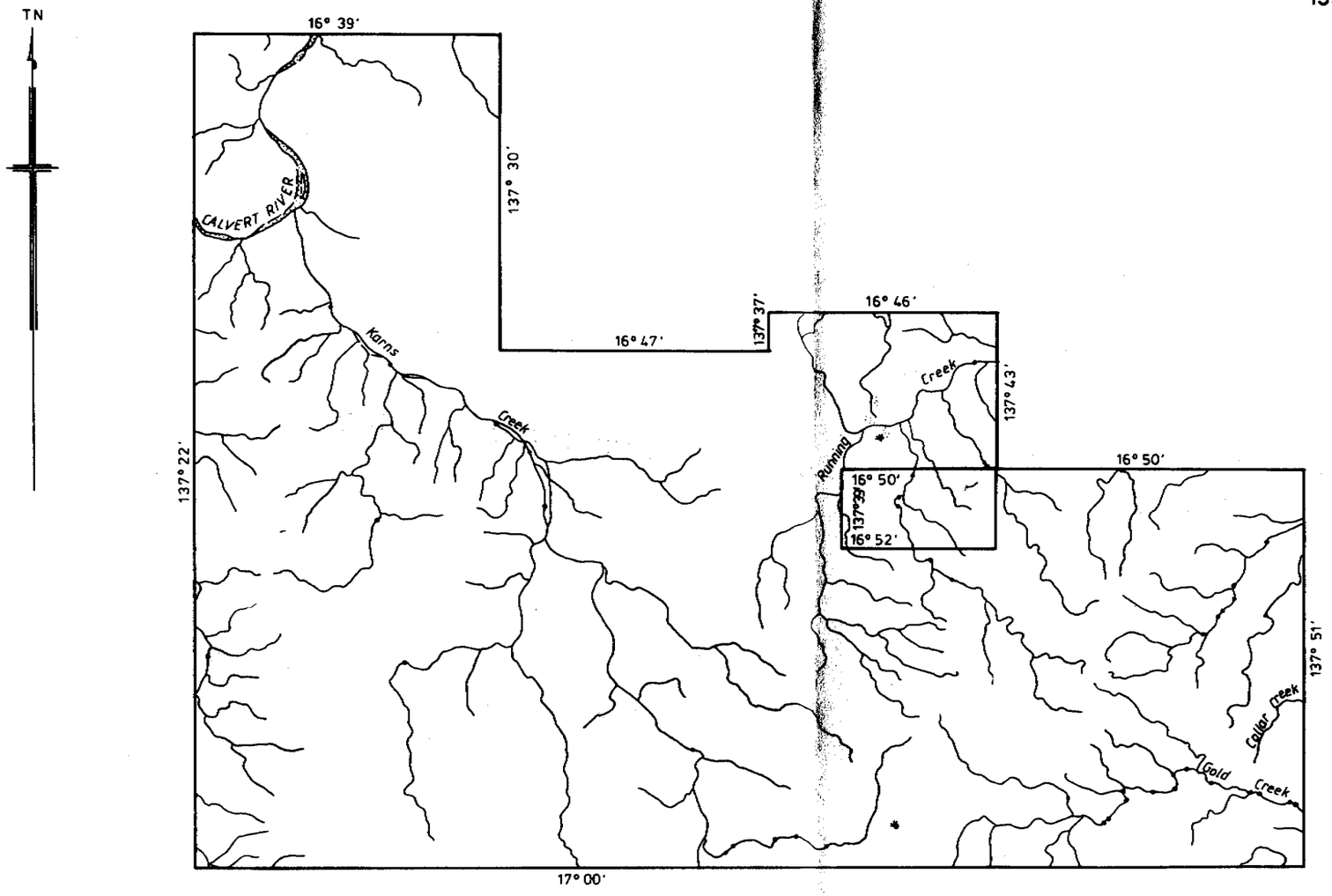
DPO No(s) 21932

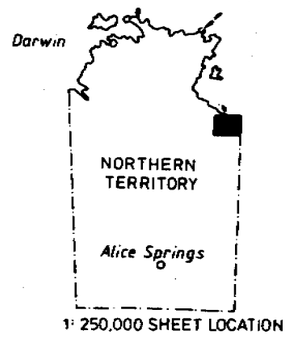
DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)			CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES KI	MIC		GEOCHEM
			0	2	Orange sand		824283	8	9.5		-	-		(SEE APPENDIX 5 DPO NO 21932 RESULTS)
			2	4	Quartz sandstone rubble, red sand ferruginous sandstone, laterite									
			4	6	Red sand, ferruginous sandstone, laterite, yellow ferruginous siltstone and white cherty inclusions									
			6	8	Red sand, cherty dolomite chips, blue clay, yellow siltstone	fine to medium grained quartz sandstone, generally about 90 percent quartz grains; a few chips are of fine quartz sandstone, laminated with > 10% clay matrix, which has been deeply weathered to white kaolin								
			8	9.5	Blue/green and red clays, cherty dolomite chips, ferruginous sandstone chips, quartzite to hard bottom.									

SUMMARY AND SPECIAL COMMENTS _____

LOGGED BY _____ DATE _____

AREA: 415 BLOCKS
1359·54 sq. kilometres





1: 250,000 SHEET LOCATION

0 5 10 15 Kilometres

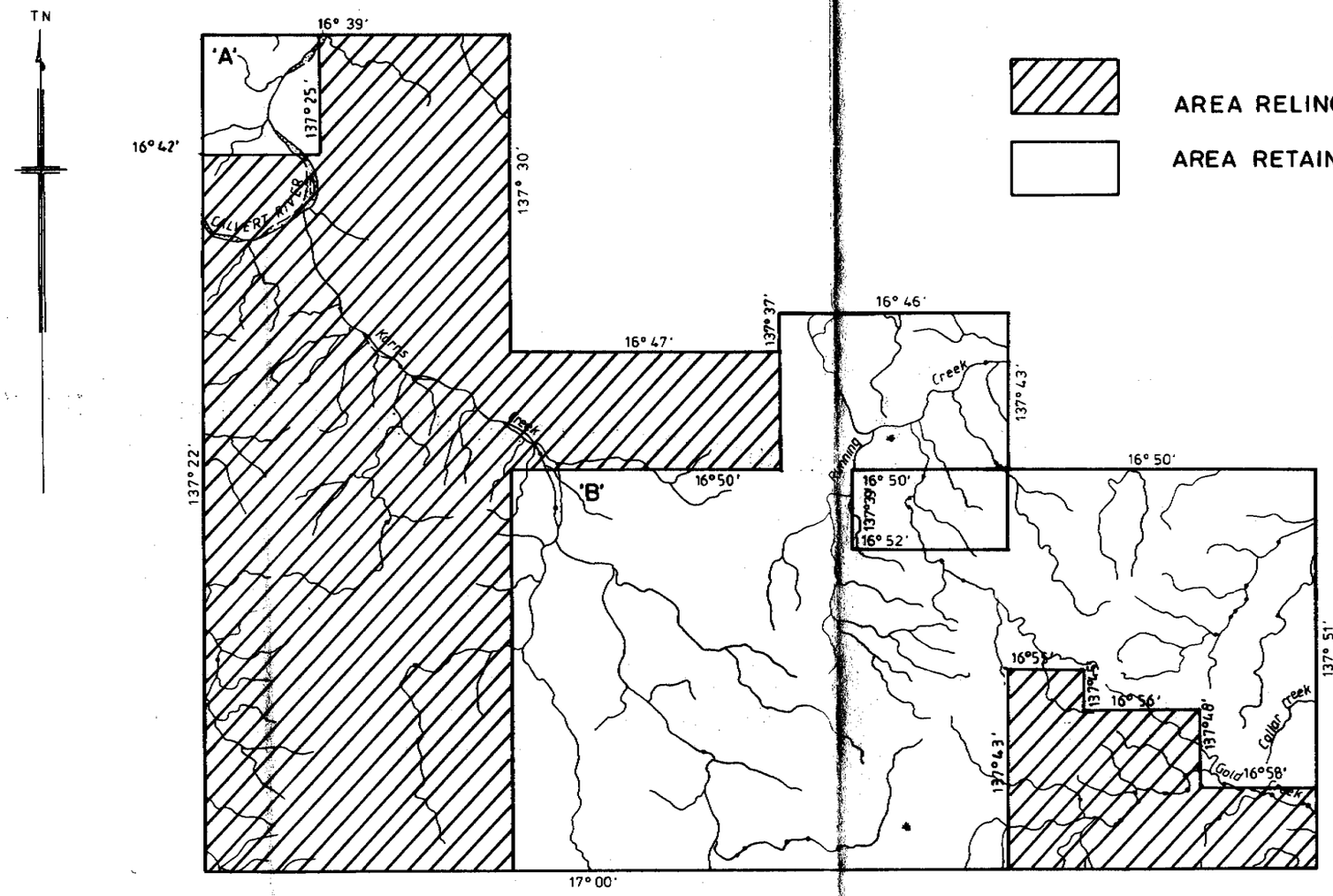
C R A EXPLORATION PTY LIMITED

LOCATION PLAN

KARNS CREEK

EL 4166

REFERENCE SE 53 - 4 ROBINSON RIVER	
SCALE 1:250,000	DATE NOVEMBER 1982
AUTHOR GPJ	REPORT 130704
DRAWN SRJ	PLAN No NTd 2018



CRA EXPLORATION PTY LIMITED

REDUCTION OF AREA

KARNS CREEK

EL 4166

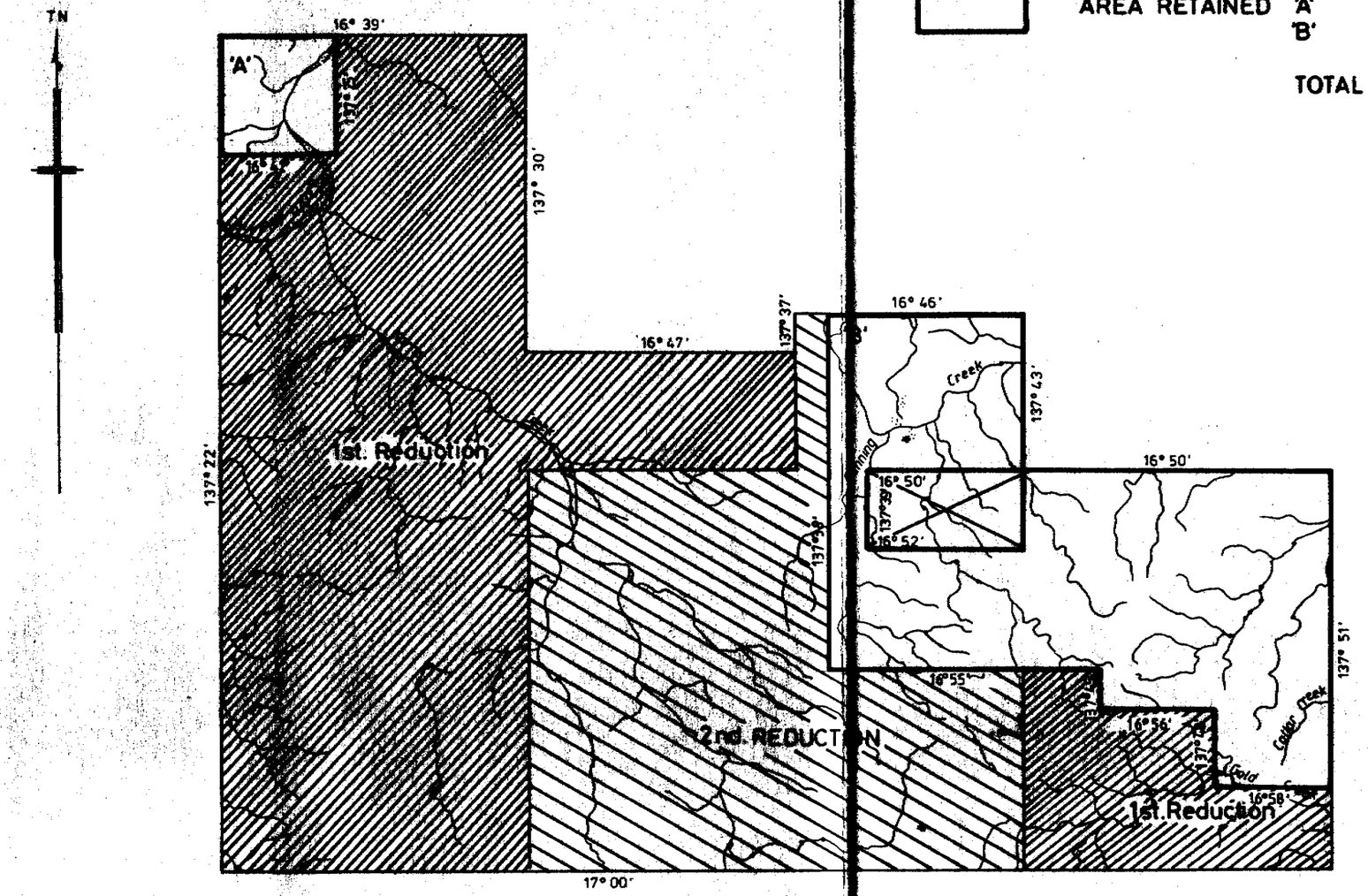
REFERENCE SE 53 - 4 ROBINSON RIVER	
SCALE 1:250,000	DATE FEBRUARY 1985
AUTHOR ICC	REPORT 130704
DRAWN SRJ	PLAN No NTd 3850

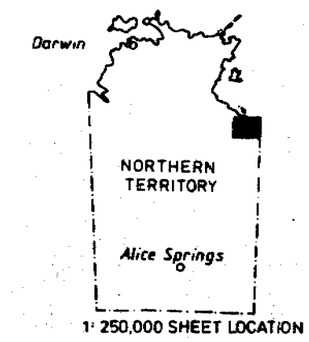
CR87/014A

1st. REDUCTION - 1985

2nd. REDUCTION - 1986 (Relinquished area)

AREA RETAINED			
	'A'	9 BLOCKS	- 29·511 sq. km.
	'B'	89 BLOCKS	- 291·564 sq. km.
	TOTAL	98 BLOCKS	- 321·075 sq. km.





1: 250,000 SHEET LOCATION

0 5 10 15 Kilometres

C R A EXPLORATION PTY LIMITED

REDUCTION OF AREA

KARNS CREEK

EL 4166

REFERENCE SE 53 - 4 ROBINSON RIVER	
SCALE 1:250,000	DATE FEBRUARY 1986
AUTHOR ICC	REPORT 130704
DRAWN SRJ	PLAN No NTd 4129

TN

KAR Q
KAR R
KAR S
KAR P
KAR F
KAR A
KAR B
KARE
KAR C
KAR D
KAR M
KAR T
KAR N
KAR O
KAR H
KAR J
KAR G
KAR K
KAR L

RC1
RC2
RC3
RC4
RC5
RC6
RC7
RC8
RC9
RC10
RC11
RC12
RC13
RC14
RC15
RC16
RC17
RC18
RC19
RC20
RC21
RC22
RC23
RC24
RC25

16°50'
137°39'

LEGEND

- 1081613 L — LOAM SAMPLE LOCATION
- 965664 — DRAINAGE SAMPLE
- 766758 — DRAINAGE SAMPLE
- RC3 • — GROUND RECOVERED AEROMAG ANOMALY (RESPONSE CENTRE)
- KAR M — PHOTO ANOMALY
- PALAEOCHANNEL FEATURE

0 1 2 3 4 5 6 7 8
KILOMETRES

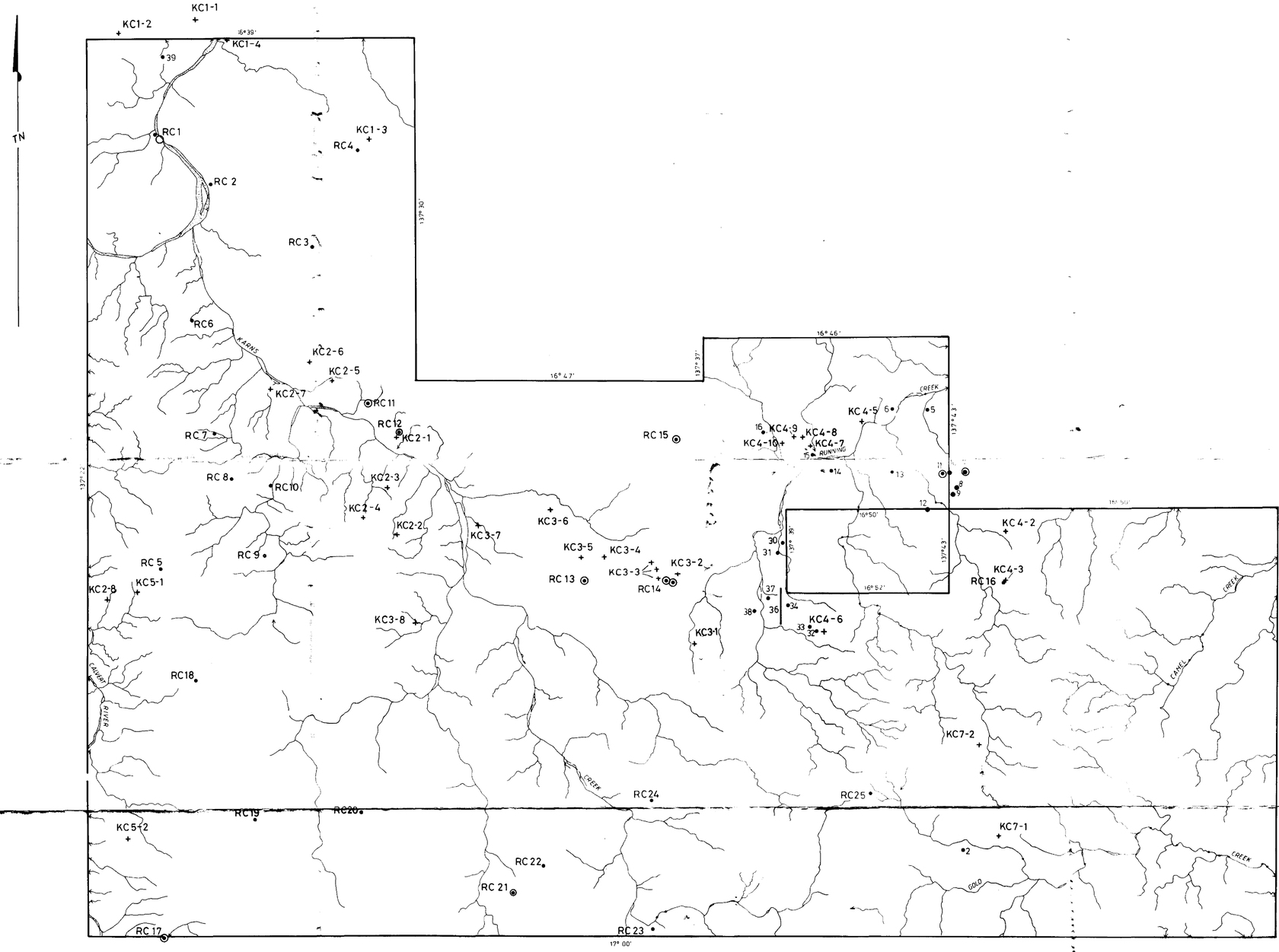
CRA EXPLORATION PTY LIMITED

KARNS CREEK EL4166

SAMPLE & PHOTO ANOMALY LOCATION PLAN

REFERENCE SE 53-4 ROBINSON RIVER	
SCALE 1:100,000	DATE FEB 1985/1986
AUTHOR ICC	REPORT 130704
DRAWN SRJ	PLAN No Nid 3359

CR87/014A



LEGEND

- RC16 — MAGNETIC ANOMALY
- KC3-2 — RADIOMETRIC ANOMALIES SELECTED BY C.G. ANDERSON 1984
- •13 — URANIUM CHANNEL ANOMALIES SELECTED BY G.P. JENKE 1983
- ○ — SAMPLE TAKEN

0 1 2 3 4 5 6 7 8
KILOMETRES

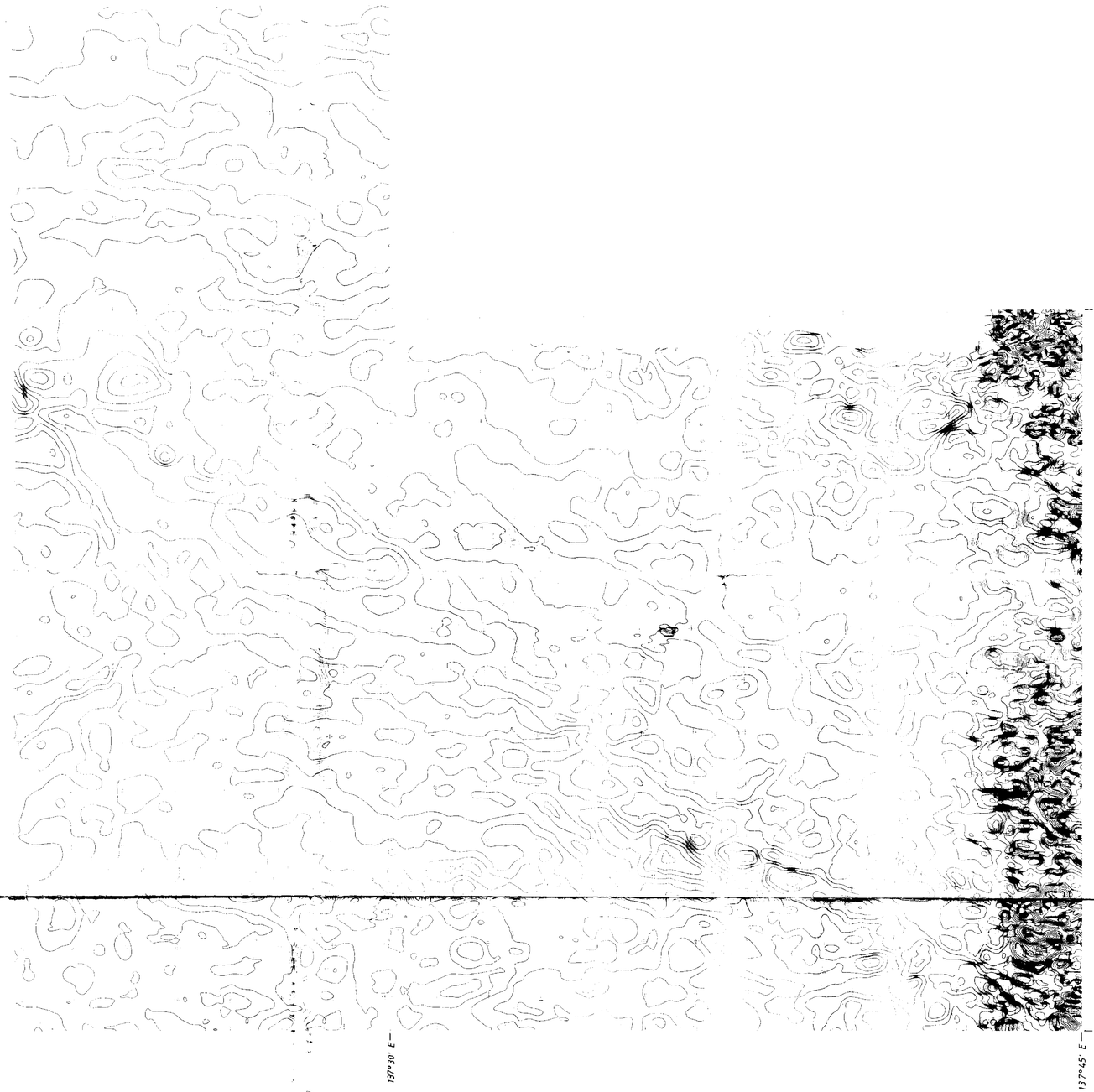
CRA EXPLORATION PTY LIMITED

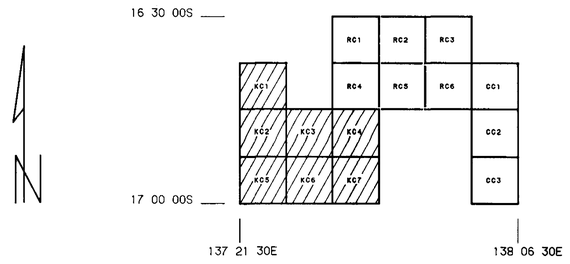
KARNS CREEK - EL4166

AIRBORNE GEOPHYSICAL SURVEY
ANOMALY LOCATION PLAN

REFERENCE ROBINSON RIVER SE 53-4	
SCALE 1:100,000	DATE MARCH 1985/1986
AUTHOR TCL	REPORT 130704
DRAWN SRJ	PLAN No NTd 3873

CR87/014





AIRBORNE SURVEY SPECIFICATIONS

MAGNETOMETER :	Cesium Vapour optical absorption. Sensitivity : 0.04 nT
RECORDING INTERVAL :	0.2 sec (approx 13m sampling) at mean ground speed of 220 km/hour.
SPECTROMETER :	Nuclear Data 256 channel ADC Volume : 33.1 litres
TOTAL COUNT WINDOW :	0.8 - 3.00 MeV
AUX. URANIUM WINDOW :	1.048 - 1.21 MeV
POTASSIUM WINDOW :	1.36 - 1.56 MeV
URANIUM WINDOW :	1.66 - 1.86 MeV
THORIUM WINDOW :	2.42 - 2.82 MeV
RECORDING INTERVAL :	1.0 sec (approx 60m sampling) at mean ground speed of 220 km/hour.
DATA RECORDING :	Geoterrex MADACS acquisition system. Digital to magnetic tape.
NOMINAL TERRAIN CLEARANCE :	Both detectors in aircraft at 80m.
NOMINAL LINE SPACING :	Traverse lines 250 metres. Tie lines 4.0 km.
FLIGHT PATH RECORD :	Geocam 35mm continuous tracking camera.
FLIGHT LINE RECOVERY :	Visually to 1:25,000 black & white enlargements of high level photography.

RESIDUAL MAGNETIC CONTOURS

Grid notation refers to Australian Map Grid Zone 53
Reference Robinson River SE53-4
Digitised from 1:25,000 black & white enlargements of high level photography.

Magnetics	:Tie line levelled.
Diurnal	:Removed.
IGRF	:Removed.
Contour Interval	:2,10,50,100,500 and 1000 nt.
Grid mesh size	:100m by 100m.
Grid filter	:Polynomial , 150m radius.

CRA EXPLORATION PTY LIMITED

KARNS CREEK-EL4166

AEROMAGNETIC CONTOURS

REFERENCE *ROBINSON RIVER SE53-4*	
SCALE *1: 100,000*	DATE *NOVEMBER 1983*
AUTHOR *GPJ*	REPORT *130704*
DRAWN	PLAN No *NTd 3281*