UXA Resources Limited
ABN 65 112 714 397

NABARLEK GROUP PROJECT

EL24564 Nabarlek West
EL24868 Nabarlek North
EL28245 Nabarlek West C

Annual report for the period

27 September 2010 to 26 September 2011

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1:100,000 mapsheet:	OENPELLI 5573
Datum:	MGA Zone 53 (GDA94)

Bibliographic Data Sheet

Project Name:	Nabarlek Group
Tenement Number(s):	EL 24564, EL 24868 & EL28245
Tenement Holder:	UXA Resources Limited 51% & RIL (Australia) Pty Ltd 49%
Tenement Operator:	UXA Resources Limited
Report Type:	Annual Group
Report Title:	Nabarlek Group Annual Report for the period 27 September 2010 to 26 September 2011
Report Period:	27 September 2010 to 26 September 2011
Author:	Debakanta Biswal, Simon Powell
Date of Report:	22 November 2011
1:250,000 map sheet:	Alligator River (SD53-01)
1:100,000 map sheet:	OENPELLI (5573)
Target Commodity:	Uranium
Geological Province:	Nimbuwah Domain, McArthur Basin, Pine Creek Orogen
Geological Units:	Kombolgie Subgroup, Lower Cahill Formation, Myra Falls Metamorphics (Lit-par-lit gneiss zone), Zamu dolerite, Oenpelli Dolerite and Nungbulgarri Volcanic member, Nimbuwah Complex
Keywords:	AEM Survey, Hyperspectral Survey, Radon Cup Survey, Soil sampling, RC drilling, drill assays, downhole geophysical logs, water samples, petrography study, Nimbuwah Domain
Abstract:	This report details exploration activities for the Nabarlek Group tenements comprising EL24868, EL24564 and EL28245 for the 12 month term to 26 September 2011. The Nabarlek Group tenements are subject to a Joint Venture agreement between UXA Resources Limited 51% and RIL (Australia) Pty Ltd 49% where UXA has been appointed as the project operator. The tenements are considered prospective for unconformity style uranium mineralisation analogous to known unconformity related uranium deposits located throughout the Alligator Rivers Uranium Field.
Work Completed:	During the first year of tenure, exploration activities comprised a desk top review of historical works completed by previous explorers and research on known uranium deposits within the region, an orientation and field mapping exercise, a 1,927 line kilometre airborne GEOTEM^{tm} electromagnetic survey covering all tenements, a hyperspectral remote sensing survey covering all tenements, a 548 sample point Alphatrack radon cup survey and coincident 559 sample point geochemical sampling survey covering an area approximately

19km^2 within EL24868, RC drilling of 27 holes totaling 2308m located within EL24868 and adjacent to Cameco's U40 prospect , gamma logging of 22 drillholes, chemical assay of 559 soil samples, chemical assay of 42 one metre composite drill chip samples with elevated radioactive content and chemical and petrological analyses of 6 selected drill chip samples for lithological identification.

Recommendations: The Nabarlek Group tenements are considered prospective for unconformity style uranium mineralisation since they comprise similar tectonic setting, lithology and structure to known deposits within the region.

Results for the airborne EM survey were disappointing as interpretation of the data was considered to be non-conclusive and the hyperspectral survey failed to identify any zones of significant chlorite alteration or intense argillic alteration considered to be a strong indicator for potential mineralisation however the radon cup survey coupled with geochemical soil sampling returned coincident anomalous results at varying levels of magnitude highlighting potentially mineralised regions including the northern extension of U40 prospect. Drilling over a portion of the most anomalous area located adjacent to U40 confirmed anomalous uranium mineralisation to occur at depth and therefore it is recommended to continue drilling at the U40 North prospect, commence drilling some of the second order radon cup anomalies and extend the radon cup and geochemical soil survey to cover the Nabarlek Group tenements where access can be reasonably negotiated.
A work program for the 2012 dry season will be finalised in early January and submitted to the Traditional Owners and Northern Territory Government Department of Resources for approval.

Executive Summary

This report details exploration activities for the Nabarlek Group tenements comprising EL24868, EL24564 and EL28245 for the 12 month term to 26 September 2011. The Nabarlek Group tenements are subject to a Joint Venture agreement between UXA Resources Limited 51% and RIL (Australia) Pty Ltd 49% where UXA has been appointed as the project operator.

The tenements are considered prospective for unconformity style uranium mineralisation analogous to known unconformity related uranium deposits located throughout the Alligator Rivers Uranium Field.

Key criteria for uranium mineralisation within the region include reduced basement lithologies in unconformable contact with overlying oxidized, quartz-rich sandstones that provide an ideal environment for the accumulation and transportation of uranium-bearing fluids.

Within Nabarlek Group tenements, Neoproterozoic Kombolgie Subgroup sandstone provides a suitable cover sequence, while the most prospective basement lithologies include reducing units within Lower Cahill Formation, Myra Falls Metamorphics (Lit-par-lit gneiss zone) and possibly Zamu dolerite, Oenpelli Dolerite and Nungbulgarri Volcanic member.

Paleoproterozoic basement sequences within the Nabarlek Group tenements is mostly concealed either by Kombolgie Formation sandstone or Tertiary and Quaternary laterite, silt and sand.

During the first year of tenure, exploration activities comprised a desk top review of historical works completed by previous explorers and research on known uranium deposits within the region, an orientation and field mapping exercise, a 1,927 line kilometre fixed wing airborne GEOTEM electromagnetic survey covering all tenements, a hyperspectral remote sensing survey covering all tenements, a 548 sample point Alphatrack radon cup survey and coincident 559 sample point geochemical sampling survey covering an area approximately 19km^2 within EL24868, RC drilling of 27 holes totaling 2308m located within EL24868 and adjacent Cameco's U40 prospect , gamma logging of 22 drillholes, chemical assay of 559 soil samples, chemical assay of 42 one metre composite drill samples with elevated radioactive content and chemical and petrological analyses of 6 selected drill samples for lithological identification.

Results for the airborne EM survey were disappointing as interpretation of the data was considered to be non-conclusive in delineating the unconformable contact, highlighting conductors and or delineating detailed structure. The hyperspectral survey failed to identify any zones of significant chlorite alteration or intense argillic alteration considered to be a strong indicator for potential mineralisation however the radon cup survey coupled with geochemical soil sampling returned coincident anomalous results at varying levels of magnitude highlighting potentially mineralised regions including the northern extension of U40 prospect. Drilling over a portion of the most anomalous area at U40 North confirmed anomalous uranium mineralisation to occur at depth and therefore it is recommended to continue drilling at this prospect and commence drilling some of the second order radon cup anomalies. Extension of the radon cup and geochemical soil survey to cover the Nabarlek Group tenements where access can be reasonably negotiated is being considered for the 2012 field season.

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File Name	Format
NABARLEK_Grp_2011_A_01_Reportbody	PDF
NABARLEK_Grp_2011_A_02_AEM	GDF
NABARLEK_Grp_2011_A_03_Hyperspectral	BIL
EL24868_2011_A_04_RadonCup_SoilGeochem.	txt
EL24868_2011_A_05_DrillCollars	txt
EL24868_2011_A_06_DownholeGeochem	txt
EL24868_2011_A_07_Lith	txt
EL24868_2011_A_08_LithCodes	txt
EL24868_2011_A_09_WaterDataFile	txt
EL24868_2011_A_10_GammaLogs	LAS

1 Introduction

This report details exploration activities for the Nabarlek Group tenements comprising EL24868, EL24564 and EL28245 for the 12 month term to 26 September 2011. These works were conducted on behalf of a joint venture collaboration between UXA Resources Limited and RIL (Australia) Pty Ltd with both parties undertaking an active involvement in exploration. The tenements are considered prospective for unconformity-style uranium mineralisation analogous to the nearby Ranger, Jabiluka and Nabarlek deposits.

2 Tenure

The Nabarlek Group tenements were issued to UXA Resources Limited on 27 September 2010 for an initial period of 6 years. Subsequently, 49% ownership of the tenements was transferred to RIL (Australia) Pty Ltd on 31 March 2011 and UXA remains the nominated tenement operator (Table 1). Group reporting status for the 3 tenements was granted on 18 October 2011.

Table 1: Tenement Details

EL No/Name	Registered Holder	Area (km2)/ blocks	Grant Date	Expiry Date	Annual Expenditure Commitment
24564 Nabarlek West	UXA 51% RILA 49%	26 (13 blocks)	27/09/201	26/09/2016	$11,200
24868 Nabarlek North		191 (71 blocks)			$51,600
28245 Nabarlek West C		3 (5 blocks)			$1,400

2.1 Location and Access

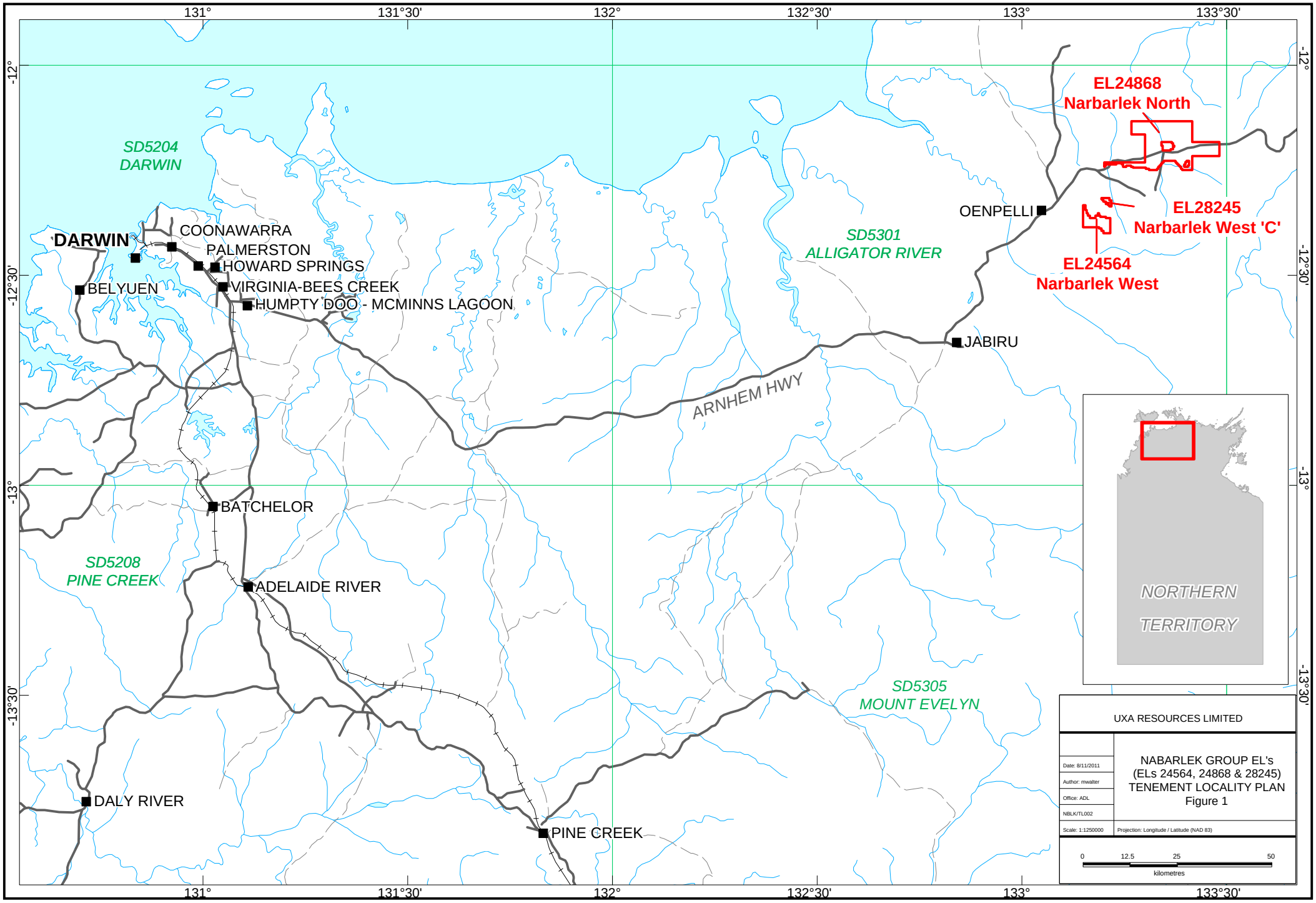
The Nabarlek Group tenements are located approximately 250km east of Darwin and approximately 60km northeast of Jabiru (Figure 1) and occur within the Arnhem Land Aboriginal Land Trust.

Access to the tenements is via sealed Arnhem Highway from Darwin to Jabiru, then sealed/unsealed road from Jabiru via Oenpelli. The principal access to and within EL24868 is via Maningrida road which traverses the tenement west to east. Access to EL24564 and EL28245 is via the Nabarlek mine road however access within these tenements is limited due to rugged and incised topography.

2.2 Climate and Physiography

The wet season lasts from November through to March, and is responsible for virtually all the 1,350mm mean annual rainfall received in the region. The dry season lasts from May through to September, during which grass fires are prevalent (Needham, 1984).

The Nabarlek region is dominated by the Arnhem Land Plateau, undulating sandy plains and coastal & estuarine plains. The Arnhem Land Plateau comprises spectacular sandstone


131°
131°30'
132°
132°30'
133°
133°30'
-12°
-12°30'
-13°
-13°30'
EL24868
Narbarlek North
EL28245
Narbarlek West 'C'
EL24564
Narbarlek West
SD5204
DARWIN
SD5301
ALLIGATOR RIVER
SD5208
PINE CREEK
SD5305
MOUNT EVELYN
DARWIN
COONAWARRA
PALMERSTON
HOWARD SPRINGS
VIRGINIA-BEES CREEK
HUMPTY DOO - MCMINNS LAGOON
BELYUEN
OENPELLI
JABIRU
ARNHEM HWY
BATCHELOR
ADELAIDE RIVER
DALY RIVER
PINE CREEK
NORTHERN
TERRITORY
UXA RESOURCES LIMITED
NABARLEK GROUP EL's
(ELs 24564, 24868 & 28245)
TENEMENT LOCALITY PLAN
Figure 1
Date: 8/11/2011
Author: mwalter
Office: ADL
NBLK/TL002
Scale: 1:1250000
Projection: Longitude / Latitude (NAD 83)
0
12.5
25
50
kilometres

escarpments typically 200-300m above sea level, and up to ~500m. The surface of the Plateau is typically dominated by bare rock or shallow sandy soils which support spinifex and low scrub. Woodland and rainforest can dominate over well developed soil profiles associated with interbedded volcanic units, or within gorges and areas where there are permanent springs (Needham, 1984). Previous explorers have noted the difficulties in navigating this terrane using vehicles, with a lot of work required to be conducted on foot.

The undulating sandy plains are the most extensive topographic unit, supporting woodland to tall forest with tall grasses. The sandy plains form over many different rock types ranging from recent Tertiary sediments to Archean and Paleoproterozoic granite and gneiss. The coastal and estuarine plains typically occur between the sandy plains and the coast, and are mainly developed on estuarine sediments deposited in former drowned river valleys (Needham, 1984).

3 Previous exploration

Mineral exploration in the Alligator Rivers Uranium Field (ARUF) has focused almost exclusively on uranium (and associated gold mineralisation, i.e Jabiluka 2), with minor lead-zinc mineralisation documented in quartz-breccia-filled faults in the Nanambu Complex and minor alluvial tin associated with the Tin Camp Granite.

Uranium exploration within the ARUF commenced in 1969 following the release of geochronological data from the Nanambu Complex and mapping work by the Bureau of Mineral Resources. The majority of available exploration licences were taken up by four companies; Geopeko Ltd, Pancontinental Ltd, Noranda Ltd and Queensland Mines Ltd. Regional radiometric surveys conducted by each company and subsequent follow-up work led to the discovery of Ranger 1 (Geopeko), Jabiluka 1 (Pancontinental), Koongarra (Noranda) and Nabarlek (Queensland Mines Ltd). By 1972, resources had been defined at Ranger, Nabarlek and Koongarra, with the resource at Jabiluka defined in 1973. Mining at Nabarlek took place in 1979 over a 5 month period, with the stockpiled ore processed between 1980 and 1988. Mining at Ranger 1 commenced in 1980 and is on-going, with recent delineation of the Ranger 3 Deeps orebody (~34,000t contained U_3O_8) likely to extend the mine life by several years.

Exploration work conducted on historical exploration licences relevant to the Nabarlek Group tenements is summarised below.

3.1 EL 2508 (Afmeco & Queensland Mines Ltd)

EL 2508 was granted on 29th June 1988 to a joint venture comprising Queensland Mines Ltd and Afmeco Mining and Exploration Pty Ltd. The exploration licence covered an area of 580km^2 encompassing EL24564 and was considered prospective for unconformity style uranium mineralisation analogous to the Ranger, Jabiluka and Nabarlek deposits. Initial exploration activities during the first two years of tenure defined a total of 49 anomalies which were ranked and systematically followed up with work including geological mapping, soil and rock chip sampling, surveying and gridding, ground radiometrics, trenching, radon track etch surveys and drilling (RAB, >1580 holes for >30,000m; RC and diamond, >73 holes for >8,800m). Of these 49 anomalies, three occur within 5km of EL24564 (Q4, S21 & U11). Following 10 years of systematic follow-up, the majority of EL 2508 was relinquished in 1998 with the exception of three prospects (N147, SMLB & U65) which were retained under Exploration Retention Licences ERL 150, ERL 151 and ERL 152.

3.2 EL 3419 (Afmeco & Cameco)

EL 3419 was located within the current boundaries of EL 24564 and was explored by Afmeco and Cameco between 1997 and 2003. Exploration activities included 9 diamond drill holes (KUN001-KUN009), a helicopter-borne radiometric and magnetic survey, an airborne multispectral scanner survey, logging of drill core using PIMA II spectrometer and rock chip sampling. The aim of the exploration work was to test the geological nature of the basement beneath the sandstone cover and major structural zones.

A helicopter radiometric and magnetic survey was carried out in 1997, covering 651 line kilometres at 100m line spacing with a sensor height of 30m. No significant radiometric anomalies were identified from this survey.

Five diamond holes were completed in 1997 (KUN001-KUN005) and a further 4 completed in 1998 (KUN006-KUN009) targeting the unconformity between the Kombolgie sandstone and basement lithologies however no significant mineralisation was identified.

3.3 ERL 150 (Afmeco)

ERL 150 was one of three ERL's retained by Afmeco when EL 2508 was relinquished in 1998. It covers an area of 21.45km^2 and is located on the southern margin of EL 24868. The ERL was retained due to the discovery of uranium mineralisation in the SML Boundary (SMLB) area in 1992 during blind drilling of the interpreted extension of the Nabarlek Shear. The mineralised zone is associated with a northwest striking fault known as the Boundary Fault.

Exploration work carried out between 1999 and 2004 on ERL 150 included RC/diamond drilling of 9 holes for a total of 2,467m, airborne magnetic/radiometric and electromagnetic (TEMPEST) surveys and ground electromagnetic (EM) and induced polarization (IP) surveys.

During the first year of tenure, ground NanoTEM and Tensor IP (TIP) surveys were carried out over ERL 150, along with a microgravity survey. The NanoTEM method was employed to map the thickness of the Kombolgie Sandstone and help determine vertical movement in faults through the sandstone. Unfortunately due to the rugged terrane, the lines were too short to produce useable data. The TIP survey collected readings at 500m intervals and produced unexplained anomalous resistivity and phase responses in the central part of the survey area. The microgravity survey was employed to determine if this method could be used to detect mineralisation and/or alteration haloes and structures in sandstone covered areas. The results of this work suggested this method could be successful in mapping structures and lithological variations.

A detailed airborne magnetic/radiometric survey was flown in 2001 over ERL 150, focused on a structural corridor considered prospective for uranium mineralisation in order to provide detailed information on the structural features. Unfortunately it failed to resolve structural information beneath the sandstone, and produced several weak radiometric anomalies. The airborne EM (TEMPEST) survey flown in 2001 was a trial to test the effectiveness of the method in resolving depth to the unconformity, highlighting basement conductors and elevated conductivity in hydrothermally altered sandstone. The resulting conductivity depth image produced a narrow conductive horizon interpreted to represent hydrothermal alteration around the unconformity.

Drilling was conducted using both dual purpose truck mounted rigs (RC/DD) and helicopter supported drilling, comprising 9 holes for a total of 2,467m.

4 Geological Setting

The Nabarlek Group tenements are situated within the northwestern portion of the Pine Creek Orogen and fall within the Alligator Rivers Uranium Field (ARUF). The following summary is drawn from Lally & Bajwah (2006), Needham (1984), Sweet et al (1999), Wilde & Noakes (1990) and Wilde & Wall (1987) and detailed geology is shown on 1:100,000 Special Geology publication "Geology of the Nabarlek Region".

Nabarlek area comprises Archean to Mesoproterozoic Nanambu Complex which has been subdivided based on age and lithology, comprising un-metamorphosed Archean granite, metamorphosed Archean granite (now mainly gneiss) and Mesoproterozoic metamorphics.

The un-metamorphosed granite is white to light grey, medium-coarse grained and comprises quartz, microcline, plagioclase and biotite with accessory muscovite and opaques. Outcrops form mainly scattered domes and pavements on the eastern side of the South Alligator River floodplain. The granite has been dated at 2504 ± 22Ma. The metamorphosed Archean granite is strongly foliated and comprises quartz, feldspar (mostly potash) and biotite. They typically comprise granuloblastic texture characteristic of almandine-amphibolite facies.

The Mesoproterozoic metamorphics comprise pegmatoidal leucocratic paragneiss, schist and migmatite dated around 1800Ma and appears to be consistent with the timing of late Mesoproterozoic regional metamorphism. Isotopic ratio work has suggested a meta-sedimentary origin for this sequence of rocks.

Kakadu Group units overlie the Nanambu Complex gneiss and comprise the Mount Howship Gneiss and Kudjumarndi Quartzite. The Mount Howship Gneiss (potentially up to 1000m thick) is coarse, granular quartzo-feldspathic gneiss which is typically massive to faintly foliated. Quartz forms 30-75% of the rock, with microcline, plagioclase and muscovite (up to 10% of the rock) with subordinate biotite and accessory apatite and monazite.

Kudjumarndi Quartzite (up to 150m thick) comprises an ortho-quartzite which ranges in composition from monomineralic to muscovite-biotite-hornblende, biotite-muscovite and feldspathic gneiss. It can be distinguished from the underlying Mount Howship Gneiss by its higher quartz content (>75%).

Cahill Formation units conformably overlie the Kakadu Group units and comprise a lower member (carbonate and carbonaceous schist) passing transitionally into a more psammitic upper member. The Cahill Formation is for the most part poorly exposed, confined mostly to a belt 5km wide surrounding and folded into the Nanambu Complex, as well as within the Myra Falls Inlier. The poor exposure tends to be due to the typically micaceous nature of many of the rock units, making them less resistant and friable, with silicified dolomite ridges providing the best outcrop. The lower member of the Cahill Formation is interpreted to be between 300-600m thick.

The upper member of the Cahill Formation comprises a sequence of interlayered feldspathic quartz schist, feldspathic schist and feldspathic quartzite, with minor mica schist and quartzofeldspathic gneiss. It conformably overlies and grades vertically into the lower member, and in the Koongarra area it is interpreted as being up to 2500m thick (this thickness is probably a result of repetition by folding and faulting).

The Nourlangie Schist is believed to overlie the Cahill Formation and is probably a metamorphosed stratigraphic equivalent of the Wildman Siltstone, which occurs elsewhere in the Pine Creek Geosyncline overlying correlatives of the Cahill Formation. It comprises amphibolite facies rocks in the north, upper greenschist facies rocks through the southern portion of the ALLIGATOR RIVER mapsheet to lower greenschist facies rocks, mostly within the adjoining MOUNT EVELYN 1:250,000 mapsheet.

To the east of the East Alligator River, the Nourlangie Schist grades into the Myra Falls Metamorphics, a sequence of metamorphically differentiated gneiss and schist formed by progressive metamorphism and migmatisation during the Top End Orogeny (~1800Ma). The sequence has been divided into two zones, the Transitional Zone and the Lit-par-lit Gneiss Zone.

The rocks of the Lit-par-lit Gneiss Zone are predominantly gneiss, although granuloblastic amphibolites are widespread and are typically retrogressively metamorphosed to an assemblage of radiating fibrous aggregates of actinolite, tremolite and chlorite. In some cases, relict ophitic texture of hornblende and plagioclase with accessory sphene, magnetite, granular quartz, apatite, garnet porphyroblasts and orthopyroxene are preserved. This relict texture and mineral assemblage suggests that these rocks are ortho-amphibolites derived via metamorphism from Zamu dolerite.

The Zamu Dolerite is comprised of a series of tholeiitic sills which intruded the Palaeoproterozoic sediment pile prior to regional deformation and metamorphism. The unit ranges from metadolerite in the west of the ALLIGATOR RIVER mapsheet to amphibolite with occasional metadolerite cores in the east of the mapsheet area, with an interpreted age of approximately 1884 ±3Ma.

The Nimbuwah Complex forms a large, roughly semi-circular body approximately 2600km^2 in the Nabarlek region, comprised of mesocratic to leucocratic granitoid migmatite with melanocratic migmatite and tonalite. The complex can be broadly divided into a northern group and a southern group as described below.

The northern group of the Nimbuwah Complex is present predominantly to the north of the Nabarlek project area and is consisting of Migmatite and Porphyroblastic granite.

The southern group of the Nimbuwah Complex is present predominantly within the Caramal and Beatrice Inliers, approximately 25km and 40km south of the Nabarlek project area respectively. These areas contain the most mafic rock types of the Nimbuwah Complex, including melanocratic migmatite and tonalite.

The Tin Camp Granite and Nabarlek Granite within the ALLIGATOR RIVER mapsheet are members of the late Palaeoproterozoic Jim Jim Suite, which is present throughout the eastern portion of Pine Creek Inlier and appears to be coeval with the Cullen Supersuite (~1825Ma). The Tin Camp Granite is present within the Caramal and Beatrice inliers approximately 25km and 40km south of the Nabarlek project area respectively. It intrudes the Nimbuwah Complex, is faulted against the Oenpelli Dolerite and appears to intrude the Myra Falls Metamorphics.

The Nabarlek Granite has been mapped approximately 7km east of the Nabarlek deposit, and has also been documented to occur below the Nabarlek orebody. In outcrop, the granite is cut by numerous quartz breccia-filled fault zones and is extensively altered.

Oenpelli Dolerite occurs throughout the eastern portion of the Pine Creek Orogen and is mapped predominantly in the eastern half of the ALLIGATOR RIVER mapsheet in the vicinity of the Nabarlek Group project areas. Regionally, the Oenpelli Dolerite forms large lopoliths up to 250m thick, as is the case below the Nabarlek orebody.

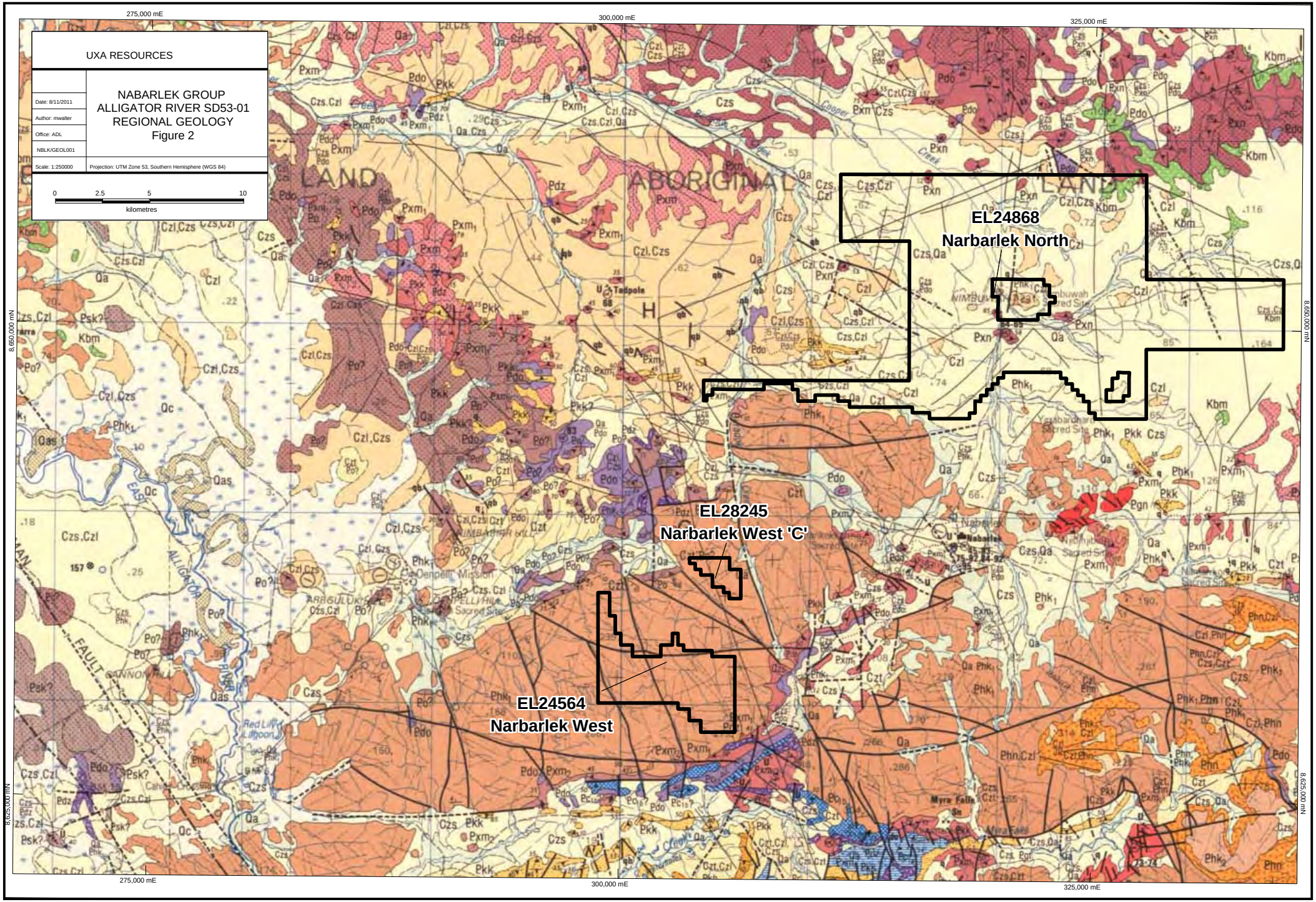
The Kombolgie Formation is a thick, predominantly sandstone sequence which unconformably overlies Archean to Mesoproterozoic basement rocks within the Pine Creek Orogen. It is divided into upper and lower sandstones, each containing a distinctive volcanic unit (the Gilruth and Nungbalgarri volcanic members respectively). The entire sequence of sandstone and associated volcanic units forms part of the Katherine River Group. Recent work has constrained the age of the Kombolgie Subgroup to between 1822Ma and ~1730Ma.

Sporadic outcrops of the Late Jurassic Petrel Formation occur throughout the ALLIGATOR RIVER mapsheet, and have a limited presence in the northeast corner of ELA 24868. This sequence comprises coarse sandstone, conglomerate, minor siltstone and claystone and sits unconformably on older rocks. Cainozoic sediments include laterite, late Tertiary sand, silt and sandstone, talus, Quaternary continental deposits and coastal sediments.

Refer to Figures 2 and 3 for the ALLIGATOR RIVER geology overlain with the Nabarlek EL's and stratigraphic column/map units.

4.1 Structure

Palaeoproterozoic deformation took place primarily during the Top End Orogeny (~1880-1800Ma), with the basement units divided into two main structural/metamorphic terrains. The Nimbuwah Domain, east of the East Alligator River, comprises gneissic and schistose, medium to high grade rocks with shallow dipping (<35°) foliation and flat lying, west-verging recumbent folds. To the west of the East Alligator River, The Nanambu Domain, medium grade schist with steep dipping foliation predominate with folds ranging from recumbent to steeply inclined, facing both east and west. At least four phases of deformation are attributed to the Top End Orogeny.


UXA RESOURCES
NABARLEK GROUP
ALLIGATOR RIVER SD53-01
REGIONAL GEOLOGY
Figure 2
Date: 8/11/2011
Author: mwalter
Office: ADL
NBLK/GEOL001
Scale: 1:250000
Projection: UTM Zone 53, Southern Hemisphere (WGS 84)
0 2.5 5 10
kilometres
275,000 mE
300,000 mE
325,000 mE
8,650,000 mN
8,625,000 mN
EL24868
Narbarlek North
EL28245
Narbarlek West 'C'
EL24564
Narbarlek West
ABORIGINAL LAND
Tadpole
Nabarlek
Myra Falls
ALLIGATOR RIVER FAULT

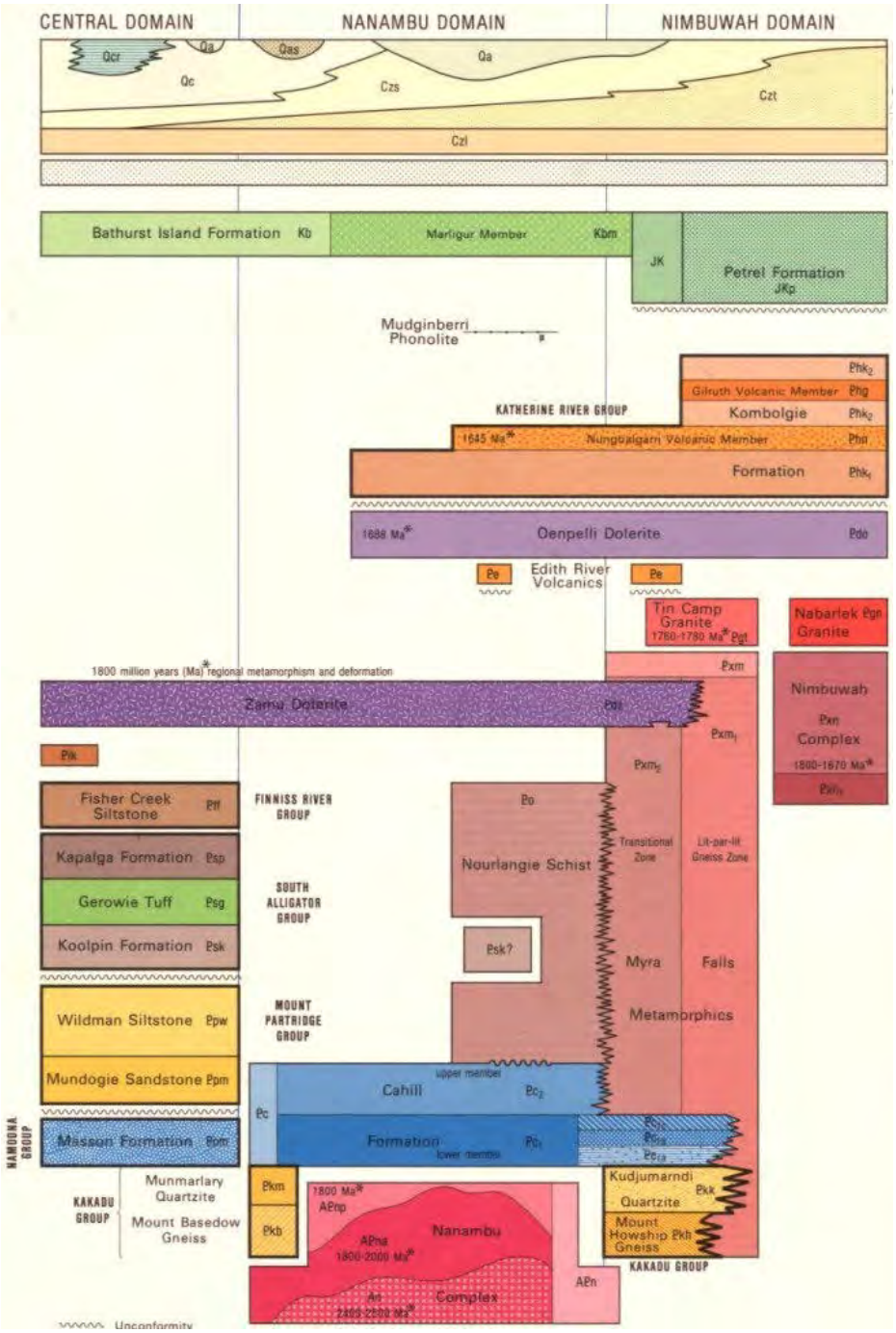
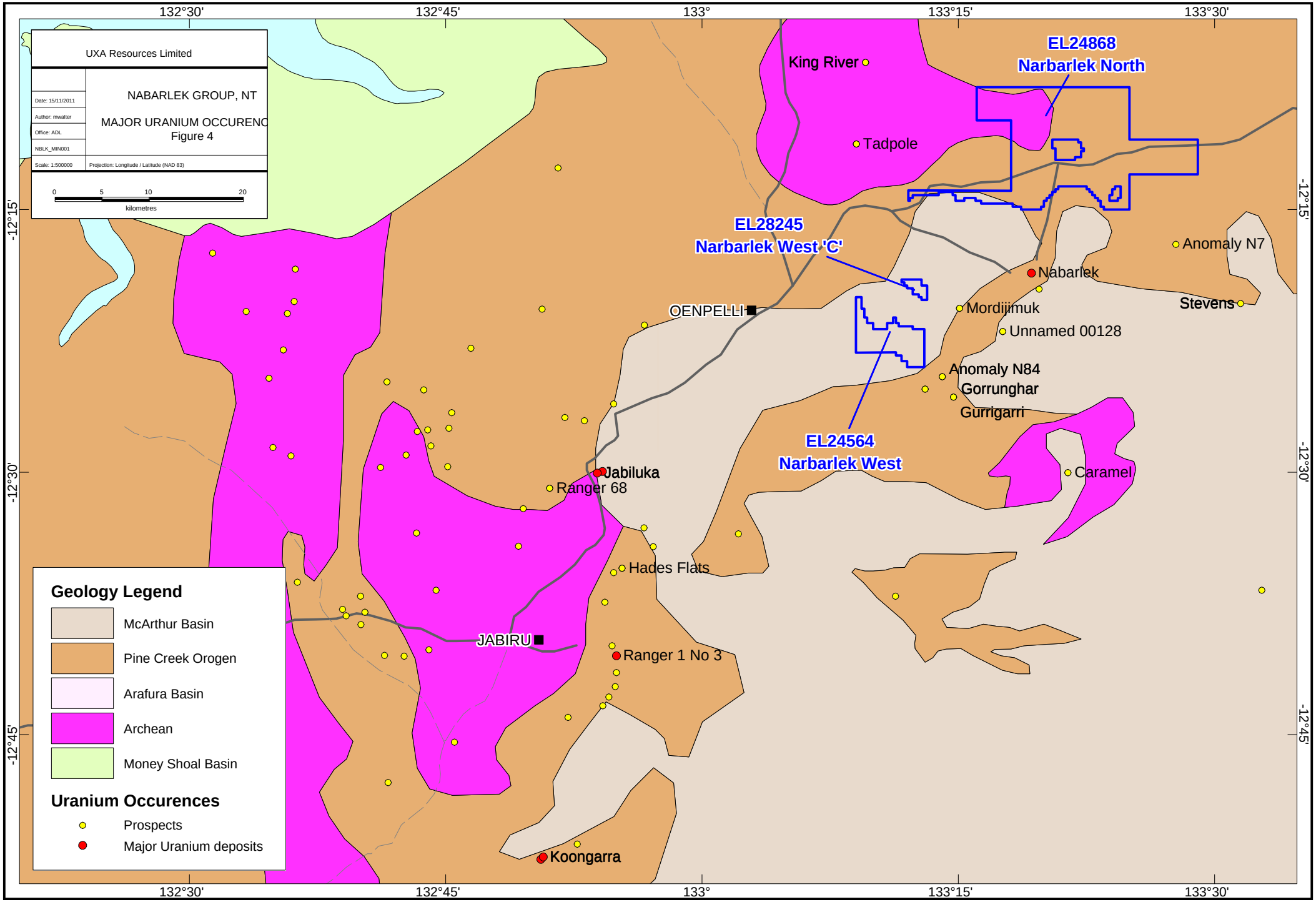


Figure 3: Map units within the ALLIGATOR RIVER map sheet

4.2 Mineralisation

The Alligator Rivers Uranium Field (ARUF) contains over 60 known uranium occurrences, including the Ranger, Jabiluka, Koongarra and the historic Nabarlek uranium mine (Figure 4).

These uranium deposits and occurrences are related to fracture, fault and breccia zones within Palaeoproterozoic basement rocks, within close proximity to an unconformable contact with overlying Neoproterozoic sediments.


UXA Resources Limited
NABARLEK GROUP, NT
MAJOR URANIUM OCCURENC
Figure 4
Date: 15/11/2011
Author: mwalter
Office: ADL
NBLK_MIN001
Scale: 1:500000
Projection: Longitude / Latitude (NAD 83)
0 5 10 20
kilometres
132°30'
132°45'
133°
133°15'
133°30'
-12°15'
-12°30'
-12°45'
King River
EL24868
Narbarlek North
Tadpole
EL28245
Narbarlek West 'C'
Anomaly N7
Nabarlek
OENPELLI
Mordiijimuk
Stevens
Unnamed 00128
Anomaly N84
Gorrunghar
Gurrigarri
EL24564
Narbarlek West
Caramel
Jabiluka
Ranger 68
Hades Flats
JABIRU
Ranger 1 No 3
Koongarra
Geology Legend
McArthur Basin
Pine Creek Orogen
Arafura Basin
Archean
Money Shoal Basin
Uranium Occurences
Prospects
Major Uranium deposits

4.2.1 Nabarlek

The Nabarlek uranium deposit was discovered in 1970 by Queensland Mines Ltd while investigating a significant airborne radiometric anomaly. Mineralisation is hosted within chlorite schist, biotite-muscovite-quartz-feldspar gneiss and amphibolite within the Myra Falls Metamorphics. These rocks are faulted against Palaeoproterozoic Nabarlek Granite and are intruded by a thick (~220-250m) discordant sheet of Oenpelli Dolerite (Figure 5). The orebody was approximately 250m in length, 7m wide and tapered to a maximum depth of 85m where it was truncated by an Oenpelli Dolerite sill. Mineralisation is intimately associated with the Nabarlek Fault breccia, which contains the high grade core (>1% U_3O_8) surrounded by a lower grade (0.1% U_3O_8) envelope, extending up to several metres into the country rock. The primary ore mineral is uraninite (with rare brannerite), with secondary ore minerals comprising coffinite and yellow-green phosphate phases. Minor sulphide phases (including chalcopyrite, galena with rare pyrite, chalcocite and bornite) are present, typically comprising less than 1% by volume of the ore assemblage.

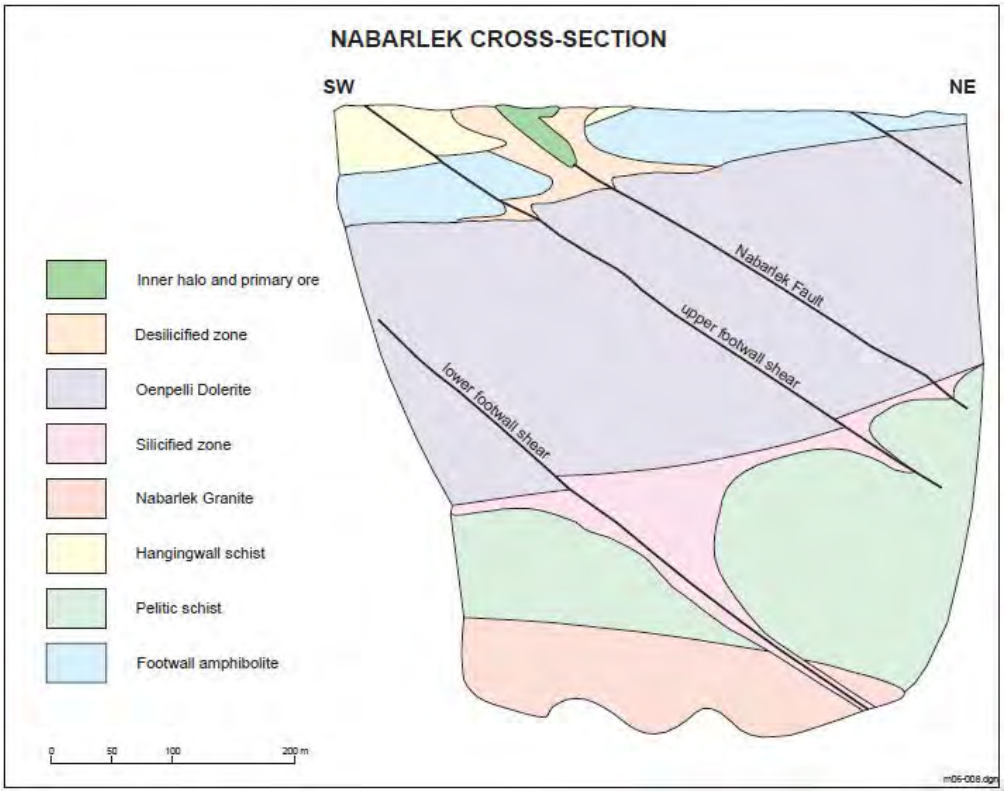


Figure 5: Cross section of the Nabarlek deposit. After Lally & Bajwah (2006)

4.2.2 Ranger

The Ranger Uranium Mine is located approximately 55km southwest of the Nabarlek Group and includes the Ranger 1 and No 3 orebodies (Figure 6). Mineralisation is hosted within the Lower Cahill Formation and comprises a total of 148,082t contained U_3O_8 at an average grade of 0.25% U_3O_8. Mineralisation is characterised by intense chloritisation, sericitisation and hematite alteration, which in some cases completely obliterates primary mineral fabrics. Several periods of brecciation with associated chloritisation and uranium mineralisation are suggested within the ore zone. The primary ore assemblage comprises uraninite, with minor brannerite and amorphous

mixtures of pitchblende with titanium and phosphates. Pyrite, chalcopyrite and galena (predominantly radiogenic) are associated with pitchblende mineralisation.

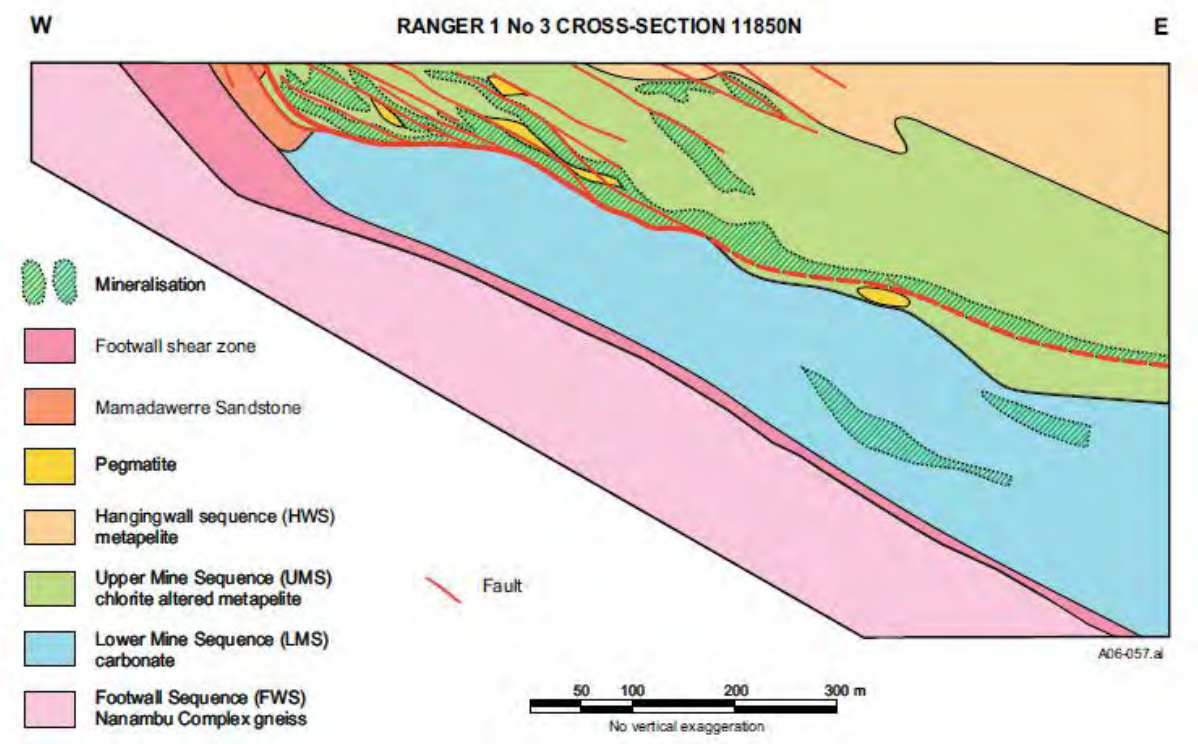


Figure 6: Cross section of the Ranger 1 No 3 orebody. After Lally & Bajwah (2006).

4.2.3 Jabiluka

The Jabiluka deposit is located approximately 24km southwest of the Nabarlek group project area and comprises two separate orebodies, Jabiluka 1 and 2, which contain a combined uranium resource of 166,250t contained U_3O_8 at an average grade of 0.39% U_3O_8. Uranium mineralisation is hosted by Lower Cahill Formation schists. The bulk of the mineralisation (163,000t contained U_3O_8) at a grade of 0.53% U_3O_8 is contained within the Jabiluka 2 orebody (Figure 7). Uranium mineralisation is typically confined to zones of brecciation within graphitic schist and commonly associated with chloritisation, sericitisation and hematite alteration. The primary ore mineralogy comprises predominantly uraninite with minor brannerite, coffinite and organo-uranium minerals. Sulphides present include pyrite with lesser galena and chalcopyrite. Economic gold mineralisation is also reported within graphite horizons from the Jabiluka 2 orebody.

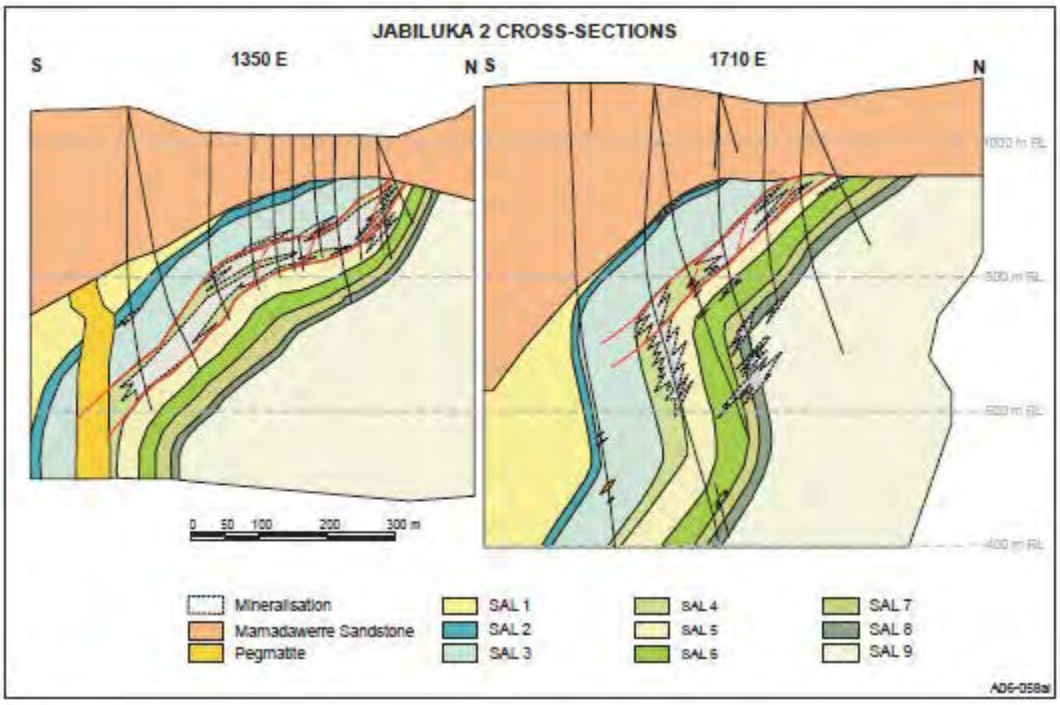


Figure 7: Cross section of the Jabiluka 2 deposit. After Lally & Bajwah (2006).

4.2.4 Koongarra

The Koongarra uranium deposit is located approximately 70km southwest of the Nabarlek Group project area. The deposit comprises two discrete orebodies, separated by ~100m in plan (Figure 8), and contains an estimated resource of ~16,541t contained U_3O_8. Uranium mineralisation is hosted by Lower Cahill Formation schists. The Koongarra 1 orebody extends ~450m along strike and to ~100m depth, with a secondary mineralisation zone present within the weathered schists overlying the main orebody. The Koongarra 2 orebody has a strike length of ~100m and occurs between 50-250m depth. Primary uranium mineralisation is hosted predominantly by quartzchlorite schist. Primary ore comprises crystalline uraninite veins and veinlets, with sooty amorphous uraninite masses present within host schists, while secondary mineralisation includes sklodowskite, kasolite, renardite, metatorbernite, saleeite and curite.

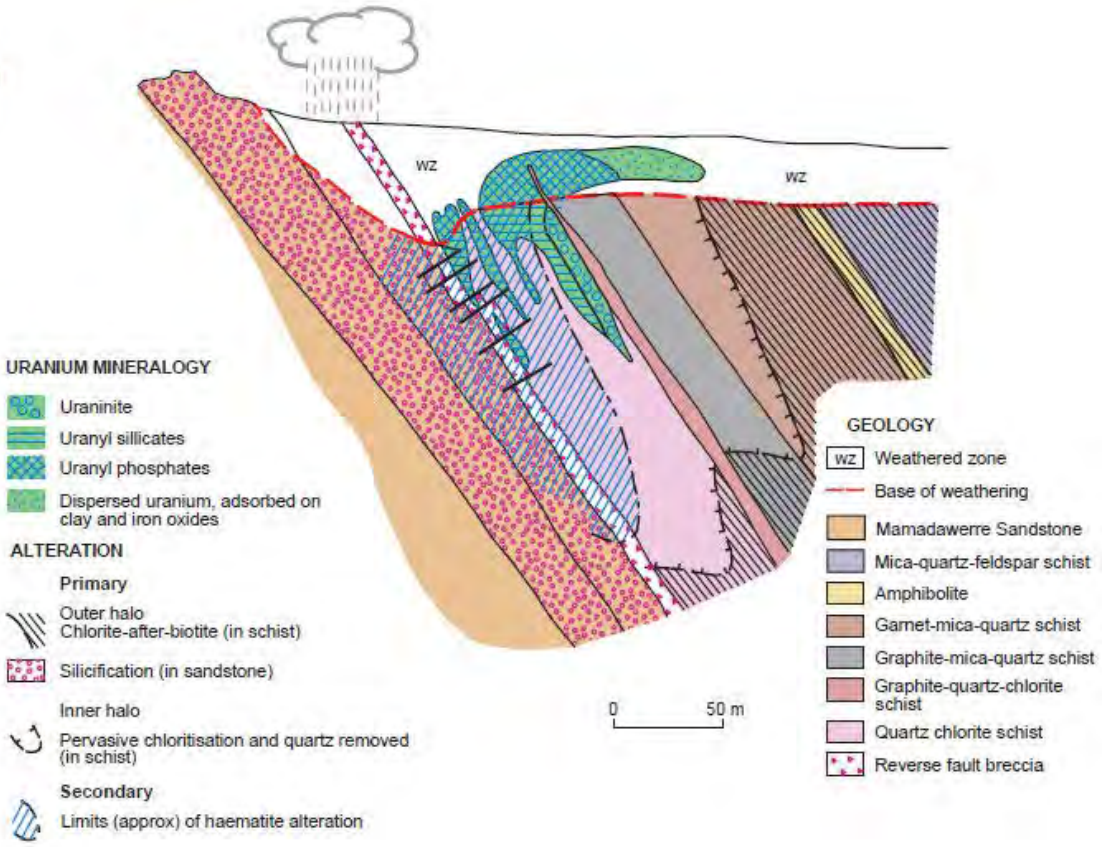


Figure 8: Cross section of the Koongarra deposit. After Lally & Bajwah (2006).

4.2.5 Other Occurrences

The Ranger 68 deposit is located approximately 44km west-southwest of the Nabarlek project area and contains resources of approximately 5000t contained U_3O_8 with an average ore grade of 0.35% U_3O_8. The geology is broadly similar to that at the main Ranger deposit, with mineralisation hosted by chloritised breccia and to a lesser extent quartz-sericite-chlorite schist within the Lower Cahill Formation.

Hades Flat uranium prospect is located ~42km southwest of EL24868 and comprises an estimated resource of 726t contained U_3O_8. Mineralisation is found within the Lower Cahill Formation and is comprised predominantly of pitchblende, which occurs both within fractures and breccia in chlorite-feldspar schist.

Caramel prospect is located ~22 south of the Nabarlek mine site and contains an unconfirmed estimated resource of 2500t contained U_3O_8. Primary uranium mineralisation occurs within a ~80 wide elongate zone within altered metasedimentary schist and carbonate rocks of the Myra Falls Metamorphics.

A number of uranium occurrences have been reported proximal to the Nabarlek Group tenements (Figure 4), including:

- U40 (200m south of EL24868) currently being evaluated be Cameco in joint venture with Uranium Equities Limited.
- *Tadpole* (~12km north of EL 24564), described as a vein occurrence.

- *Mordijimuk* (~2km east of EL 24564), described as “surficial enrichment”.
- *Gorrunghar* (~2km south of EL 24564), described as “unconformity-related”.
- *Gurrigarri* (~4.5km southeast of EL 24564), described as “unconformity related”.
- *Anomaly N84* (~2.3km east of EL 24564) described as “surficial enrichment”.
- *Anomaly N7* (~6km southwest of EL 24868), described as “surficial enrichment”.
- *Stevens* (~15.5km southeast of EL 24868), described as “vein gold, platinum, palladium, uranium”.
- *King River* (~12km west of EL 24868), described as “unconformity-related”.
- *00128* (~7km east of EL 24564), described as “surficial enrichment”.

5 Exploration Rationale

The model proposed for unconformity-style uranium deposits in the Alligator Rivers area is based in an intracratonic basin setting, where a thick, oxidized and quartz-rich cover sequence unconformably overlies metamorphic basement containing suitable reductants. Fluids produced during basin diagenesis transport uranium along basement penetrating faults where they may come into contact to reducing lithologies within the basement and deposit uranium. Therefore, the key criteria for a deposit of this type are:

- A thick, oxidized quartz-rich sandstone cover sequence, preferably free of organic matter, which can facilitate the transport of uranium ore bearing fluids.

- Basement rocks comprising suitable reducing lithologies such as graphitic schists, carbonates (marble etc), hydrocarbons or inorganic reductants (eg sulphides or ferric Fe2+ iron rich rocks).

- Burial of the basin and diagenesis creating a moderate temperature (~150-200°C), oxidized and saline fluid capable of transporting uranium.

- A leachable source of uranium which could include uranium-rich felsic rocks either rimming or underlying the sedimentary basin, lithic fragments of felsic rocks (including volcanic ash) within aquifer or leachable detrital U-rich minerals such as zircon, monazite, allanite and apatite within the sandstone sequence.

- Significant fault structures which penetrate both the cover sequence and basement rocks, which provide fluid pathways. It is also evident that structures within the basement (particularly those associated with reducing lithologies) provide further fluid pathways and depositional sites for mineralizing fluids.

The characteristics of unconformity style uranium deposits in the Northern Territory can be summarised as follows (after Mernagh et al, 1998 & Beufort et al, 2005):

- Typically an oxidized, thick cover sequence of quartz-rich sandstone overlying reduced basement lithologies.

- Significant fault/structural feature bisecting both the covering sequence and basement rocks, to allow passage of fluids.
- Clay alteration (kaolinite-illite) in covering sandstones proximal to the fault structure.
- Elevated Th in stratigraphic units above the unconformity (areas of high Th but low U/K may indicate mineralization at depth).
- Phosphatic breccias at higher stratigraphic levels above the unconformity. Areas of silicification proximal to the fault structure at higher stratigraphic levels, and strong desilicification at the unconformity.

Previous exploration in and around the Nabarlek Group tenements suggests the Kombolgie Formation sandstone has been subjected to diagenetic processes with illite alteration commonly reported and silicification and chlorite-hematite alteration also suggestive of fluid flow.

The most prospective basement lithologies in the Nabarlek project area include the Lower Cahill Formation (host to the Ranger, Jabiluka and Koongarra deposits) and the Myra Falls Metamorphics (in particular the Lit-par-lit gneiss).

6 Exploration Activities for the 12 months ended 26 September 2011

During the first year of tenure, exploration activities comprised a desk top review of historical works completed by previous explorers and research on known uranium deposits within the region, an orientation and field mapping exercise, a 1927 line kilometre airborne GEOTEM^{tm} electromagnetic survey covering all tenements, a hyperspectral remote sensing survey covering all tenements, a 548 sample point Alphatrack radon cup survey and coincident 559 sample point geochemical sampling survey covering an area approximately 19km^2 within EL24868, RC drilling of 27 holes totaling 2308m located within EL24868 and adjacent Cameco's U40 prospect , gamma logging of 22 drillholes, chemical assay of 559 soil samples, chemical assay of 42 one metre composite drill chip samples with elevated radioactive content and chemical and petrological analyses of 6 selected drill samples for lithological identification.

6.1 Airborne EM

A 1927 line kilometre fixed wing GEOTEM^{tm} electromagnetic survey with east west flight lines at 200m line spacing covering 100% of the Nabalek Group tenements at a 120m flight height was completed by Fugro Airborne Surveys Pty Ltd over a 4 day period using their Casa 212 aircraft on 15 October 2010. Line locations are shown on (Figure 9) and survey specifications are attached as Appendix 1.

GEOTEM^{tm} was chosen as it was reported to provide superior resolution of deep targets and was considered appropriate to "see through" the thick cover on Kombolgie Formation sandstone.

The survey data was processed with Fugro's latest in-house Layered Earth Inversion software, comparable to EM Flow software used by Geoscience Australia to process its VTEM data.

Results for the airborne EM survey were disappointing as interpretation of the data was considered to be non-conclusive. The survey failed to "see through" the thick sandstone cover within EL24564 and EL28245 and failed to clearly delineate any anomalous conductive features or

accurately locate specific structures with confidence that required follow-up investigation which had not already been interpreted from magnetic data.

Weathering appears to be approximately 50 to 80m deep over most of EL24868 and much of the conductive clay altered saprolitic cover masks any potential conductor at greater depths and/or produces spurious results.

Interpretation of the EM data was limited to highlighting lineaments and trends more so than being able to confidently interpret specific localised scenarios. This was achieved using depth slices and cross sections generated from LEI data.

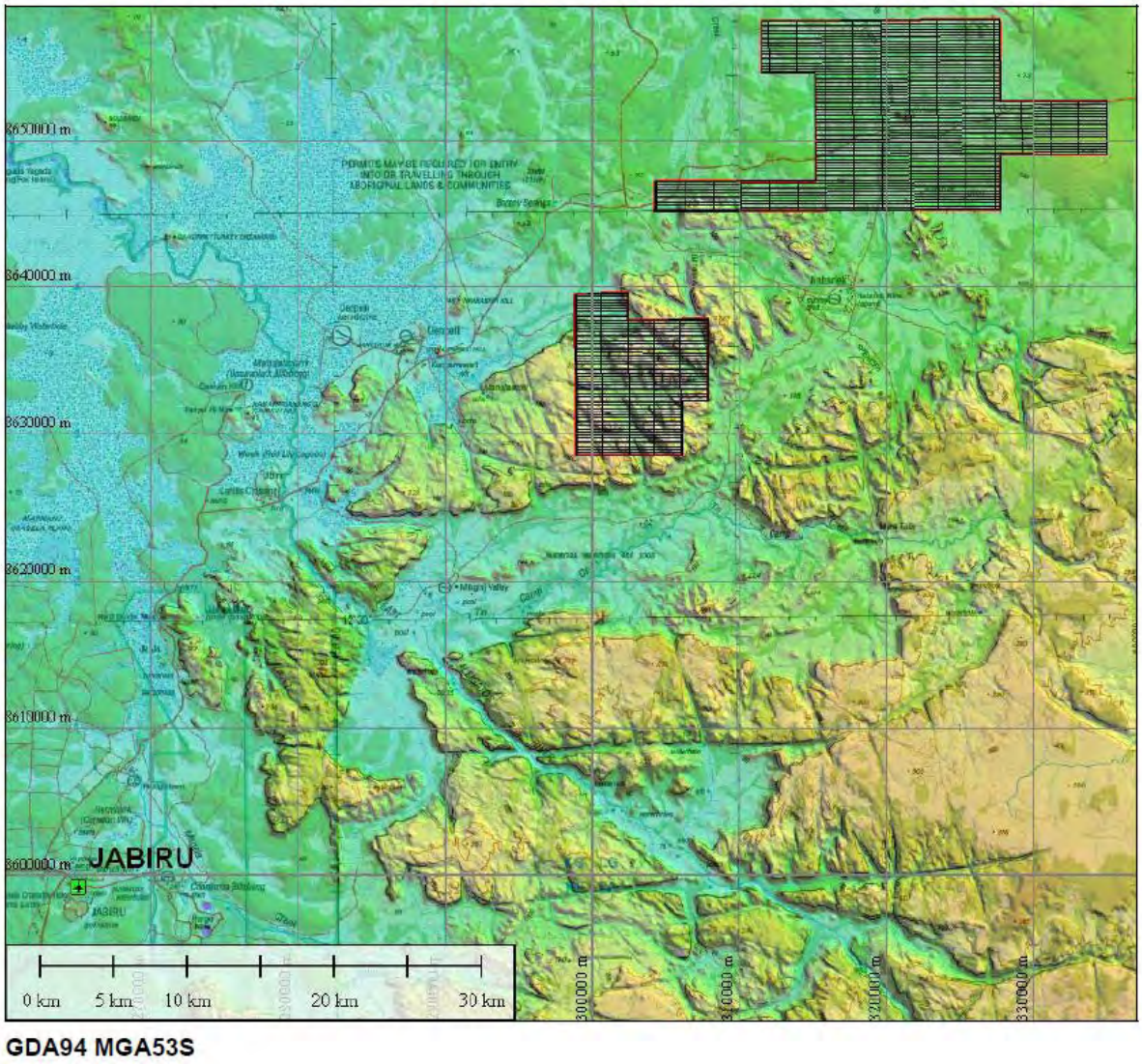


Figure 9: GEOTEM[tm] Airborne Survey Flight LInes

6.2 Hyperspectral Remote Sensing

Hyvista Corporation completed a hyperspectral remote sensing survey covering 100% of the Nabarlek Group tenements using a HyMap airborne hyperspectral scanner resulting in a ground spatial resolution of 3.5m.

The survey was completed on 19 October 2010 and the data was processed by HyVista to produce overview false colour composite minimum noise fraction (MNF) colour composite mineral maps.

7 minerals were identified within EL24868 viz., nontronite distribution is in the southwestern region of the tenement and possibly correlates with underlying dolerite. Kaolinite, dickite, pyrophyllite and white mica 2205 are dispersed throughout the tenement and correlates with Kombolgie sandstone and Cenozoic sediments. Hematite is located in the northeastern region of the tenement and in the upper units of the regolith. The dispersion patterns for kaolinite, dickite, pyrophyllite, white mica 2205 and hematite possibly represent mineral stability from most stable to least stable respectively. White mica 2206 is predominately restricted to Kombolgie sandstone and is possibly unstable within the regolith.

Unfortunately the hyperspectral survey failed to identify any zones of significant chlorite or intense argillic alteration considered to be a strong indicator of potential mineralisation. Survey specifications and data are attached as Appendix 2.

6.3 Radon Cup Survey

Based on the interpretation of surface geological and radiometric data, airborne EM data and hyperspectral remote sensing data and due to the location of the U40 prospect, an area of approximately 19 km^2 was covered by an Alphatrack radon cup survey at 200m sample site centres with some in-fill stations at 50m spacing (Figure 10). A hole up to 30cm depth and 20cm diameter was hand dug using a shovel in which an inverted Alphatrack radon cup was placed at the bottom of the hole. The holes were backfilled where the cups remained buried for approximately 30 days.

Placement of the cups commenced on 22 July 2011 and was completed on 7 August 2011. The cups were despatched to ALPHATRACK in Canada for processing following their retrieval in early September 2011. The ALPHATRACK Radon (Rn222) cup method was selected over other similar radon detection methods since -

1. Unlike charcoal radon test the ALPHATRACK detectors are unaffected by humidity.

2. High period of exposure minimises the errors due to variation in radon concentration, temperature, pressure, wind conditions and moisture.

Results for the radon cup survey coupled with geochemical soil sampling returned coincident anomalous values at varying levels of magnitude highlighting potentially mineralised regions.

Radon Cup Survey sample site co-ordinates and corresponding radiometric values (total count) are attached in Appendix 3.

317,000 mE 318,000 mE 319,000 mE 320,000 mE 321,000 mE 322,000 mE 323,000 mE 324,000 mE 325,000 mE 326,000 mE 327,000 mE

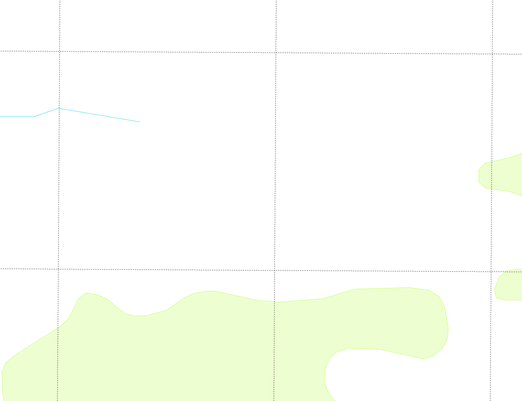
8,650,000 mN 8,649,000 mN 8,648,000 mN 8,647,000 mN 8,646,000 mN 8,645,000 mN 8,644,000 mN 8,643,000 mN

EL24868
Narbarlek North

UXA RESOURCES LIMITED

Date: 17/11/2011	NABARLEK GROUP RADON CUP & SOIL SAMPLE LOCALITY PLAN Figure 10
Author: mwalter	
Office: ADL	
NBLKN_SOIL001	
Scale: 1:10000	Projection: Longitude / Latitude (NAD 83)

0 125 250 500
metres



7 Surface Geochemistry

UXA recovered a geochemical soil sample at each radon cup point as well as recording total count scintillometer values. A total 559 soil samples were collected (Figure 10).

A 100 gram sample of soil recovered from the hole was collected with the soil type and dampness being recorded. The samples were then forwarded to AMDEL for chemical analyses comprising As, Cu, Li, Ni, Pb, V, F, Ce, Mo, Nd, Th, U, Y and pH.

Results of the geochemical analyses coupled with results for the radon cup survey returned coincident anomalous values at varying levels of magnitude highlighting potentially mineralised regions (Appendix 4).

8 RC Drilling

27 Reverse Circulation (RC) drill holes (NNRC01-NNRC01, NNRC04a, NNRC05, NNRC05a, NNRC06-NNRC14, NNRC21-NNRC26, NNRC42-NNRC46), totalling 2308m were drilled on 3 lines adjacent the southern boundary of EL24868 to test the northern extension of U40 mineralisation as well as covering a portion of a coincident radon cup and geochemical anomaly (Figure 11).

Profile Drilling Services Pty Ltd carried out the drilling programme using a Schramm 660 mounted on an 8X8 MAN fitted with a 900cfm/350psi compressor and coupled to a 2400cfm/1000psi booster and 1350cfm/500psi auxiliary compressor. All holes were drilled with an inclination of -60^{0} toward 270^{o}. Drilling was completed over a 14 day period and concluded on 24 August 2011.

All holes except NNRC01 and NNRC02 intersected quartz chlorite mica schist with varying degree of sericitic and haematitic alteration. NNRC01 and NNRC02 intersected dolerite.

A total of 42 one metre interval composite samples were collected. The samples were forwarded to AMDEL for geochemical analyses comprising Al, Ca, Fe, K, Mn, Mg, Na, P, Si, Ti, V, LOI, TOEC, Ce, Mo, U, Y, Nd, Cu, Li, Ni and Pb (Appendix 5).

All RC drill hole 1m composite samples were tested for their radiometric total count (TC) value using a hand held scintillometer. A peak TC of 930 cps was returned from 51m to 53m in NNRC4a. Anomalous values were also recorded from NNRC08 (480cps from 8m to 10m), NNRC06 (700 cps from 32m to 34m), and NNRC23 (500cps from 23m to 25m).

22 water samples were collected from 22 of the 27 drill holes. Samples were collected approximately two weeks following completion of the drill hole. Approximately 500ml for water was collected from the top of the water column within each hole and sent to AMDEL for analyses comprising As, Fe, Mn, Ni, Pb, V, Zn, Au, Co, Mo, Nd, Se, Th and U (Appendix 5).

22 holes of the 27 RC holes were gamma logged by GAA WIRELINE using an SSG02 down hole logging system and a 38mm gamma probe. Gamma logging of the drill holes returned strongly anomalous results in 5 of the holes as shown in the Table below (Appendix 6).

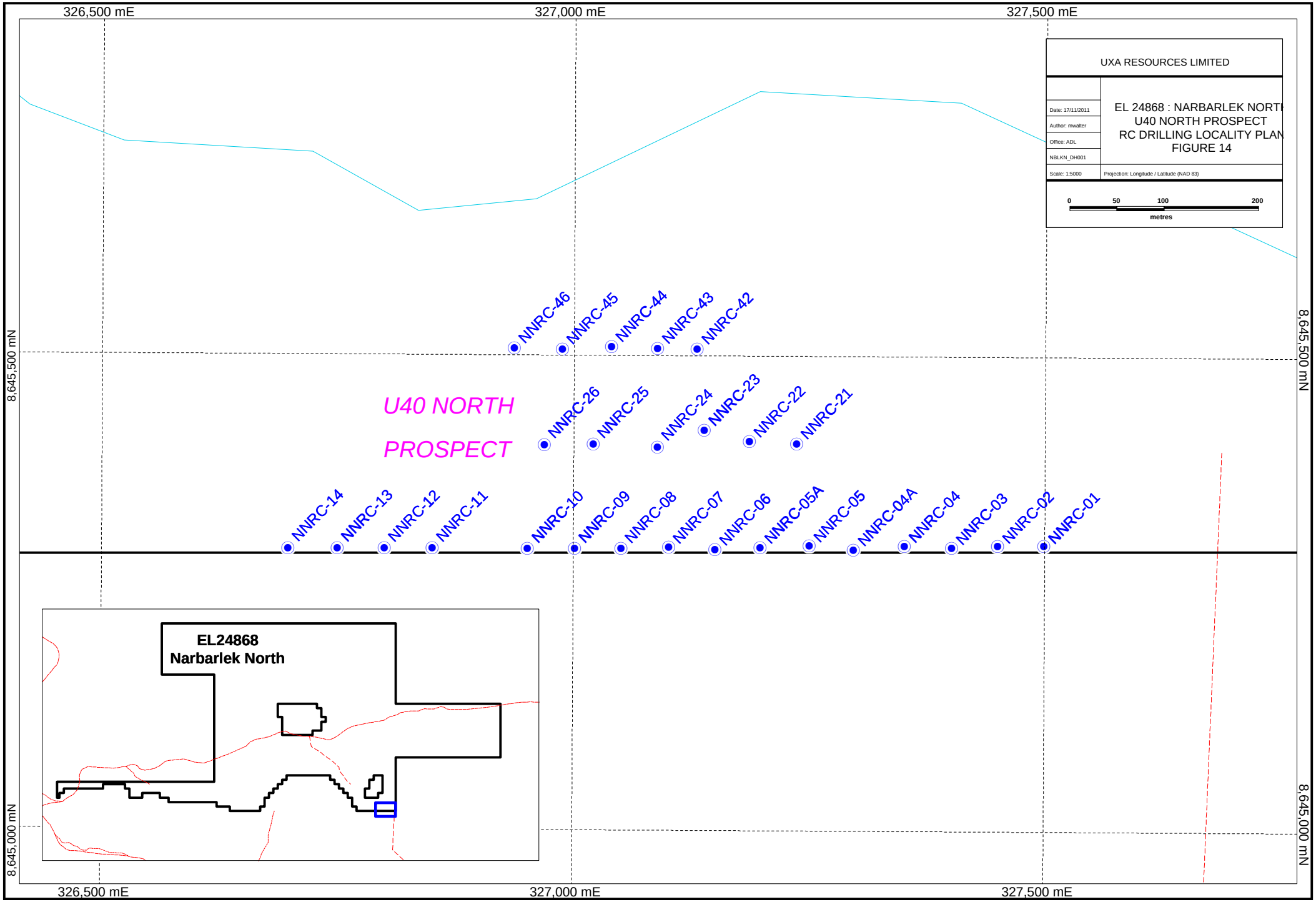

326,500 mE
327,000 mE
327,500 mE
8,645,500 mN
8,645,000 mN
UXA RESOURCES LIMITED
Date: 17/11/2011
Author: mwalter
Office: ADL
NBLKN_DH001
Scale: 1:5000
EL 24868 : NARBARLEK NORTH
U40 NORTH PROSPECT
RC DRILLING LOCALITY PLAN
FIGURE 14
Projection: Longitude / Latitude (NAD 83)
0
50
100
200
metres
U40 NORTH
PROSPECT
NNRC-46
NNRC-45
NNRC-44
NNRC-43
NNRC-42
NNRC-26
NNRC-25
NNRC-24
NNRC-23
NNRC-22
NNRC-21
NNRC-14
NNRC-13
NNRC-12
NNRC-11
NNRC-10
NNRC-09
NNRC-08
NNRC-07
NNRC-06
NNRC-05A
NNRC-05
NNRC-04A
NNRC-04
NNRC-03
NNRC-02
NNRC-01
EL24868
Narbarlek North

Table 2: Anomalous results encountered in Drill holes

Hole ID	From (m)	Interval (m)	*Average eU_3O_8 ppm*	*Peak eU_3O_8 ppm*
NNRC04a	50.85	1.31	**460**	**690**
	59.34	0.39	**402**	**540**
NNRC06	32.89	0.39	216	265
NNRC08	7.30	1.50	101	155
	10.34	0.85	113	135
NNRC22	16.50	0.73	117	178
NNRC23	21.50	2.50	99	205

9 Environmental Management Activities

Environmental rehabilitation of the disturbed ground created by Radon cup survey has been completed. UXA is carrying out environmental rehabilitation of the disturbed ground created by RC drilling and is expected to be completed by 31 December 2011.

9.1 Rehabilitation

Rehabilitation of the 2011 field season comprised, plugging and backfilling all drill holes, redistribution of any disturbed soils back to their original position, scarifying drill sites and tracks where required to promote regeneration and removing all drill samples rubbish from the tenement. All sample bags from the drill sites were removed and have been stored in a shipping container prior to their disposal.

10 Expenditure Statement

An expenditure statement for the reporting period was submitted to the Northern Territory Department of Resources on 4 November 2011.

Table 3 summarises expenditure for the Nabarlek Group tenements.

Table 3: Summary of Expenditure during the Reporting Period

EL #	Covenant	Expenditure
EL24564	$11,200	$123,197
EL 24868	$51,600	$870,140
EL 28245	$1,400	$123,197
	TOTAL:	**$1,116,534**

11 Conclusions and Recommendations

The Nabarlek Group tenements are considered prospective for unconformity style uranium mineralisation since they comprise similar tectonic setting, lithology and structure to known deposits within the region.

Results for the airborne EM survey were disappointing as interpretation of the data was considered to be non-conclusive and the hyperspectral survey failed to identify any zones of significant chlorite or intense argillic alteration considered to be a strong indicator of potential mineralisation however the radon cup survey coupled with geochemical soil sampling returned coincident anomalous results at varying levels of magnitude highlighting potentially mineralised regions. Follow up drilling over the most anomalous area located adjacent U40 confirmed anomalous uranium mineralisation to occur at depth and therefore it is recommended to continue drilling at the U40 North prospect, commence drilling some of the second order radon cup anomalies and extend the radon cup and geochemical soil survey to cover the Nabarlek Group tenements where access can be reasonably negotiated.

A work program for the 2012 dry season will be finalised in early January and submitted to the Traditional Owners and Northern Territory Department of Resources for approval.

12 References

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APPENDIX 1

AEM Survey Report

Nabarlek, Northern Territory
GEOTEM
Geophysical Survey

Acquisition and Processing Report

for

Uranium Exploration Australia Ltd

Prepared by : A. Carbone
L. Stenning

Authorised for release by : ……..

……..

Survey flown: October 2010

by

Fugro Airborne Surveys
435 Scarborough Beach Road, Osborne Park WA 6017, Australia
Tel: (61-8) 9273 6400 Fax: (61-8) 9273 6466

FAS JOB # 2160

TABLE OF CONTENTS

1. SURVEY OPERATIONS AND LOGISTICS

1.1 Introduction

Between the 11th of October 2010 and the 14th October 2010, Fugro Airborne Surveys Pty. Ltd. (FAS) undertook an airborne **GEOTEM$_{DEEP}$®** electromagnetic and magnetic survey for Uranium Exploration Australia Ltd, over the Nabarlek Project area in the Northern Territory. The survey consisted of two areas. Total coverage of the survey areas amounted to 1927.1 line kilometres flown in 5 flights.

The survey employed the **GEOTEM$_{DEEP}$®** electromagnetic system, operating at a base frequency of 25Hz. Ancillary equipment consisted of a magnetometer, radar altimeter, video camera, analogue and digital recorders and an electronic navigation system. The instrumentation was installed in a CASA C212-200 Turbo Prop survey aircraft registration VH-TEM. The aircraft was flown at an average speed of 235 km/h with an EM bird receiver height of 80 m. This report summarises the procedures and equipment used by FAS in the acquisition, verification and processing of the airborne geophysical data.

1.2 Survey Base

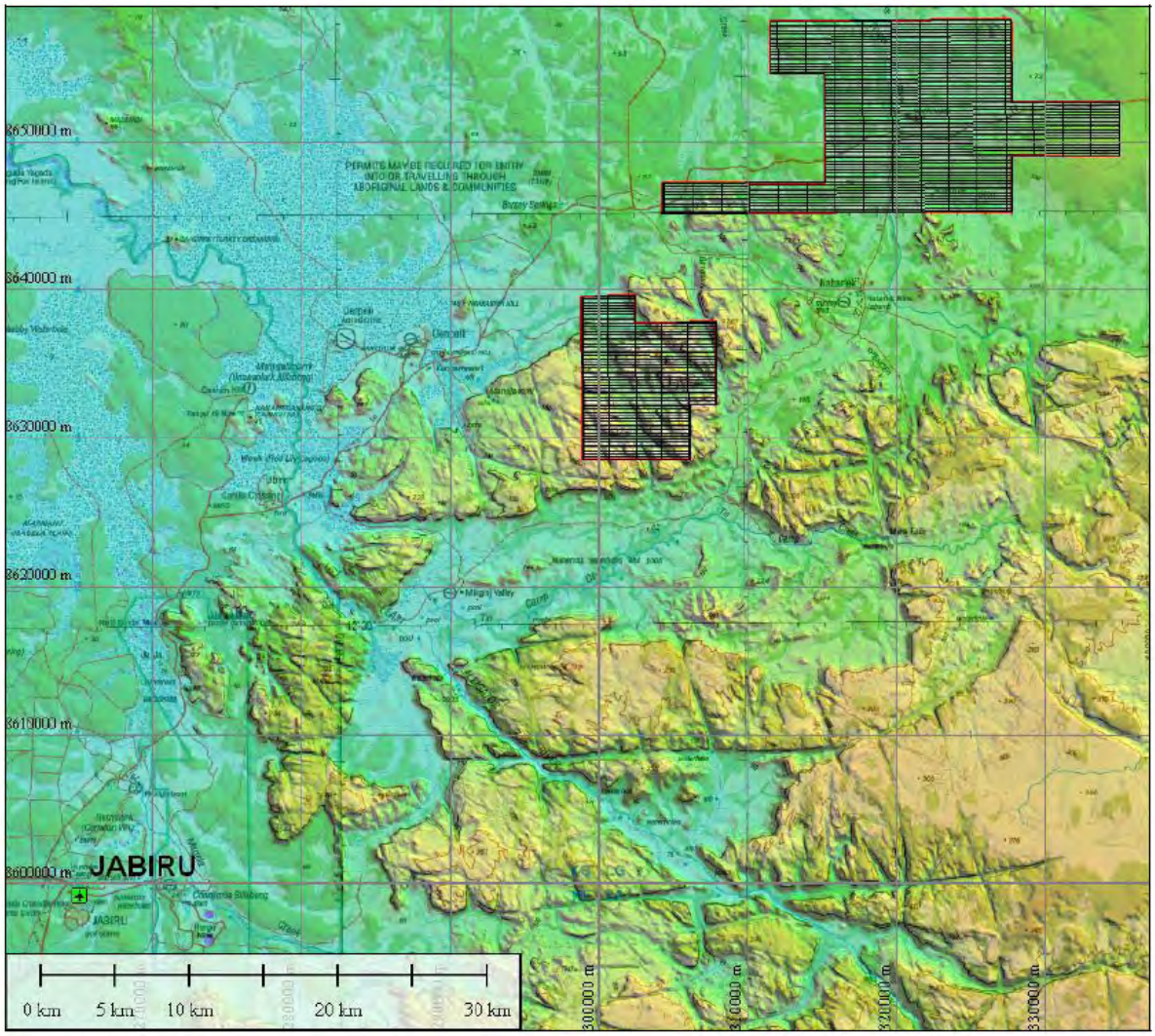
The survey was based out of Jabiru, Northern Territory. The survey aircraft was operated from the Jabiru Airstrip with the aircraft fuel brought in. A temporary office was set up at the Lake View Lodge, Jabiru, where all survey operations were run and the post-flight data verification was performed.

1.3 Survey Personnel

The following personnel were involved in this project:

Project Supervision - Acquisition	Bart Anderson
- Processing	Denis Cowey
On-site Crew Leader	Ben Riggs
Pilot/s	Peter Hiskins, Mel Cote, Tymon Dyer
System Operator/s	Ben Riggs
Aircraft Engineer	Richard Carden
Field Data Processing	Adam Carbone
Office Data Processing	Adam Carbone

1.4 Area Map



GDA94 MGA53S

1.5 General Disclaimer

It is Fugro Airborne Survey's understanding that the data and report provided to the client is to be used for the purpose agreed between the parties. That purpose was a significant factor in determining the scope and level of the Services being offered to the Client. Should the purpose for which the data and report is used change, the data and report may no longer be valid or appropriate and any further use of, or reliance upon, the data and report in those circumstances by the Client without Fugro Airborne Survey's review and advice shall be at the Client's own or sole risk.

The Services were performed by Fugro Airborne Survey exclusively for the purposes of the Client. Should the data and report be made available in whole or part to any third party, and such party relies thereon, that party does so wholly at its own and sole risk and Fugro Airborne Survey disclaims any liability to such party.

Where the Services have involved Fugro Airborne Survey's use of any information provided by the Client or third parties, upon which Fugro Airborne Survey was reasonably entitled to rely, then the Services are limited by the accuracy of such information. Fugro Airborne Survey is not liable for any inaccuracies (including any incompleteness) in the said information, save as otherwise provided in the terms of the contract between the Client and Fugro Airborne Survey.

2. SURVEY SPECIFICATIONS AND PARAMETERS

2.1 Area Co-ordinates

The survey area was located within GDA94 MGA Zone 53S, Central Meridian = 135
(Note - Co-ordinates in WGS84/UTM Zone 53S)

AREA 1

Easting	Northing
304206	8645307
304336	8645308
304324	8647151
315205	8647221
315159	8654596
311531	8654573
311508	8658103
322263	8658170
327705	8658202
327737	8652671
328039	8652673
329551	8652681
334992	8652712
335012	8649025
327759	8648984
327780	8645296
304207	8645149

AREA 2

Easting	Northing
307882	8637797
307894	8635954
307906	8634110
307918	8632266
306578	8632257
306106	8632254
306118	8630410
306130	8628566
304318	8628554
302506	8628542
300693	8628529
298881	8628517
298868	8630361
298855	8632205
298842	8634049
298830	8635892
298817	8637736
298804	8639580
300617	8639593
302359	8639605
302430	8639605
302433	8639243
302443	8637761
304256	8637773
306069	8637785

2.2 Survey Area Parameters

Job Number	-	2160
Survey Company	-	Fugro Airborne Surveys Pty Ltd
Date Flown	-	11th October 2010 – 14th October 2010
Client	-	Uranium Exploration Australia Ltd
EM System	-	**GEOTEM$_{DEEP}$®**
Navigation	-	Real-time differential GPS
Datum	-	GDA94
Projection	-	MGA Zone 53S
Project Name	-	Nabarlek, Northern Territory
Area Names	-	1 and 2
Nominal Terrain Clearance	-	120 m
Traverse Line Spacing	-	200 m
Traverse Line Direction	-	090 – 270 degrees
Traverse Line Numbers	-	1001 – 1057, 2001 – 2066
Tie Line Spacing	-	1920 m EL24868, 2200m EL24564
Tie Line Direction	-	000 – 180 degrees
Tie Line Numbers	-	1701 – 1705, 2701 - 2717
Area 1 Line Kilometres	-	531.7 km
Area 2 Line Kilometres	-	1395.4 km
Total Survey Kilometers	-	1927.1 km

2.3 Data Sample Intervals

Nominal data sample intervals.		
Magnetometer	-	70 m (@1 Hz)
Electromagnetics	-	17 m (@4 Hz)
Radar altimeter	-	70 m (@1 Hz)
Barometric altimeter	-	70 m (@1 Hz)
GPS	-	70 m (@1 Hz)

2.4 Survey Reflight Specifications

As specified in the contract, the following tolerances were used.

- If electronic navigation data are not available.

- Where the actual flight path deviates from the flight plan by more than 50% of the nominal spacing over a continuous distance exceeding 3 km or where lines cross. The line spacing measurements to be used in determining such reflights will be made from the field flight path recovery.

- If the terrain clearance continuously exceeds the nominal terrain clearance by +/- 20 m over a distance of 3 km or more unless to do so would, in the sole opinion of the pilot, jeopardise the safety of the aircraft or the crew or the equipment or would be in contravention of the Aviation Authority regulations such as those pertaining to built up areas.

- GEOTEM X or Z data is not interpretable. Where the dB/dt RMS noise calculated over 3 km of the raw digital data in the last off-time channel at 25 Hz exceeds 5 nT/s (or 10 pT for B-field) in resistive areas devoid of any external interference (eg. Cultural sources etc.), for a distance greater than 3kms. Also, the FAS field geophysicist will examine all anomalous regions on the analogues to determine if the character and shape of the significant geophysical anomalies can be properly separated from the noise, and re-fly any sections of lines where the noise levels irreparably distort the significant geophysical anomalies.

- The magnetometer noise envelope of ± 1.0 nT is exceeded intermittently over a cumulative total of 10% or more of any flight line or continuously over 2 km or more.

- The departure of the diurnal magnetic field from a straight line chord, 10 minutes in length, exceeds 10 nT.

2.5 Job Safety Plan

A Job Safety Plan was prepared and implemented in accordance with the Fugro Airborne Surveys Occupational Safety & Health Management System.

3. GEOTEM SYSTEM AND SURVEY EQUIPMENT

3.1 The GEOTEM$_{DEEP}$® Multi-Coil System

GEOTEM$_{DEEP}$® is a time domain towed bird electromagnetic system incorporating a high speed EM receiver. The primary electromagnetic pulses are created by a series of discontinuous half-sine current pulses fed into a multi turn transmitting loop surrounding the aircraft and fixed to the nose, tail and wing tips. The pulse repetition rate is 25 Hz (50 bipolar pulses per second).

The EM sensor is an orthogonal set of coils mounted in a "bird", towed behind the aircraft on a cable. The cable is demagnetised to reduce noise levels. Three coil orientations are available. The X component has a horizontal axis in the direction of flight. The Y component has a lateral horizontal component. The Z component has a vertical axis, which is coplanar with the transmitter coil.

Time-domain airborne electromagnetic systems have historically measured the in-line horizontal (X) component using a coaxial receiver coil. New versions of the electromagnetic systems are designed to collect two additional components (the vertical component (Z) and the lateral horizontal component (Y)) to provide greater diagnostic information. The three components, X, Y and Z can be combined to give the “energy envelope” of the response. Due to asymmetry in the transmitter and receiver coil geometry, the shapes of the component profiles depend on flight direction, the most sensitive component being X component.

In areas where lithological strike is near horizontal, the Z component response provides greater signal-to-noise due to greater coupling. In comparison, the X coils couple best with vertical structures striking perpendicular to the flight direction. In a laterally symmetric environment, the symmetry implies that the Y component will be zero; hence a non-zero y-component indicates lateral inhomogeneity.

In the interpretation of discrete conductors, the Z component data may be used to ascertain the dip and depth to the conductor using simple rules of thumb. The response of the Y component can be used to ascertain the strike direction and lateral offset of the target respectively.

Having the Y and Z component data increases the total response when the profile line has not traversed the target. This increases the possibility of detecting a target located between adjacent flight lines or beyond a survey area.

Each primary current pulse may induce eddy currents in subsurface conductors that decay following cessation of each pulse. Any decaying earth currents can induce voltages in the receiver coils that are proportional to the electromagnetic field. These voltages are sampled over 20 time gates. The centres and widths of these gates are variable and may be placed anywhere within or outside the transmitter pulse.

The time varying EM signals received at the sensor pass through anti-aliasing filters and are then digitised with an A/D converter. The digital data stream from the A/D converter passes into an array processor where all the numerically intensive processing tasks are carried out. The array processor is under control of a multi-tasking minicomputer. The on-board processing sequence is as follows:

Transient Analysis: Transient analysis enables the separation of noise from signal in real time.

Digital Stacking: The stacking of transients to produce 1 recorded reading, of which 4 are recorded every second.

Windowing of Data: The transient is initially sampled into 384 time windows that are then binned to form 20 channels.

Table 1: Airborne Equipment Specifications

System Parameters		**GEOTEM$_{DEEP}$®** Specifications
Navigation		Real time Differential GPS
Nominal aircraft speed (m/s)		65
Geometry	Transmitter height Above ground level (m agl) (Nominal terrain clearance)	120
	Receiver Bird Height (agl, m)	80 m
	Tx-Rx horizontal separation (m)	136 m
	Tx-Rx vertical separation (m)	38 m
Transmitter	Coil Axis	Vertical
	Signal	Half sine wave current pulse
	Base frequency (Hz)	25
	Repetition rate (pulses per second)	50
	Pulse width (microseconds)	4108
	Loop area (square metres)	231
	Number of turns	6
	Peak Current (amps)	650
	Tx loop dipole moment (Am^2)	9.009×10^5
Receiver	Coil Axes	X, Y and Z
	Sample Interval (seconds)	0.25
	Channel times	see Table 2

Table 2: Receiver Channel Positions

Gate No.	Sample Number Start	Sample Number End	Width	Microseconds after Trigger Start	Microseconds after Trigger End	Microseconds after Trigger Centre
1	4	12	9	156	625	391
2	13	33	21	625	1719	1172
3	34	57	24	1719	2969	2344
4	58	87	30	2969	4531	3750
5	88	90	3	4531	4688	4609
6	91	93	3	4688	4844	4766
7	94	96	3	4844	5000	4922
8	97	102	6	5000	5313	5156
9	103	108	6	5313	5625	5469
10	109	117	9	5625	6094	5859
11	118	126	9	6094	6563	6328
12	127	138	12	6563	7188	6875
13	139	153	15	7188	7969	7578
14	154	171	18	7969	8906	8438
15	172	192	21	8906	10000	9453
16	193	216	24	10000	11250	10625
17	217	246	30	11250	12813	12031
18	247	282	36	12813	14688	13750
19	283	330	48	14688	17188	15938
20	331	384	54	17188	20000	18594

3.2 Electromagnetic Acquisition System

The Digital Acquisition System (GEODAS) is a computer-based software system using a Pentium field PC. It runs multiple DOS programs in a multi-tasking environment. The modular design of the GEODAS allows for re-configuring of the system to record different types of surveys by adding, removing or changing task modules.

The GEODAS is currently installed on a rugged, totally enclosed, moisture and dust-proof system, originally designed for military use. The GEODAS currently uses a Pentium CPU on a plug-in module card that can be upgraded.

The following are recorded digitally using the GEODAS:

Each second:	Flight number Navigation data Total magnetic field Fiducial number (time in seconds) Altitude (radar and barometer)
Each 0.25 secs:	20 X, Y, & Z component dB/dt **GEOTEM$_{DEEP}$**® channels 20 X, Y, & Z component B-field **GEOTEM$_{DEEP}$**® channels X, Y, & Z component transmitter primary field

Power line (50Hz) monitor (X, Y, & Z component)
Earth field monitor (X, Y, & Z component)

3.3 Magnetometers

3.3.1 Survey Magnetometer

Model:	Cesium vapour optical absorption magnetometer sensor
Mounting:	Tail stinger
Sample period:	50 milliseconds
Sample interval:	1.0 seconds *
Sensitivity:	0.01 nanoTeslas (nT)

* To operate both the **GEOTEM$_{DEEP}$®** system and the magnetometer system simultaneously, the transmitter is switched off for a period of 200 milliseconds every second to allow for a noise free magnetometer reading.

3.4 Altimeter System

3.4.1 Radar Altimeter

Model:	Sperry Stars RT-220 radio altimeter system
Sample interval:	1.0 second
Accuracy:	+/- 1.5 % of indicated altitude.

The Sperry radio altimeter is a high quality instrument whose output is factory calibrated. It is fitted with a test function which checks the calibration of a terrain clearance of 100 feet, and altitudes which are multiples of 100 feet. The aircraft radio altitude is recorded onto digital tape as well as displayed on the aircraft chart recorder. The recorded value is the average of the altimeters output during the previous second.

3.4.2 Barometric Altimeter

Output of a Digiquartz 215A-101pressure transducer is used for calculating the barometric altitude of the aircraft. The atmospheric pressure is taken from a gimbal-mounted probe projecting 0.5 metres from the wing tip of the aircraft and fed to the transducer mounted in the aircraft wingtip.

3.5 Video Tracking System

The video tape recorded by a PAL VHS colour video system is synchronised with the geophysical record by a digital fiducial display, which is recorded along with GPS latitude and longitude information and survey line number.

3.6 Electronic Navigation

A Picodas PNAV 2001 Navigation Computer is used for real-time navigation. The PNAV computer loads a pre-programmed flight plan from disk which contains boundary co-ordinates, line start and end co-ordinates, local co-ordinate system parameters, line spacing, and cross track definitions. The WGS-84 latitude and longitude positional data received from the Novatel GPScard contained in the SURVEY computer is transformed to the local co-ordinate system for calculation of the cross track and distance to go values. This information, along with ground heading and ground speed, is displayed to the pilot numerically and graphically on a two line LCD display, and on an analog HSI indicator. It is also presented on a LCD screen in conjunction with a pictorial representation of the survey area, survey lines, and ongoing flight path.

The PNAV is interlocked to the SURVEY computer for auto selection and verification of the line to be flown. The GPS information passed to the PNAV 2001 navigation computer is corrected using the received real time differential data, enabling the aircraft to fly as close to the intended track as possible.

3.7 Analogue Recorder

Model:	RMS GR33 Thermal Dot Matrix Printer
Chart speed:	11 cm/minute; time increases from left to right
Event marks:	20 second marks are recorded on the bottom of the chart with the associated fiducial numbers being printed at the base of the chart.
GEOTEM$_{DEEP}$® Traces:	The scales for the **GEOTEM$_{DEEP}$®** traces are displayed on the analogue charts. The zero line for each channel is separated by 0.5 cm with the latest channel always being plotted closest to the bottom of the page.
Synchronisation:	A lag of approximately 5.0 seconds occurs between the **GEOTEM$_{DEEP}$®** channels and the magnetometer and altimeter traces.
Channels Displayed:	Channel 16 noise monitors (X, Y and Z) Primary field monitor (X and Z) Earth field monitors (X, Y and Z) Total magnetic field - fine and coarse scale Terrain clearance - radar Barometer Selected **GEOTEM$_{DEEP}$®** X and Z channels Powerline monitor

4. EQUIPMENT TESTS AND CALIBRATIONS

4.1 GEOTEM$_{DEEP}$® Daily Calibration

All checks and adjustments are performed at high altitude at the start of each flight to allow for automatic compensation and calibration at survey altitude. The calibrations and compensations are as follows:

4.1.1 Compensation

At the beginning of the flight data is acquired at high altitude (in excess of 600m). These data are used by the airborne operator to determine if:

a) the system noise level is acceptable
b) the response had not varied significantly from previous flights, and
c) the sferics level is acceptable,

This calibration system produces a reference waveform (or series of coefficients) which is used to establish the compensation algorithm within the GEOTEM receiver itself. This therefore allows automatic compensation to take place at survey altitude. Zero levels of the GEOTEM channels are verified at the beginning and end of each flight.

Following this aircraft manoeuvres (swoops) are performed before and after each sortie to ensure that the system operates correctly when the relative position of the towed sensor is varied relative to the aircraft.

4.2 Lag Tests

4.2.1 Electromagnetic Lag Test

An electromagnetic lag check is routinely carried out to determine the lag of the **GEOTEM$_{DEEP}$®** system. The check is conducted by flying in two different directions over a known target with a particular electromagnetic signature. The value calculated by the electromagnetic test is used in the processing of the **GEOTEM$_{DEEP}$®** electromagnetic data.
A lag check was completed over a known conductive feature near Mandurah, Western Australia. The results showed that the lag for the electromagnetic data was 16 samples (4 seconds).

4.2.2 Magnetometer Lag Test

The lag of the magnetics can be calculated by flying the aircraft in opposite directions over a sharp magnetic anomaly with the navigation system and magnetometer operating. The position of the magnetic high is determined from the navigation system for each line direction. The numerical difference in position is the 2-way or total lag. The lag to be applied to each direction is this value divided by two. Varying lag due to varying ground speed will be compensated for in the processing. However, for this survey the lag was calculated using grids of the magnetics data from the survey. The results showed that there was a lag of 2.25 seconds.

5. GROUND DATA ACQUISITION EQUIPMENT

5.1 Magnetic Base Station

Two CF1 magnetometer's were used to measure the daily variations of the Earth's magnetic field. The base stations were established in an area of low gradient, away from cultural influences. The base stations were run continuously throughout the survey flying period with a sampling interval of 1 second at a sensitivity of 0.1 nT. The magnetometer base stations were set up north of the base airstrip approximately 50 m apart..

5.2 GPS Base Station

A GPS base logging station integrated with the CF1 unit was used throughout the survey, setup at the base airstrips as described above.

The GPS base station position was calculated by logging data continuously at the base position over a period of approximately 24 hours. Data were then averaged to obtain the position of the base station using GrafNav software.

The calculated GPS base position at Jigalong Airstrip was (in GDA94):

Lat: -19° 42' 27" S
Long: 135° 49' 08" E
Height: 76 m. (ellipsoidal height). Sensor approximately 2m above ground surface.

6. PRODUCTS AND PROCESSING

Raw **GEOTEM$_{DEEP}$**® data collected on the aircraft GEODAS is read onto a Pentium IV laptop computer where proprietary Fugro software is then used to further process the data.

Processed data is displayed as profiles and plans in the field. Displays are produced of flight path plots, magnetic and EM channel amplitudes. The field processor / geophysicist uses these displays and other QC procedures to analyse the quality of the data collected, and decide on any reflights.

Field Processing System

Hardware: Laptop PC operating on a Windows XP platform
HP Laser Printer

Software: Fugro Airborne Surveys developed GMAPS **GEOTEM$_{DEEP}$**® processing software
OASIS Montaj geophysical processing software
GRAFNAV GPS processing software

Office Processing System

Hardware: PC network and peripherals operating on a Windows XP platform
Ricoh DVD+R/RW CD/DVD burner
HP 1055 Design-jet Plotters

Software: Fugro Airborne Surveys developed ATLAS **GEOTEM$_{DEEP}$**® processing software
OASIS Montaj geophysical processing software

6.1 Electromagnetics

6.1.1 Levelling

Since the **GEOTEM$_{DEEP}$**® receiver constantly normalises and calibrates during data acquisition there is normally minimal levelling of data required at the post-survey processing stage. However, some low amplitude noise and microlevelling is generally applied to adjust small line to line level busts and improve the cosmetic appearance of the gridded data.

6.1.2 Synchronisation Lag

All **GEOTEM$_{DEEP}$**® and auxiliary geophysical data have been synchronised with navigation data so that there is no "peak position" offset between the responses obtained from lines flown in opposite directions over a narrow vertical conductor (see also section 4.2.1)

6.1.3 Noise Reduction

Noise reduction in the digital data is accomplished by identification of the noise type (atmospheric, system or cultural), analysis of the spectral content of the entire signal (geological + noise) and selective filtering.

6.1.3.1 Atmospheric Noise

The first stage of processing is atmospheric (spheric) noise removal which is achieved by using a method based loosely on cross correlation and non linear filtering, since most spheric events are single reading (impulse response) features which cannot be properly removed by linear filtering.

6.1.3.2 Cultural noise

Cultural noise (which includes sources such as 50 Hz powerlines, electric fences, cathodic protected metal structures) is measured by the 50 Hz monitor. Normally cultural noise is not removed during processing.

6.1.3.3 System noise

System noise is removed by filtering using strict amplitude and wavelength thresholds to correctly isolate noise from geological signal. The filter shape and amplitude thresholds are determined on a flight by flight basis from raw data plots of at least 2 flight lines flown in opposite directions at the beginning and end of the flight. This allows customised filtering for directional, diurnal and flight noise, ensuring that the minimal amount of filtering is performed so that real signal is not degraded by using a "lowest common denominator" philosophy of applying one filter (usually the maximum) for all noise conditions.

6.2 Magnetics

6.2.1 Diurnal Levelling

Base station data is edited so that all significant spikes, level shifts and null data are eliminated. The data is re-sampled and synchronised to the airborne fiducial system prior to subtraction from airborne magnetic readings. A diurnal base value was then added.

Area	Base Value
Nabarlek 1 & 2	46167 nT

6.2.2 Synchronisation Lag

A lag was applied to synchronise the magnetic data with the navigation data (see section 4.2.2).

6.2.3 IGRF Removal

The International Geomagnetic Reference Field (IGRF) 2000 model (updated for secular variation 20010.8) was removed from the levelled total field magnetics. An IGRF base value was then added to the data.

Area	Base Value
Nabarlek 1 & 2	45889 nT

6.2.4 Levelling

A Fugro proprietary micro-levelling process was applied in order to more subtly level the data. This process removes sub-gamma pulls evident only under image enhancement algorithms.

6.3 Digital Terrain Model

Where necessary, spike corrections to the raw radar altimeter data are carried out and undefined values interpolated. The data is then co-ordinated with post-processed GPS data. The aircraft's height above ground is subtracted from the aircraft's height above the WGS84 ellipsoid.

The accuracy of the elevation calculation is directly dependent on the accuracy of the two input parameters, radar altitude and GPS altitude. The radar altitude value may be erroneous in areas of heavy tree cover, where the altimeter reflects the distance to the tree canopy rather than the ground. The GPS altitude value is primarily dependent on the number of available satellites. Although post-processing of GPS data will yield X and Y accuracies in the order of 1-2 metres, the accuracy of the altitude value is usually much less, sometimes in the ±5 metre range. Further inaccuracies may be introduced during the interpolation and gridding process. Because of the inherent inaccuracies of this method, no guarantee is made or implied that the information displayed is a true representation of the height above sea level. Although this product may be of some use as a general reference,
THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.

6.4 Flight Path Recovery

A GPS receiver mounted in the survey aircraft uses 3D triangulation of satellite signals to calculate both the position of the aircraft in real time and to provide pilots with steering information. GPS data are read into the field computer and plotted on a daily basis to ensure data quality control and determine any re-flights. Positioning data are stored digitally as Latitudes and Longitudes and later converted to Universal Transverse Mercator coordinates using the appropriate datum. Raw GPS data are corrected with post differential corrections improving the accuracy of the recorded position.

The integrated aircraft track is plotted on a daily basis using the differential GPS data. Plots are analysed to ensure data quality and to determine any re-flights.

6.5 Survey Products

6.5.1 Multi-Parameter Profile Plots

Final **GEOTEM$_{DEEP}$**® data is presented as multi-parameter profiles after final processing in the Fugro Airborne Surveys office in Perth. The processed geophysical data are plotted at suitable scales from top to bottom. The x-axes of alternate sections of each plot are annotated with fiducial numbers or grid coordinates. The scales for the **GEOTEM$_{DEEP}$**® traces vary according to the channel, to allow resolution in late channels whilst keeping early channels on scale. The base level for each channel is separated by 0.5 cm with the latest channel always being plotted closest to the bottom of the page. Each plot has a title containing line number, job number, area name, transmitter frequency and average northing or easting.

6.5.2 Hardcopy Products

- Acquisition and processing report

6.5.3 Digital Products

- Located Data - EM window data and auxiliary data as ASCII and Geosoft GDB
- Acquisition and Processing Report
- Flight Path
- CDI plots for dB/dt and Bfield (X and Z channels 1-20, multiplots as PDF files)
- Gridded Data – ERMapper grids of EM channels and auxillary data (TMI, TMI1VD, DEM, 16 X and Z channels for both dB/dt and Bfield data)

- Waveform files calculated from high alt cal lines pre and post flight.

APPENDIX I – Weekly Acquisition Reports

System: Geotem
Aircraft: VH-TEM

100.0

Total Job kms: 1927.000 Kms

200.0

Plan Kms Remain: -0.100 Kms
% Complete: 100.005 %

Job Number: 2160
Contract Number: CG6396
Job Name: Nabarlek, NT
Area Names: Area 1 & 2
Client: Uranium Exploration Australia Limited

Date	Flt	Pilot initials	On board Oper initials	Production inc. Reflights Exc. Scrubs	FAS Scrub	Time Start	Time End	Engine Hours on M/R	Hours to Periodic Inspectio	Job Hrs to Date	Prod. to Date	FAS Scrubs to Date	Stdby Days	Activity Contribution	Activity	COMMENTS Weather, Data delivery Aircraft movement, etc
11-October-2010	1	PH, MC	BR	554.900		6:29:00	10:50:00	4.4						1.00	P	
Julian Day 284																
Monday																
									91.6	8.5	554.900					
Date 12-Oct	2	PH, MC	BR	644.000		6:12:00	10:48:00	4.6						0.50	P	
Julian Day 285	3	PH, MC	BR	196.500		11:44:00	14:01:00	2.3						0.50	P	
Tuesday																
									84.7	15.3	1395.400					
Date 13-Oct	4	PH, MC	BR		480.200	5:58:00	10:20:00	4.4						0.50	P & S	Bird problems
Julian Day 286														0.50	E	Bird suspension failed. Replaced bird with
Wednesday																
									80.3	19.7	1395.400	480.200				
Date 14-Oct	5	PH, MC	BR	531.700		5:56:00	10:38:00	4.7						0.50	P & R	production with spare bird
Julian Day 287		PH, TD				12:05:00	12:55:00	0.8						0.50	TF	TD check flight.
Thursday															Comment	TD arrives.
									74.8	25.2	1927.100	480.200				
Date 15-Oct														1.00	SETUP	Job Packup
Julian Day 288															Comment	PH departs
Friday																
									74.8	25.2	1927.100	480.200				
Date 16-Oct						8:00:00	14:00:00	6.0						1.00	MO	demobe back to perth
Julian Day 289																
Saturday																
									68.8	31.2	1927.100	480.200				
Date 17-Oct						8:00:00	11:30:00	3.5						1.00	MO	demobe back to perth
Julian Day 290																
Sunday																
									65.3	34.7	1927.100	480.200				
	Totals This Week: ►			**1927.100**	**480.200**		Week Hours:►	**30.6**	▲: A/C Hrs to Next Service					**7.00**		

APPENDIX II – Final Located Data Formats

FINAL DATA HEADERS

NABARLEK AREA 1

```
COMM JOB NUMBER:                                                    2160
COMM AREA NUMBER:                                                      1
COMM SURVEY COMPMANY:                        Fugro Airborne Surveys Pty Ltd
COMM CLIENT:                               Uranium Exploration Australia Ltd
COMM SURVEY TYPE:                                    25Hz GEOTEM Survey
COMM AREA NAME:                                                  Nabarlek
COMM STATE:                                                            NT
COMM COUNTRY:                                                    Australia
COMM SURVEY FLOWN:                                          October, 2010
COMM LOCATED DATA CREATED:                                  November, 2010
COMM
COMM DATUM:                                                         GDA94
COMM PROJECTION:                                                      MGA
COMM ZONE:                                                             53
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                         200 m
COMM TRAVERSE LINE DIRECTION:                                      90 deg
COMM TIE LINE SPACING:                                             1920 m
COMM TIE LINE DIRECTION:                                           180 deg
COMM NOMINAL TERRAIN CLEARANCE:                                     120 m
COMM FINAL LINE KILOMETRES:                                       531.7 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                                  1001 - 1057
COMM TIE LINE NUMBERS:                                       1701 - 1705
COMM
COMM AREA BOUNDARY (WGS84, UTM53S)
COMM  EASTING NORTHING
COMM
COMM  304206  8645307
COMM  304336  8645308
COMM  304324  8647151
COMM  315205  8647221
COMM  315159  8654596
COMM  311531  8654573
COMM  311508  8658103
COMM  322263  8658170
COMM  327705  8658202
COMM  327737  8652671
COMM  328039  8652673
COMM  329551  8652681
COMM  334992  8652712
COMM  335012  8649025
COMM  327759  8648984
COMM  327780  8645296
COMM  304207  8645149
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                              CASA C212 Turbo Prop, VH-TEM
COMM
```

```
COMM MAGNETOMETER:                                  Scintrex Cs-2 Cesium Vapour
COMM INSTALLATION:                                                stinger mount
COMM RESOLUTION:                                                       0.001 nT
COMM RECORDING INTERVAL:                                                  1.0 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                        25Hz GEOTEM
COMM INSTALLATION:                 Transmitter loop mounted on the aircraft
COMM                                        Receiver coils in a towed bird
COMM COIL ORIENTATION:                                                  X,Y,Z
COMM RECORDING INTERVAL:                                               0.25 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER:                           136 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER:                             38 m
COMM
COMM RADAR ALTIMETER:                                              Sperry RT-220
COMM RECORDING INTERVAL:                                                  1 s
COMM
COMM NAVIGATION:                                    real-time differential GPS
COMM RECORDING INTERVAL:                                                  1.0 s
COMM
COMM ACQUISITION SYSTEM:                                                GEODAS
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL CORRECTION APPLIED                           base value 46167 nT
COMM PARALLAX CORRECTION APPLIED                                 2.25 seconds
COMM IGRF CORRECTION APPLIED                              base value 45889 nT
COMM IGRF MODEL 2010 EXTRAPOLATED TO                                  2010.8
COMM DATA HAVE BEEN MICROLEVELLED
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                                4.0 s
COMM Y-COMPONENT EM DATA                                                4.0 s
COMM Z-COMPONENT EM DATA                                                4.0 s
COMM DATA CORRECTED FOR COIL MOVEMENT
COMM DATA HAVE BEEN MICROLEVELLED
COMM CONDUCTIVITY DEPTH INVERSION CALCULATED                      EMFlow V5.10
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA                0 seconds
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA                  0 seconds
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM
COMM ------------------------------------------------------------------------
COMM DISCLAIMER
COMM ------------------------------------------------------------------------
COMM It is Fugro Airborne Survey's understanding that the data provided to
COMM the client is to be used for the purpose agreed between the parties.
COMM That purpose was a significant factor in determining the scope and
COMM level of the Services being offered to the Client. Should the purpose
COMM for which the data is used change, the data may no longer be valid or
COMM appropriate and any further use of, or reliance upon, the data in
COMM those circumstances by the Client without Fugro Airborne Survey's
COMM review and advice shall be at the Client's own or sole risk.
COMM
COMM The Services were performed by Fugro Airborne Survey exclusively for
COMM the purposes of the Client. Should the data be made available in whole
COMM or part to any third party, and such party relies thereon, that party
COMM does so wholly at its own and sole risk and Fugro Airborne Survey
COMM disclaims any liability to such party.
COMM
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```
COMM Where the Services have involved Fugro Airborne Survey's use of any
COMM information provided by the Client or third parties, upon which
COMM Fugro Airborne Survey was reasonably entitled to rely, then the
COMM Services are limited by the accuracy of such information. Fugro
COMM Airborne Survey is not liable for any inaccuracies (including any
COMM incompleteness) in the said information, save as otherwise provided
COMM in the terms of the contract between the Client and Fugro Airborne
COMM Survey.
COMM
COMM With regard to DIGITAL TERRAIN DATA, the accuracy of the elevation
COMM calculation is directly dependent on the accuracy of the two input
COMM parameters laser altitude and GPS altitude. The laser and radar
COMM altitude value may be erroneous in areas of heavy tree cover, where
COMM the altimeters reflect the distance to the tree canopy rather than the
COMM ground. The GPS altitude value is primarily dependent on the number of
COMM available satellites. Although post-processing of GPS data will yield
COMM X and Y accuracies in the order of 1-2 metres, the accuracy of the
COMM altitude value is usually much less, sometimes in the ±5 metre range.
COMM Further inaccuracies may be introduced during the interpolation and
COMM gridding process.
COMM Because of the inherent inaccuracies of this method, no guarantee is
COMM made or implied that the information displayed is a true
COMM representation of the height above sea level.  Although this product
COMM may be of some use as a general reference,
COMM THIS PRODUCT MUST NOT BE USED FOR NAVIGATION PURPOSES.
COMM ------------------------------------------------------------------------
COMM
COMM ELECTROMAGNETIC SYSTEM
COMM
COMM GEOTEMdeep IS A TIME-DOMAIN HALF SINE-WAVE SYSTEM,
COMM TRANSMITTING AT A BASE FREQUENCY OF 25Hz,
COMM WITH 3 ORTHOGONAL-AXIS RECEIVER COILS IN A TOWED BIRD.
COMM FINAL EM OUTPUT IS RECORDED 4 TIMES PER SECOND.
COMM THE TIMES (IN MILLISECONDS) FOR THE 20 WINDOWS ARE:
COMM
COMM WINDOW      START        END        CENTRE
COMM 1           0.156        0.625      0.391  \
COMM 2           0.625        1.719      1.172   | "on-time"
COMM 3           1.719        2.969      2.344   |  windows
COMM 4           2.969        4.531      3.750  /
COMM 5           4.531        4.688      4.609  \
COMM 6           4.688        4.844      4.766   |
COMM 7           4.844        5.000      4.922   |
COMM 8           5.000        5.313      5.156   |
COMM 9           5.313        5.625      5.469   |
COMM 10          5.625        6.094      5.859   |
COMM 11          6.094        6.563      6.328   |
COMM 12          6.563        7.188      6.875   | "off-time"
COMM 13          7.188        7.969      7.578   |  windows
COMM 14          7.969        8.906      8.438   |
COMM 15          8.906       10.000      9.453   |
COMM 16         10.000       11.250     10.625   |
COMM 17         11.250       12.813     12.031   |
COMM 18         12.813       14.688     13.750   |
COMM 19         14.688       17.188     15.938   |
COMM 20         17.188       20.000     18.594  /
COMM
COMM PULSE WIDTH 4.108 ms
COMM
COMM WAVEFORM FILE HAS BEEN PROVIDED WITH DATA (T0051410003.out)
COMM
COMM LOCATED DATA FORMAT
COMM
COMM  Output field format : DOS  - Flat ascii
```

```
COMM  Number of fields    : 360
COMM
COMM Field  Channel      Description            Units     Undefined  Format
COMM -----  -------      -----------            -----     ---------  ------
COMM   0  LINE         Line                                -99999999  i10
COMM   1  FLIGHT       Flight                                   -99  i4
COMM   2  FID          Fiducial                            -999999.9
f8.1
COMM   3  DATE         Date                                 -9999999  i9
COMM   4  LATITUDE     Latitude  GDA94              (deg)  -99.9999999
f12.7
COMM   5  LONGITUDE    Longitude GDA94              (deg) -999.9999999
f13.7
COMM   6  EASTING      Easting   MGA53S               (m)    -99999.99
f10.2
COMM   7  NORTHING     Northing  MGA53S               (m)   -999999.99
f11.2
COMM   8  RAlt         Radar altimeter                (m)   -999999.99
f8.2
COMM   9  GPS_Ht       Aircraft Height                (m)   -999999.99
f8.2
COMM  10  DTM          DTM                            (m)      -999.99
f8.2
COMM  11  Tx_Pitch     Tx pitch                     (deg)      -999.99
f8.2
COMM  12  Tx_Roll      Tx roll                      (deg)      -999.99
f8.2
COMM  13  MAG          Compensated TMI               (nT)   -99999.999
f11.3
COMM  14  MAG_1VD      Levelled TMI 1VD             (nT/m)   -99999.999
f11.3
COMM  15  X_50Hz       X Powerline Monitor            (mV)      -999.99
f8.2
COMM  16  Z_50Hz       Z Powerline Monitor            (mV)      -999.99
f8.2
COMM  17  TxPeak       Tx peak current              (Amp)      -999.99
f8.2
COMM  18  BposX        Bird Position X                (m)      -999.99
f8.2
COMM  19  BposY        Bird Position Y                (m)      -999.99
f8.2
COMM  20  BposZ        Bird Position Z                (m)      -999.99
f8.2
COMM  21  EM_dbdt_X_raw   EM X dB/dt Raw Windows 01-20    (nT/s)     -999.999
f9.3
COMM  41  EM_dbdt_Y_raw   EM Y dB/dt Raw Windows 01-20    (nT/s)     -999.999
f9.3
COMM  61  EM_dbdt_Z_raw   EM Z dB/dt Raw Windows 01-20    (nT/s)     -999.999
f9.3
COMM  81  EM_bfield_X_raw EM X B-field Raw Windows 01-20  (pT)       -999.999
f9.3
COMM 101  EM_bfield_Y_raw EM Y B-field Raw Windows 01-20  (pT)       -999.999
f9.3
COMM 121  EM_bfield_Z_raw EM Z B-field Raw Windows 01-20  (pT)       -999.999
f9.3
COMM 141  EM_dbdt_X       EM X dB/dt Final Windows 01-20  (nT/s)     -999.999
f9.3
COMM 161  EM_dbdt_Y       EM Y dB/dt Final Windows 01-20  (nT/s)     -999.999
f9.3
COMM 181  EM_dbdt_Z       EM Z dB/dt Final Windows 01-20  (nT/s)     -999.999
f9.3
COMM 201  EM_bfield_X     EM X B-field Final Windows 01-20(pT)       -999.999
f9.3
COMM 221  EM_bfield_Y     EM Y B-field Final Windows 01-20(pT)       -999.999
f9.3
COMM 241  EM_bfield_Z     EM Z B-field Final Windows 01-20(pT)       -999.999
f9.3
COMM 261  CND             Conductivity Windows 01-100     (mS/m)    -9999.999
f10.3
```

NABARLEK AREA 2

```
COMM JOB NUMBER:                                                2160
COMM AREA NUMBER:                                                  2
COMM SURVEY COMPMANY:                      Fugro Airborne Surveys Pty Ltd
COMM CLIENT:                             Uranium Exploration Australia Ltd
COMM SURVEY TYPE:                                  25Hz GEOTEM Survey
COMM AREA NAME:                                               Nabarlek
COMM STATE:                                                         NT
COMM COUNTRY:                                                 Australia
COMM SURVEY FLOWN:                                      October, 2010
COMM LOCATED DATA CREATED:                              November, 2010
COMM
COMM DATUM:                                                      GDA94
COMM PROJECTION:                                                   MGA
COMM ZONE:                                                          53
COMM
COMM SURVEY SPECIFICATIONS
COMM
COMM TRAVERSE LINE SPACING:                                      200 m
COMM TRAVERSE LINE DIRECTION:                                   90 deg
COMM TIE LINE SPACING:                                          2200 m
COMM TIE LINE DIRECTION:                                       180 deg
COMM NOMINAL TERRAIN CLEARANCE:                                  120 m
COMM FINAL LINE KILOMETRES:                                  1395.4 km
COMM
COMM LINE NUMBERING
COMM
COMM TRAVERSE LINE NUMBERS:                                2001 - 2066
COMM TIE LINE NUMBERS:                                     2701 - 2717
COMM
COMM AREA BOUNDARY (WGS84, UTM53S)
COMM  EASTING NORTHING
COMM
COMM  307882  8637797
COMM  307894  8635954
COMM  307906  8634110
COMM  307918  8632266
COMM  306578  8632257
COMM  306106  8632254
COMM  306118  8630410
COMM  306130  8628566
COMM  304318  8628554
COMM  302506  8628542
COMM  300693  8628529
COMM  298881  8628517
COMM  298868  8630361
COMM  298855  8632205
COMM  298842  8634049
COMM  298830  8635892
COMM  298817  8637736
COMM  298804  8639580
COMM  300617  8639593
COMM  302359  8639605
COMM  302430  8639605
COMM  302433  8639243
COMM  302443  8637761
COMM  304256  8637773
COMM  306069  8637785
COMM
COMM
COMM SURVEY EQUIPMENT
COMM
COMM AIRCRAFT:                              CASA C212 Turbo Prop, VH-TEM
```

```
COMM
COMM MAGNETOMETER:                                  Scintrex Cs-2 Cesium Vapour
COMM INSTALLATION:                                                stinger mount
COMM RESOLUTION:                                                       0.001 nT
COMM RECORDING INTERVAL:                                                 1.0 s
COMM
COMM ELECTROMAGNETIC SYSTEM:                                        25Hz GEOTEM
COMM INSTALLATION:                  Transmitter loop mounted on the aircraft
COMM                                      Receiver coils in a towed bird
COMM COIL ORIENTATION:                                                   X,Y,Z
COMM RECORDING INTERVAL:                                               0.25 s
COMM SYSTEM GEOMETRY:
COMM RECEIVER DISTANCE BEHIND THE TRANSMITTER:                           136 m
COMM RECEIVER DISTANCE BELOW THE TRANSMITTER:                             38 m
COMM
COMM RADAR ALTIMETER:                                              Sperry RT-220
COMM RECORDING INTERVAL:                                                 1 s
COMM
COMM NAVIGATION:                                    real-time differential GPS
COMM RECORDING INTERVAL:                                                 1.0 s
COMM
COMM ACQUISITION SYSTEM:                                                 GEODAS
COMM
COMM DATA PROCESSING
COMM
COMM MAGNETIC DATA
COMM DIURNAL CORRECTION APPLIED                              base value 46167 nT
COMM PARALLAX CORRECTION APPLIED                                    2.25 seconds
COMM IGRF CORRECTION APPLIED                                 base value 45889 nT
COMM IGRF MODEL 2010 EXTRAPOLATED TO                                     2010.8
COMM DATA HAVE BEEN MICROLEVELLED
COMM
COMM ELECTROMAGNETIC DATA
COMM SYSTEM PARALLAX REMOVED, AS FOLLOWS
COMM X-COMPONENT EM DATA                                                 4.0 s
COMM Y-COMPONENT EM DATA                                                 4.0 s
COMM Z-COMPONENT EM DATA                                                 4.0 s
COMM DATA CORRECTED FOR COIL MOVEMENT
COMM DATA HAVE BEEN MICROLEVELLED
COMM CONDUCTIVITY DEPTH INVERSION CALCULATED                        EMFlow V5.10
COMM
COMM DIGITAL TERRAIN DATA
COMM PARALLAX CORRECTION APPLIED TO RADAR ALIMETER DATA                 0 seconds
COMM PARALLAX CORRECTION APPLIED TO GPS ALIMETER DATA                   0 seconds
COMM DTM CALCULATED [DTM = GPS ALTITUDE - RADAR ALTITUDE]
COMM DATA HAVE BEEN MICROLEVELLED
COMM
COMM ------------------------------------------------------------------------
COMM DISCLAIMER
COMM ------------------------------------------------------------------------
COMM It is Fugro Airborne Survey's understanding that the data provided to
COMM the client is to be used for the purpose agreed between the parties.
COMM That purpose was a significant factor in determining the scope and
COMM level of the Services being offered to the Client. Should the purpose
COMM for which the data is used change, the data may no longer be valid or
COMM appropriate and any further use of, or reliance upon, the data in
COMM those circumstances by the Client without Fugro Airborne Survey's
COMM review and advice shall be at the Client's own or sole risk.
COMM
COMM The Services were performed by Fugro Airborne Survey exclusively for
COMM the purposes of the Client. Should the data be made available in whole
COMM or part to any third party, and such party relies thereon, that party
COMM does so wholly at its own and sole risk and Fugro Airborne Survey
COMM disclaims any liability to such party.
```

```
COMM
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COMM the altimeters reflect the distance to the tree canopy rather than the
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COMM 4           2.969        4.531      3.750  /
COMM 5           4.531        4.688      4.609  \
COMM 6           4.688        4.844      4.766   |
COMM 7           4.844        5.000      4.922   |
COMM 8           5.000        5.313      5.156   |
COMM 9           5.313        5.625      5.469   |
COMM 10          5.625        6.094      5.859   |
COMM 11          6.094        6.563      6.328   |
COMM 12          6.563        7.188      6.875   | "off-time"
COMM 13          7.188        7.969      7.578   |  windows
COMM 14          7.969        8.906      8.438   |
COMM 15          8.906       10.000      9.453   |
COMM 16         10.000       11.250     10.625   |
COMM 17         11.250       12.813     12.031   |
COMM 18         12.813       14.688     13.750   |
COMM 19         14.688       17.188     15.938   |
COMM 20         17.188       20.000     18.594  /
COMM
COMM PULSE WIDTH 4.108 ms
COMM
COMM WAVEFORM FILE HAS BEEN PROVIDED WITH DATA (T0031210003.out)
COMM
COMM
COMM LOCATED DATA FORMAT
```

```
COMM
COMM  Output field format : DOS  - Flat ascii
COMM  Number of fields    : 360
COMM
COMM Field  Channel       Description                      Units    Undefined
Format
COMM -----  -------       -----------                      -----    --------- ----
--
COMM   0  LINE            Line                                       -99999999 i10
COMM   1  FLIGHT          Flight                                           -99 i4
COMM   2  FID             Fiducial                                    -999999.9
f8.1
COMM   3  DATE            Date                                         -9999999 i9
COMM   4  LATITUDE        Latitude  GDA94                  (deg)  -99.9999999
f12.
COMM   5  LONGITUDE       Longitude GDA94                  (deg) -999.9999999
f13.7
COMM   6  EASTING         Easting   MGA53S                   (m)    -99999.99
f10.2
COMM   7  NORTHING        Northing  MGA53S                   (m)   -999999.99
f11.2
COMM   8  RAlt            Radar altimeter                    (m)   -999999.99
f8.2
COMM   9  GPS_Ht          Aircraft Height                    (m)   -999999.99
f8.2
COMM  10  DTM             DTM                                (m)      -999.99
f8.2
COMM  11  Tx_Pitch        Tx pitch                         (deg)      -999.99
f8.2
COMM  12  Tx_Roll         Tx roll                          (deg)      -999.99
f8.2
COMM  13  MAG             Compensated TMI                   (nT)   -99999.999
f11.3
COMM  14  MAG_1VD         Levelled TMI 1VD                (nT/m)   -99999.999
f11.3
COMM  15  X_50Hz          X Powerline Monitor               (mV)      -999.99
f8.2
COMM  16  Z_50Hz          Z Powerline Monitor               (mV)      -999.99 f8.
COMM  17  TxPeak          Tx peak current                  (Amp)      -999.99
f8.2
COMM  18  BposX           Bird Position X                    (m)      -999.99
f8.2
COMM  19  BposY           Bird Position Y                    (m)      -999.99
f8.2
COMM  20  BposZ           Bird Position Z                    (m)      -999.99
f8.2
COMM  21  EM_dbdt_X_raw   EM X dB/dt Raw Windows 01-20     (nT/s)     -999.999
f9.3
COMM  41  EM_dbdt_Y_raw   EM Y dB/dt Raw Windows 01-20     (nT/s)     -999.999
f9.3
COMM  61  EM_dbdt_Z_raw   EM Z dB/dt Raw Windows 01-20     (nT/s)     -999.999
f9.3
COMM  81  EM_bfield_X_raw EM X B-field Raw Windows 01-20   (pT)       -999.999
f9.3
COMM 101  EM_bfield_Y_raw EM Y B-field Raw Windows 01-20   (pT)       -999.999
f9.3
COMM 121  EM_bfield_Z_raw EM Z B-field Raw Windows 01-20   (pT)       -999.999
f9.3
COMM 141  EM_dbdt_X       EM X dB/dt Final Windows 01-20   (nT/s)     -999.999
f9.3
COMM 161  EM_dbdt_Y       EM Y dB/dt Final Windows 01-20   (nT/s)     -999.999
f9.3
COMM 181  EM_dbdt_Z       EM Z dB/dt Final Windows 01-20   (nT/s)     -999.999
f9.3
COMM 201  EM_bfield_X     EM X B-field Final Windows 01-20 (pT)       -999.999
f9.3
COMM 221  EM_bfield_Y     EM Y B-field Final Windows 01-20 (pT)       -999.999
f9.3
COMM 241  EM_bfield_Z     EM Z B-field Final Windows 01-20 (pT)       -999.999
f9.3
COMM 261  CND             Conductivity Windows 01-100     (mS/m)   -9999.999
f10.33
```

APPENDIX III – Flight Line Summary

NABARLEK AREA 1

LINE #	Flt	START X	START Y	END X	END Y	DIST
1001	5	298466	8639690	303466	8639690	5.0
1002	5	298427	8639490	303427	8639490	5.0
1003	5	298426	8639290	303426	8639290	5.0
1004	5	298427	8639090	303427	8639090	5.0
1005	5	298427	8638890	303427	8638890	5.0
1006	5	298447	8638690	303447	8638690	5.0
1007	5	298427	8638490	303427	8638490	5.0
1008	5	298466	8638290	303466	8638290	5.0
1009	5	298454	8638090	303480	8638090	5.0
1010	5	298456	8637890	308241	8637890	9.8
1011	5	298457	8637691	308243	8637690	9.8
1012	5	298459	8637490	308244	8637490	9.8
1013	5	298460	8637291	308245	8637290	9.8
1014	5	298462	8637090	308247	8637090	9.8
1015	5	298463	8636891	308248	8636890	9.8
1016	5	298464	8636690	308249	8636690	9.8
1017	5	298466	8636490	308251	8636490	9.8
1018	5	298467	8636290	308252	8636290	9.8
1019	5	298469	8636090	308253	8636090	9.8
1020	5	298470	8635890	308254	8635890	9.8
1021	5	298471	8635690	308256	8635690	9.8
1022	5	298473	8635490	308257	8635490	9.8
1023	5	298474	8635290	308258	8635290	9.8
1024	5	298475	8635089	308260	8635089	9.8
1025	5	298477	8634889	308261	8634889	9.8
1026	5	298478	8634690	308262	8634690	9.8
1027	5	298479	8634490	308264	8634490	9.8
1028	5	298480	8634290	308265	8634290	9.8
1029	5	298482	8634090	308266	8634090	9.8
1030	5	298483	8633889	308267	8633890	9.8
1031	5	298485	8633690	308269	8633690	9.8
1032	5	298486	8633489	308270	8633490	9.8
1033	5	298487	8633290	308271	8633290	9.8
1034	5	298489	8633090	308273	8633090	9.8
1035	5	298490	8632889	308274	8632890	9.8
1036	5	298492	8632690	308275	8632690	9.8
1037	5	298493	8632490	308277	8632489	9.8
1038	5	298494	8632289	308278	8632290	9.8
1039	5	298496	8632090	306459	8632090	8.0
1040	5	298497	8631889	306468	8631890	8.0
1041	5	298499	8631689	306470	8631690	8.0
1042	5	298500	8631490	306471	8631490	8.0
1043	5	298501	8631289	306472	8631290	8.0
1044	5	298503	8631090	306474	8631090	8.0
1045	5	298504	8630890	306475	8630890	8.0
1046	5	298506	8630689	306476	8630690	8.0
1047	5	298507	8630490	306478	8630490	8.0

1048	5	298509	8630291	306479	8630289	8.0
1049	5	298510	8630090	306480	8630089	8.0
1050	5	298511	8629890	306481	8629890	8.0
1051	5	298513	8629690	306483	8629690	8.0
1052	5	298514	8629491	306484	8629490	8.0
1053	5	298516	8629290	306485	8629290	8.0
1054	5	298517	8629090	306487	8629090	8.0
1055	5	298518	8628890	306488	8628890	8.0
1056	5	298520	8628691	306489	8628690	8.0
1057	5	298521	8628490	306491	8628490	8.0
1901	5	298916	8628157	298916	8639941	11.8
1902	5	301116	8628172	301116	8639956	11.8
1903	5	303316	8628187	303316	8639951	11.8
1904	5	305516	8628202	305516	8638141	9.9
1905	5	307716	8631904	307716	8638156	6.3

NABARLEK AREA 2

LINE #	Flt	START X	START Y	END X	END Y	DIST
2001	3	311148	8658151	328065	8658256	16.9
2002	3	311149	8657951	328066	8658056	16.9
2003	2	311150	8657751	328067	8657856	16.9
2004	2	311152	8657551	328068	8657656	16.9
2005	2	311153	8657351	328069	8657456	16.9
2006	2	311154	8657151	328070	8657256	16.9
2007	2	311155	8656951	328072	8657056	16.9
2008	2	311157	8656751	328073	8656856	16.9
2009	2	311158	8656551	328074	8656656	16.9
2010	2	311159	8656350	328075	8656456	16.9
2011	2	311161	8656151	328076	8656256	16.9
2012	2	311162	8655950	328077	8656056	16.9
2013	2	311163	8655751	328079	8655856	16.9
2014	2	311165	8655551	328080	8655656	16.9
2015	2	311166	8655351	328081	8655456	16.9
2016	2	311167	8655151	328082	8655256	16.9
2017	2	311169	8654951	328083	8655056	16.9
2018	2	311170	8654751	328084	8654856	16.9
2019	2	311171	8654551	328086	8654656	16.9
2020	2	311172	8654351	328087	8654456	16.9
2021	2	314802	8654174	328088	8654256	13.3
2022	2	314803	8653973	328089	8654056	13.3
2023	2	314804	8653774	328090	8653856	13.3
2024	2	314805	8653574	328091	8653656	13.3
2025	2	314807	8653374	328092	8653456	13.3
2026	2	314808	8653174	328094	8653256	13.3
2027	2	314809	8652974	328095	8653056	13.3
2028	2	314810	8652774	335351	8652901	20.5
2029	2	314812	8652573	335352	8652701	20.5
2030	2	314813	8652374	335353	8652501	20.5
2031	2	314814	8652174	335354	8652301	20.5
2032	2	314815	8651974	335355	8652101	20.5
2033	2	314817	8651774	335356	8651901	20.5
2034	2	314818	8651574	335358	8651701	20.5

2035	2	314819	8651374	335359	8651502	20.5
2036	2	314820	8651173	335360	8651302	20.5
2037	2	314822	8650974	335361	8651102	20.5
2038	2	314823	8650774	335362	8650902	20.5
2039	2	314824	8650574	335363	8650702	20.5
2040	1	314825	8650374	335364	8650502	20.5
2041	1	314827	8650174	335365	8650302	20.5
2042	1	314828	8649974	335366	8650102	20.5
2043	1	314829	8649773	335367	8649902	20.5
2044	1	314830	8649574	335368	8649702	20.5
2045	1	314832	8649374	335369	8649502	20.5
2046	1	314833	8649174	335371	8649302	20.5
2047	1	314834	8648974	335372	8649102	20.5
2048	1	314835	8648774	335373	8648901	20.5
2049	1	314837	8648574	328102	8648656	13.3
2050	1	314838	8648373	328122	8648456	13.3
2051	1	314839	8648174	328123	8648256	13.3
2052	1	314840	8647974	328124	8648057	13.3
2053	1	314842	8647774	328125	8647857	13.3
2054	1	314836	8647573	328127	8647656	13.3
2055	1	303963	8647305	328128	8647456	24.2
2056	1	303964	8647105	328129	8647256	24.2
2057	1	303966	8646906	328130	8647057	24.2
2058	1	303967	8646705	328131	8646857	24.2
2059	1	303968	8646505	328132	8646657	24.2
2060	1	303970	8646306	328133	8646456	24.2
2061	1	303971	8646105	328135	8646256	24.2
2062	1	303972	8645905	328136	8646056	24.2
2063	1	303973	8645706	328137	8645857	24.2
2064	1	303845	8645505	328138	8645657	24.3
2065	1	303846	8645305	328139	8645457	24.3
2066	1	303847	8645104	328140	8645256	24.3
2901	3	304356	8643650	304325	8648650	5.0
2902	3	306276	8643663	306245	8648663	5.0
2903	3	308196	8643675	308165	8648675	5.0
2904	3	310116	8643686	310085	8648686	5.0
2905	3	312029	8644837	311944	8658465	13.6
2906	3	313949	8644849	313864	8658477	13.6
2907	3	315869	8644861	315784	8658489	13.6
2908	3	317789	8644873	317704	8658501	13.6
2909	3	319709	8644885	319624	8658513	13.6
2910	3	321629	8644897	321544	8658525	13.6
2911	3	323549	8644909	323464	8658537	13.6
2912	3	325469	8644921	325384	8658549	13.6
2913	3	327389	8644933	327304	8658560	13.6
2914	3	329288	8648336	329256	8653336	5.0
2915	3	331208	8648347	331176	8653347	5.0
2916	3	333128	8648358	333096	8653358	5.0
2917	3	335048	8648368	335016	8653368	5.0

APPENDIX IV – List of all Supplied Data and Products

Final Located Data

2160_[1-2]_final.des **-** header file describing the contents of…
2160_[1-2]_final.asc - flat ascii file containing located magnetic, EM and digital terrain data
2160_[1-2]_final.gdb - Geosoft database file containing located magnetic, EM and digital terrain data

Final Gridded Products (delivered in ERMapper format GDA94 MGA53S)

- Total Magnetic Intensity
- First Vertical Derivative TMI
- Digital Terrain Model
- EM Channels (dB/dt & B-Field, X and Z)

Final Digital Products

- Flight Path map
- Multiplots & Stacked sections

Final Acquisition and Processing Report

Delivered as hardcopy and digitally

APPENDIX 2

Hyperspectral Survey Report

AIRBORNE HYPERSPECTRAL REMOTE SENSING

HyMap SURVEY AND PROCESSING REPORT

Arnhem Land Blocks A & B
Northern Territory

CUSTOMER: Uranium Exploration Australia Limited

CONTACT:

SURVEY DATE: October 2010

REPORT DATE: 15/11/2010

WRITTEN

Dr M C Hussey

EDITED

P Cocks

ISSUED

NOVEMBER 2010

Disclaimer: No warranty is given for the accuracy or of any of the products or statements made regarding the HyMap data or derived results, however all processing was done to the best of the author's knowledge.

Executive Summary

HyVista Corporation was contracted by Uranium Exploration Australia Limited to acquire and process HyMap airborne hyperspectral scanner imagery from 2 survey blocks to the NE of Jabiru, NT. The data acquisition occurred between on between the 11th and 19th October, 2010.

This report describes the processing that has been applied to the HyMap data to produce a number of image products including overview colour composites, minimum noise fraction (MNF) colour composites, mineral maps (produced from unmixing and logical operator processing) and illite (white mica) wavelength shift images (that map Al content of illites-white micas) To produce these products the raw data has had a series of processes applied to it that converts it into reflectance imagery which is then geometrically corrected and radiometrically levelled to produce seamless mosaic images. These seamless images are used for all further processing.

Three (3) "Classes" of imagery have been produced:

1. Overview colour composites and MNF images can be used for photo-interpretation to delineate geological units and structural features. They do not provide information on the mineralogy of geological formations i.e. the same colour may map different rock types in these images.

2. Mineral maps where information is extracted by applying endmember unmixing and logical operator processing to the reflectance image mosaic. This requires several procedures that are carried out separately on the Short Wave InfraRed bands (SWIR: 2.00 microns to 2.43 microns) and the Visible Near InfraRed bands (VNIR: 0.488 microns to 1.12 microns). Processing of the SWIR bands maps the distribution of clay minerals, mica's and carbonates and the VNIR bands the iron oxides.

3. Mineral chemistry mapping where a polynomial function is applied to a specific wavelength range of the reflectance data that maps the change in minima of a spectral absorption feature that shifts in position in response to changes in the chemical composition of a specific mineral.

All mineral identification is based on analysis of the spectra and since this is a subjective procedure it requires field confirmation. Some minerals, particularly those characterised by Mg-OH / carbonate absorption (~2.30 microns) have very similar spectra.

For each mineral the output products are a greyscale, greyscale thresholded and rainbow coloured images where the tone or colour depicts the abundance of the mineral mapped (i.e. increasing abundance from dark to light or from blue to red).

For the SWIR minerals RGB colour composite image maps have been produced by assigning differing mineral abundance images to the red, green and blue image bands. Other combinations are possible.

Rule Classification Images have also been produced in which up to 5 minerals are displayed,

The output images are written ENVI, ECW, and Geotiff formats. The geo-correction applied to the data results in image maps in the UTM/WGS 84 (Zone 53 SOUTH) map projection.

The Level 1 strip data (reflectance and geocorrection) and delivery image products are supplied to the customer on external USB2 disk drives.

A brief assessment of the results based on the observed mineralogy suggests several areas of hydrothermal alteration have been detected. Whilst it is possible the pyrophyllite is of detrital origin, typically this mineral is stable in relatively high temperature and relatively acid environments, and is a good indicator to hydrothermally altered regions.

Note the intermediate products are not intended to be used by the customer they are provided for future reference by HyVista staff.

TABLE OF CONTENTS

INTRODUCTION

HyVista Corporation was contracted by Uranium Exploration Australia Limited to acquire and process HyMap airborne hyperspectral scanner imagery from 2 survey blocks to the NE of Jabiru, NT. The data acquisition occurred between on between the 11th and 19th October, 2010.

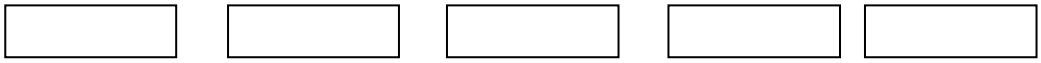


Figure 1: UXA Arnhem Land Survey Areas locations.

The HyMap is an airborne hyperspectral scanner delivering 126 bands (approx 18 nm width per band) of imagery over the 450nm to 2500nm spectral interval. The HyMap data pre-processing is carried out on a strip by strip basis, to produce radiance and apparent reflectance, and GLT files for later geometric rectification / mosaicing. The reflectance images are cross track and level corrected, (i.e. solar illumination corrected). These reflectance images are then geo-corrected to position each individual pixel in its accurate geo-location in the UTM/WGS 84 map projection. The corrected strips are then mosaiced to produce a seamless, homogeneous data (map) cube for the whole survey area, level 1C processing. This data-cube is then processed to produce the various images Level 2 and 3 products detailed below.

Figures 2a & b show an example image produced from the cross-track illumination and level corrected reflectance data for each survey block (not same scale); this is a colour composite in which bands 109, 28, 03 are displayed in red, green, and blue respectively. For colour composite images the order of band numbers, wavelengths or mineral names in the file name is always red, green and blue.

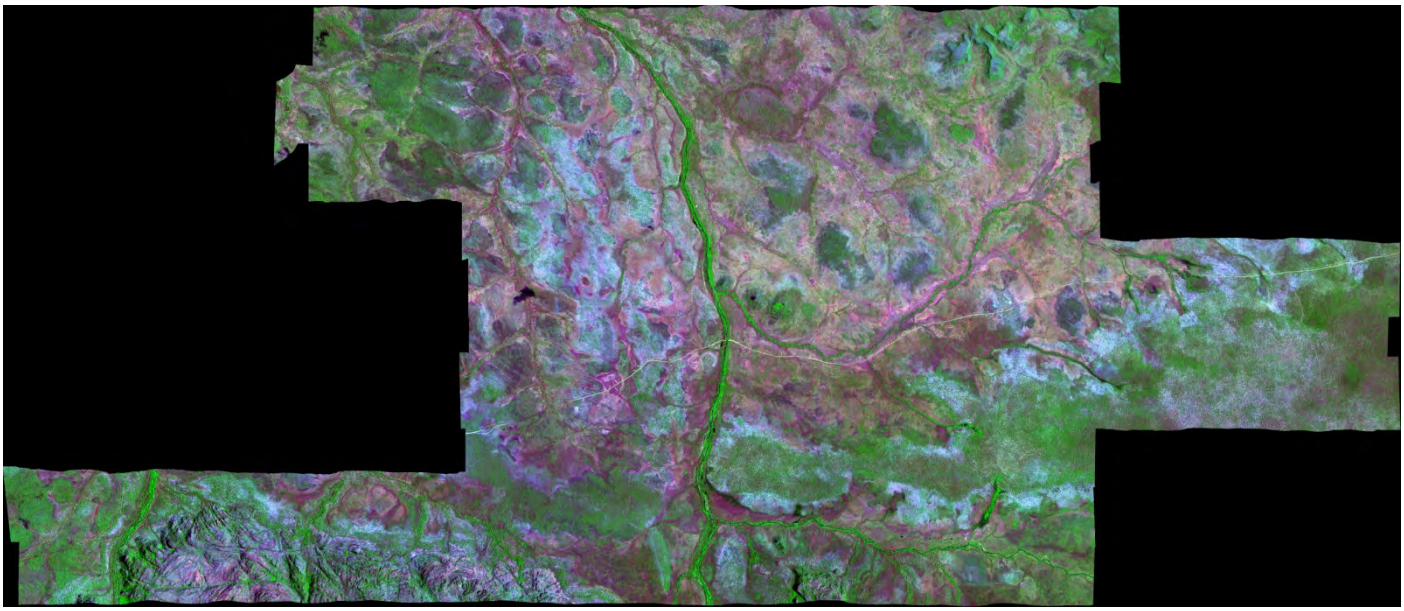


Figure 2a: Overview False Colour Composite (RGB Bands 109, 28, 3 – equivalent to Landsat 7, 4, 2 colour composite image) of block A.

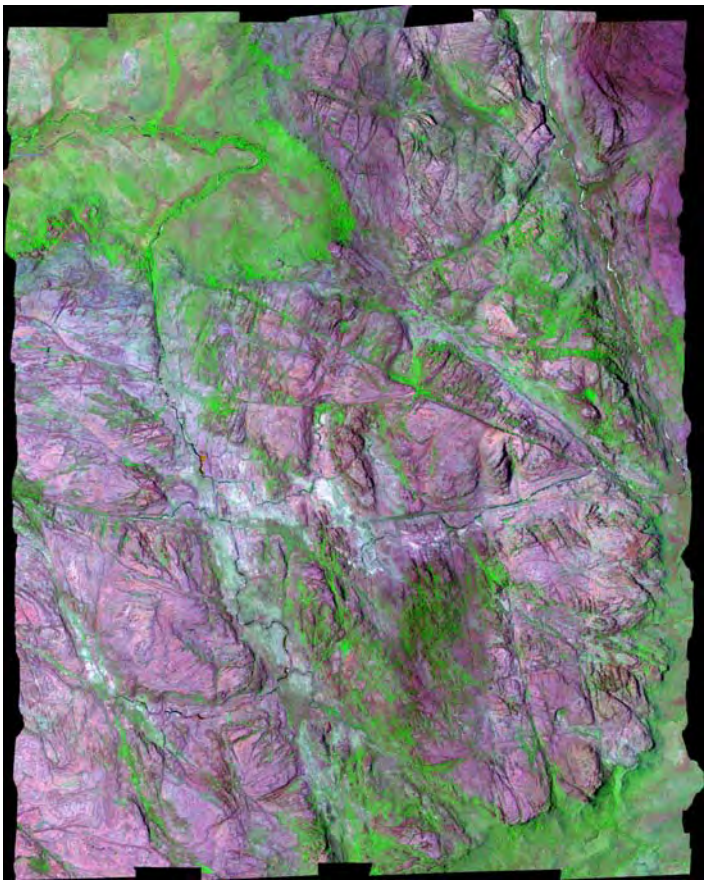


Figure 2b: Overview False Colour Composite (RGB Bands 109, 28, 3 – equivalent to Landsat 7, 4, 2 colour composite image) of block B.

This document outlines the pre-processing (Level1) and details the Level2 and Level3 processing applied to HyMap data. Further information on the sensor specification, survey planning and data pre-processing is available upon request. A summary of the flight line planning supporting this survey is provided in Appendix 2.

DATA PROCESSING

Three levels of process have been applied to the data for this project and the initial products are stored as intermediate images. These intermediate are analysed, scaled, thresholded, masked and overlain onto background images as required to produce the delivery product images:

LEVEL 1 A&B
Raw and Pre-processed data

LEVEL 1C
Cross track corrected mosaiced reflectance image (Data-Cube)

LEVEL 2
Colour composites, true and false colour
SWIR MNF Image from which a colour composite of bands 2-3-4 has been produced

LEVEL 3
Mineral Mapping from unsupervised statistical based end-member unmixing and logical operator supervised clasifications to produce:

Mineral abundance images presented as:

- Thresholded greyscale images
- Rainbow coloured threshold images
- Mineral colour composites of thresholded images
- Rule classified Images of thresholded images

Wavelength Shift for Illite (White Mica) Al-OH content presented as:

Rainbow coloured image.

MAP PRODUCTS

The delivered map products are precision geo-rectified 53 South.

LEVEL 1 / PRE-PROCESSING OF DATA

The HyMap scanner data is collected and stored on a DLT flight tape and converted to ENVI-compatible image files (16-bit integer, BIL data file with an ASCII header file) during pre-processing of the data, The HyMap stores the intensity of light reflected from the surface of the earth as digital numbers (DN). The intensity recorded is the net effect of the wavelength-dependent atmospheric absorption and scattering, solar irradiance, light scattered back from the earth surface, and background voltages from the scanner electronics. Pre-processing involves two corrections.

Dark Current Subtraction

This correction removes the "zero light" spectrum in all image pixels. The DN values for subtraction are obtained from the scanner while imaging a non-reflecting surface. It represents system voltages and electronic noise. It is additive and band-dependent.

Calibration – Radiometric, Spectral and Scaling

The scanner is calibrated using a standard light source so the response of each detector is known. Every pixel of each band has been scaled by this band constant and a multiplier has been applied so that the data is stored as a 16-bit integer.

Data Units

When the pre-processing corrections described above have been applied, the data are in radiance units of microwatts/cm^2/steradian/nm before the multiplier of 1000 is applied to convert it to a 16-bit integer.

Atmospheric Correction

Whilst the HyMap's radiance data is spectrally and radiometrically calibrated, the spectra are distorted by atmospheric absorption and scattering. The data has been processed using the HyCorr program that determines a model of a subset of atmospheric properties that are appropriate for the time (UTC), date, latitude/longitude and acquisition height (AGL) for HyMap data that has been radiance corrected. HyCorr uses radiative transfer calculations and the calibrated hyperspectral data (with artefact suppression) to remove and reduce atmospheric and solar illumination effects. The output of HyCorr is an apparent surface reflectance image from which spectra can be compared to relative reflectance library spectra, i.e. the atmospheric over-print has been removed and mineral absorption features are now recognisable HyCorr output is apparent surface reflectance. Reflectance imagery is unit-less.

Cross Track Correction and Strip Levelling

Prior to geometric correction each strip is processed to remove the effect of bi-directional reflectance that results from non uniform illumination across the image when the azimuth is to the side of the flight line. This results in the images being brighter on one side than the other. The levelling correction adjusts each data strip to the same data ranges. These corrections improve processing and ensure that the final mosaic images are seamless.

Geometric Correction

Variations in the aircraft orientation, speed and altitude during image acquisition result in spatial distortions of the images, even though the scanner is mounted in a tri-axial, gyro-stabilised platform that compensates for some of these motion effects. An IMU/GPS unit is attached to the scanner and it provides data that can be used remove these distortions which would otherwise result in positional errors of several hundred metres. Using these data with the appropriate software permits geo-correction to be completed without the need for control point picking and, depending on terrain variation; this can reduce positional errors to below 20m.

Software developed by HyVista is used for to produce a ray traced image (.glt) file from combining the output from the IMU/GPS with a DEM (SRTM 90m image). The glt file is then used to georectify the image products produced to the UTM/WGS84 map projection using proprietary HyVista software.

Level 1C Product

In this survey the cross track corrected and levelled reflectance data have been mosaiced into data cubes for the SWIR and VNIR bands and subsequent Level 2/3 processing has been carried out using these images. Prior to applying the additional processing image masks are generated that remove areas of abundant green/dry vegetation, water, shadow, bright spots due to fires and cultural features such as highly reflective steel roofs as these features can affect the statistical processes applied.

LEVEL 2 PROCESSING

Colour Composite Mosaics

Overview Colour Composites

Two colour composite images have been produced from the reflectance data consisting of:

Landsat TM 742 equivalent: RGB = 2.206um/0.851um/0.488um (HyMap bands 109, 28, 03 respectively)
True Colour: RGB=0.664um/0.577um/0.488um (HyMap bands 15, 09, 03 respectively)

The contrast in these colour composites has been enhanced by applying the ENVI contrast stretches to the images.

Note all colour composite images (MNF and Mineral Map) have a naming convention where band numbers or mineral names are given in order Red, Green and Blue the same as they are displayed.

MNF Transform

For the SWIR, MNF transforms have been applied to the reflectance data and from these images a colour composite has been produced (MNF bands RGB 2, 3, 4). This band combination shows the greatest variation in surface materials producing images that highlight geological and regolith variation within the area.

LEVEL 3 PROCESSING

Mineral Mapping

Hyperspectral remote sensing is essentially a mineral mapping technology. Its fundamental principles are based on spectroscopy, so an understanding of the spectral signatures of surface materials is required for its application. Briefly, each pixel of a hyperspectral image contains a spectrum which forms the basis for determining the materials present in a scene. Surface mineralogy and other components are mapped using algorithms which either de-convolve a scene into component endmember signatures (unsupervised unmixing) or specifically target spectral signatures of known materials (supervised match filtering). A recently developed refinement to the band depth ratio process (logical operators) has also been utilised. A combination of these approaches has been applied in the project.

Spectral Endmember Un-mixing

Linear spectral unmixing is the process of deriving the abundances of component materials in a scene from the individual pixel spectra, given the endmember spectral signatures. To give perfect unmixing results, the signatures for all endmembers present in a scene would need to be known. However, in practice, unmixing algorithms map the distribution of automatically scene derived endmember materials. These are especially useful for analysis where signatures of the target(s) are not known and for general geological and regolith mapping.

Unmixing methods output a set of endmember spectra with corresponding un-mixed images which are, in effect, mineral maps. There are several programs that can be used for this type of processing. ENVI has a selection of mapping methods which generate abundance images notably Matched Filtering and Matched Tuned Filtering. However, HyVista has several proprietary unmixing programs that can be applied to mosaiced reflectance imagery (as in this case) or allows for the selection of endmember data from multiple strips without the need to mosaic them. Thus, when they are un-mixed, the distribution of endmembers matches across images strip boundaries. This software produces mineral maps that can be used for geological and regolith interpretation where there is no a priori knowledge of the minerals present in the area. In these survey data unsupervised unmixing worked well and applying the supervised techniques did not improve overall mineral mapping results though this may be required to detect specific minerals in sub-scene area during more advanced analysis (Level 4 processing).

Prior to applying the unmixing algorithm, the data are processed to remove pixels that are of shadow, anomalously bright areas (such as active fires and metal roofs), and surface water, green and dry vegetation. These are effectively noise pixels and affect the image statistics. These pixels are masked out (i.e. set to zero).

Running the un-mixing algorithm produces two outputs; an endmember library that contains the spectra for each spectral endmember detected within the data, including minerals, and a series of abundance images (one for each flight line) each band of which maps the distribution of a spectral end member. The program is run several times, with differing parameters, to determine the optimum output in terms of minerals mapped and is run separately on the Visible Near Infra Red bands (VNIR 0.5 microns to 1.12 microns) for iron oxides and Short Wave Infrared bands (SWIR 1.95 microns to 2.45 microns) for phyllosilicates, carbonates and other minerals with cation OH bonds (e.g. amphiboles).

The spectral libraries are examined and endmembers recognised as minerals are determined and then mineral species identified. Non mineral spectra may include those from noisy spectra, residual vegetation, spectrally featureless areas and multiple mixed spectra that cannot be identified. The program uses a statistical technique to match each pixel to a spectral endmember and creates the abundance images such that each pixel has a value that is proportional to its closeness of fit to the spectra in question, the higher the value the better the match. In percentage terms, pixels with 0% have no match and the values of 100% have a perfect match and would be “pure” spectra but these will be quite rare within an image as most pixels will contain several different materials.

Logical Operators

In this process where mineral spectra have several absorption features the presence of which, their relative depths and width of the feature at half of its depth are used to identify which mineral a spectrum identifies by applying logical rules based on these criteria. Logical Operators have been established for:

> Alunite (Al), Amphibole(Am), Apatite(Ap), Biotite(Bi), Buddingtonite (Bu), Calcite (Ca), Carbonate-Chalcedony(Op), Chlorite mixture (ChCa), Chlorite (Ch). Dickite(Di), Dolomite(Do), Epidote(Ep), FeOx-Goethite(Go)*, FeOx-Hematite(He)*, Gibbsite (Gi), Gypsum(Gy), Jarosite(Jr), Kaolinite (Ka), Muscovite(Ms)**, Montmorillonite(Mo), Nontronite(No), Paragonite(Pa)**, Phengite(Ph)**, Phengite2(Ph2)**, Pyrophyllite(Py), Serpentine (Se), Talc(Ta), Topaz(To),Tourmaline(Tu), Trona(Tn)
>
> *Iron oxides may be a mixture of hematite and goethite and dominant type mapped is assessed from examining the wavelength position of the broad absorption feature between 0.86 and 1.00 microns.
> ** The white micas or illites main absorption feature shifts its minima from 2.185 microns to >2.225 microns depending on its Al content, the shorter the wavelength the higher the Al content. These minerals can also be named as Illite (Ill) with the location of the absorption feature appended thus:
> Paragonite – Ill2185 toIll2190
> Muscovite –~ Ill2205
> Phengite – Ill2211
> Phengite2 – Ill2220 or Ill2225

Thresholding

In probability terms pixels in percentage range above 85% have a significant content of the spectral endmember (mineral). Examining the spectra of areas highlighted above 85% using an interactive linear stretch (Figure 3) determines the minimum value in the image where spectra of interest are present (abundant). Pixels below this value are set to zero and those above to the scaled from 0 to 1 (i.e. real data), a thresholded image. The values for this thresholding are recorded and shown in table 3. Thresholding is also applied to LO Index images.

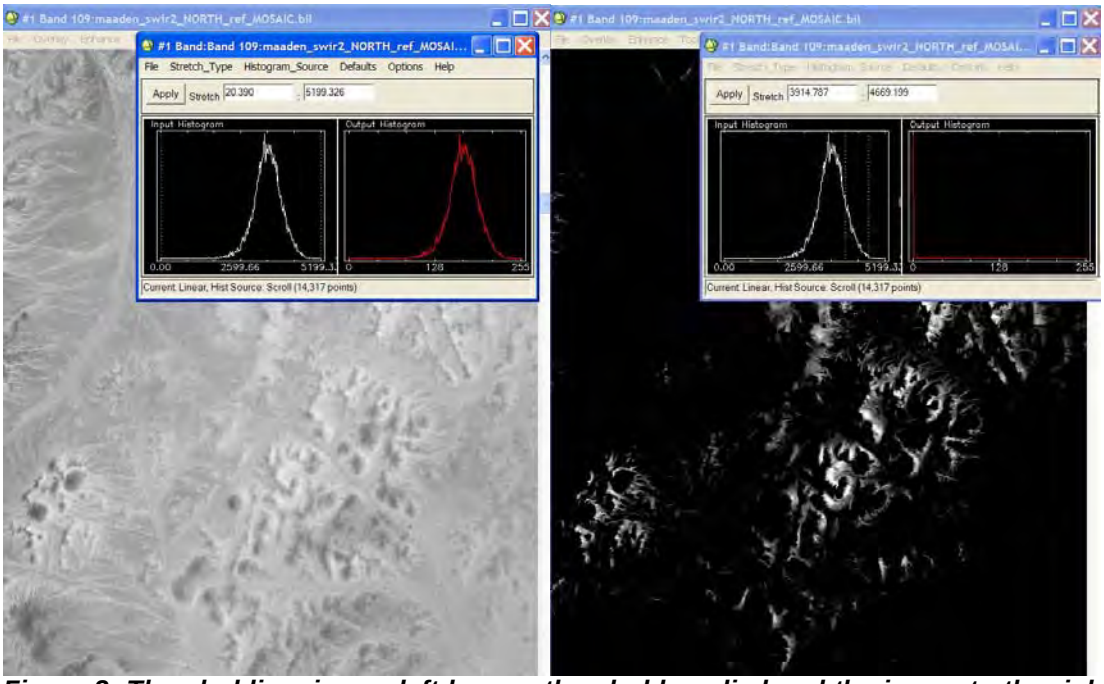


Figure 3: Thresholding, image left has no threshold applied and the image to the right has been thresholded at greater than 85% using the interactive stretch function in ENVI.

Processing Sequence

In this case the following processing sequence was applied to the masked reflectance image:

SWIR

Unmixing and Logical Operators

The logical operator functions were run first and where mineral were detected threshold values were determined and applied after examining the spectra to validate the mineral identification. Unmixing processing was then applied and the endmember images that were mapping minerals were similarly assessed, thresholded and stored. The thresholded mineral abundance images from the differing processes were then compared and those considered to be the most robust were selected. After final thresholding the greyscale mineral map images have a rainbow colour look up table applied to them (ENVI rainbow) such that blue pixels indicate a less perfect match, possibly due to dilution effects, grading through green, yellow and red being the best match. This image is also saved in jpg, tiff, ecw and img (ENVI bil with ERMapper header) formats and has the identifier “rainbow” in the file name.

While the unmixing is set to resolve up to 22 unique minerals (VNIR+SWIR) or mineral mixtures and the logical operator tests for the presence at least 30 minerals, only a small number of minerals were detected in these survey blocks (Table 1.). After checking the images produced from the un-mixing and logical operator processing those that display coherent spatial patterns are selected and thresholded to produce BW and RAINBOW mineral maps.

Using the rainbow coloured abundance images to locate the highest abundance (purest areas) of the mineral mapped, A characteristic spectrum is selected from these mineral maps, displayed with the continuum removed (CR) and stored as jpeg images. These spectra are shown in Table 3 below.

The selected mineral map images are also combined as RGB colour composites, that is, different endmembers combined in red, green and blue, with the relatively small number of endmembers detected, one RGB colour composite have been produced. Colour triangle legends as jpeg images are included with these images.

ENVI has a Rule Class function which permits the combination of the thresholded greyscale images into colour coded mineral maps, one has also been produced and Rule Class Legends have been produced as jpeg images.

Wavelength Shift

Using a polynomial fitting program the change in absorption minima between 2.180um and 2.225um has been mapped. The resultant image is scaled so that the grey scale values map the absorption from 2.18um shortwave absorbing illite or white mica (Al rich muscovite: paragonite) to 2.227um long-wavelength absorbing white mica (Al poor muscovite: phengite). The confusing effects of kaolinite which also has an absorption minimum within this wavelength range are minimised by identifying pixels containing kaolinite and masking those pixels.

Usually, a rainbow colour table is then applied to colour the image so that the absorption at 2.180um is mapped in blue through to the 2.227um in red i.e. cool colours represent paragonite, intermediate colours (green-yellow) muscovite and warm colours phengite. However, the white mica / illite wavelength absorption minima range observed in these survey data is relatively restricted and indicates most are the short wavelength / relatively Al rich variety. A rainbow colour table has been applied to colour the image so that the absorption at 2.180um is mapped in blue through to the 2.195um in red i.e. the white mica species is probably paragonite and colour variation maps subtle changes in its Al content (Plate 8).

The advanced argillic minerals alunite and pyrophyllite are spectrally distinctive with absorption minima between 2.165 and 2.175um. By selecting a slightly different wavelength range to the white mica image and inverting the table used to colour the data, it is possible to highlight areas of potential advanced argillic alteration (Figure 4).

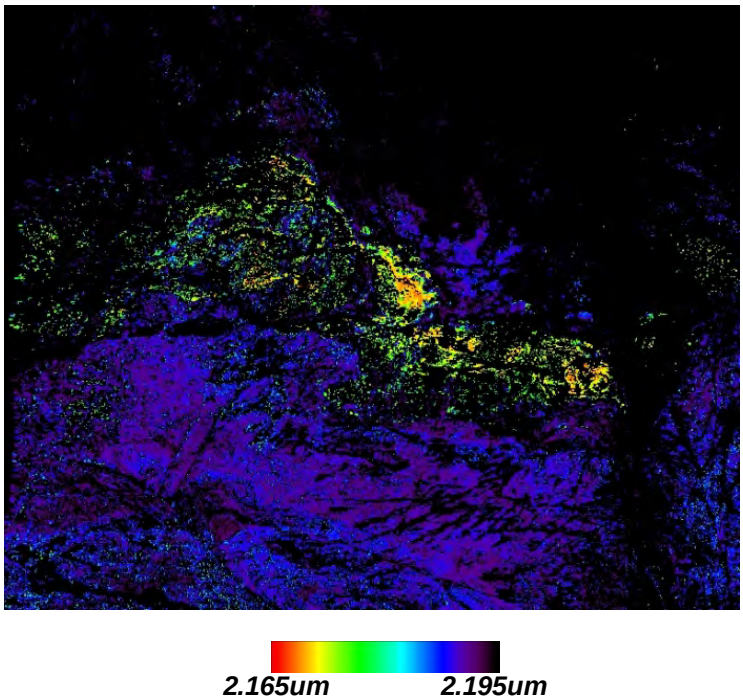


Figure 4: Wavelength Shift Image scaled from 2.165um to 2.195u. Inverted rainbow coloured, highlights (red / yellow) areas of potential advanced argillic minerals such as pyrophyllite. Example from Block B, western edge of the survey.

IMAGE PROCESSING PRODUCTS

The intermediate products are not intended to be used by the customer and are provided in ENVI format only, for future reference by HyVista staff.

Tables 1 and 2 list the abbreviations used in the image file names including mineral names.

Table 3 lists all of the files produced in the Level 2 and Level 3 processing and final delivery images and the spectra of the various minerals mapped.

Examples of the images products are presented in Appendix I.

All the presentations of Mineral Maps (greyscale thresholded, rainbow, colour composite, rule class and wavelength shift) show areas devoid of minerals with distinct and classifiable spectra in black (0). It is possible to overlay these mineral maps products onto a greyscale background image. However, this can distract from the pattern of mineral distribution and also make overlaying these images with other data in a GIS package less effective.

If the customer requires such background versions of the Mineral Maps they can be requested and produced. Alternatively the customer can produce them by overlaying the required mineral map onto the first band of the overview colour composite (OCC15-9-3_rgb) selected from the tiff image in their GIS software.

ANALYSIS

The terrain imaged in both survey blocks by the HyMap data is characterised by three minerals; kaolinite, a white mica / illite and pyrophyllite. These minerals are observed as coherent spatial patterns and as pure examples and as mixtures. The unmixing derived mineral maps (MM_AB#) probably best depict this mineralogy.

Kaolinite is widespread. This is not unexpected as it is a common component of the regolith developed under tropical weathering. The spectral expression varies greatly suggesting mineral crystallinity also varies. When in spatial association with pyrophyllite; dickite rather than kaolinite is suspected. However, it is spectrally difficult to separate these minerals.

White mica / illite is also relatively widespread. Whilst it is characterised by shifts in its wavelength, these shifts are minor and indicate that all white mica /illite observed in both survey blocks is relatively Al rich perhaps paragonite. Generally, this mineral forms in relative high temperature and relatively acid environments.

Pyrophyllite is observed at a small number of locations within the survey blocks (Examples: Block A in the south west & Block B western edge).This mineral typically depicts advanced argillic style hydrothermal alteration and is stable in high temperature and strongly acid environments. The lower image depicted in Figure 5 is an example on one occurrence of this mineral (Block B). The red hues highlight the presence of pyrophyllite. The slightly more mauve hues suggest a kaolinite group mineral (perhaps dickite) is mixed with the pyrophyllite.

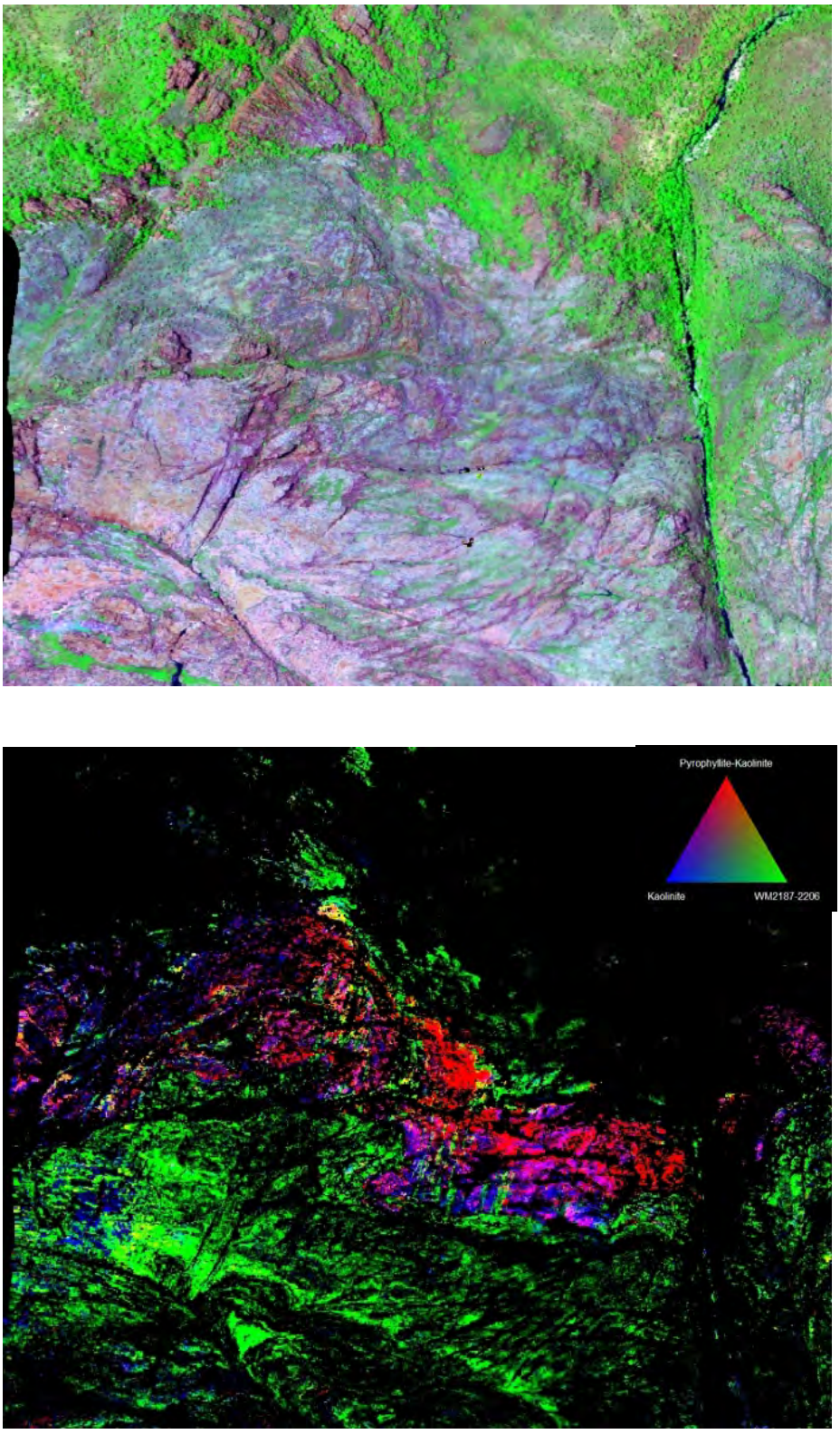


Figure 5: The lower image is an unmixing Mineral Map Colour Composite, RGB, Pyrophyllite-Kaolinite, WM2187-2206 and Kaolinite abundance image. The upper image is an overview colour composite of the same area for comparison.

DATA DELIVERY

The processed data are supplied an external disk with the following directory structure:

//UXA SURVEYS OCT 2010
//UXAARNHEM

// LEVEL 1 A & B [Strip data with raw, radiance, reflectance and geocorrection images-glt images]

//UXAARNHEM Ancillary Data and Location

//UXAARNHEM Intermediate Processing
//UXAARNHEM (A, B) Processing
LEVEL 1C [Reflectance data cubes]
LEVEL 2
//Masking
//MNF Colour Composites
//Overview Colour Composites
LEVEL 3
//Index Images (Logical Operator)
//Mineral Maps Greyscale TH (Thresholded)
/ Mineral Maps Colour Composites
//Mineral Maps Selected
//Mineral Maps rainbow [Coloured]
//Rule Classification [Mineral Maps]
//Unmixing
//Wavelength Shift White Mica
//Spectra

//UXAARNHEM Delivery Products
//UXAARNHEM (A, B) Delivery Products
// Mineral Maps Colour Composites
//Mineral Maps Thresholded Selected
//Mineral Maps rainbow [Coloured]
//MNF Colour Composites
//Overview Colour Composites
//Rule Classified [Mineral Maps]
// Wavelength Shift White Mica
//Spectra

Mineral File Naming and Table 1

The naming convention in the delivery products gives the survey name, block, data source and process from which mineral derived, mineral name and processes applied to the mineral maps as follows:

Mineral Maps Thresholded BW and RAINBOW

The file named: uxaarnhem_A_ref_MM_FPL_AB#06_WM2187-2205_bw_TH;

Is a black / white (wm) white mica image (WM) that has been thresholded (TH). Original processed data being UXA Arnhem Land Block A and derived from reflectance (ref) data. This mineral map (MM) image was selected from endmember unmixing set to find 13 endmembers of which the 6th band (AB#06) is a relatively Al rich white mica / illite (perhaps paragonite). The numbers 2187 / 2205 are the HyMap band centres in nm.

A similar endmember image has been derived from the use of the logical operator (LO) technique which is based on band depth-position of an absorption feature. MM_AB#xx is replaced by LO_MM in the file name.

These black & white mineral map images can be rainbow coloured by applying an ENVI colour lookup table. In the file name BW is replaced by rainbow.

See table 2 for file name abbreviations.

Colour Composites

These images have been derived from stack image that has had all of the separate thresholded mineral maps combined.

The file name: uxaarnhem_A_ref_mmcc_ab#070608_KaPy-WM-Kaolinite_rgb_th;

Is a colour composite of unmixing derived mineral maps listed (MMCC); display in red, green and blue respectively i.e. KaPy (Kaolinite-Pyrophyllite mixture) in red, WM (short wavelength white mica / illite) in green and Kaolinite in blue).

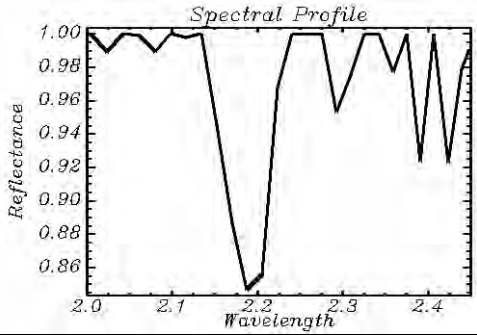
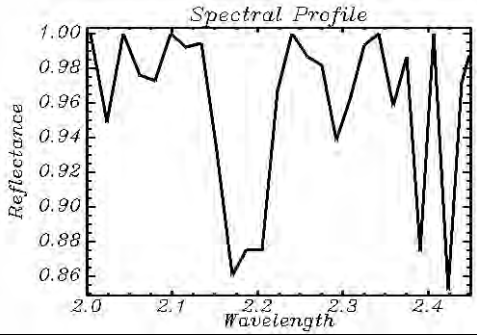
Table 1 Names of Minerals Mapped and Abbreviations Used

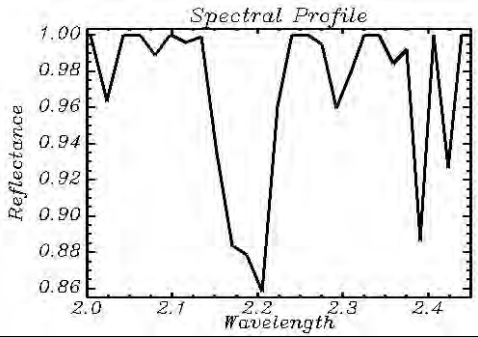
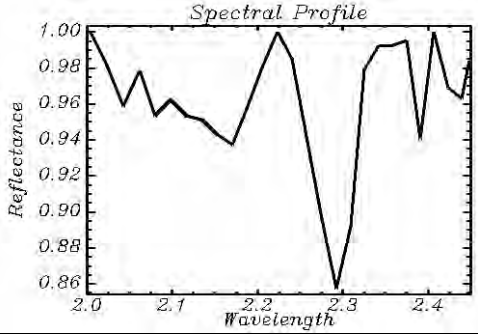
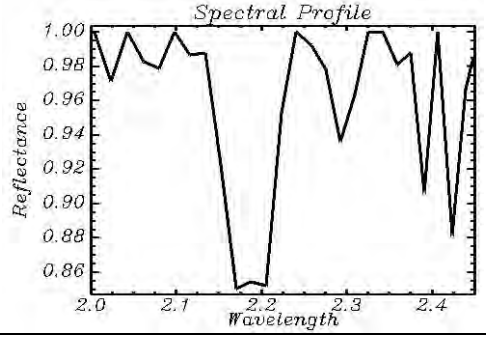
Mineral	Abbreviation	Pure or Mineral Mixture	Comment
Pyrophyllite	Py	Both	Indicates passage of hot (>250^{o}C) acid (pH<4) fluids, often accompanied by kaolinite/ dickite, hydrothermal alteration
Dickite/Kaolinite	Di	Mixture	Difficult to spectrally discriminate between dickite and kaolinite. In these survey blocks there is a kaolinite group mineral mixed with the pyrophyllite.
Hematite	He	Pure	Defines the tracks / roads in block a and adjacent maintenance pits. Not detected in block b.
Kaolinite	Ka	Both	Commonly supergene / weathering but also in lower temperature late stage hydrothermal overprints. Acid conditions. Spectral expression varies with crystallinity, regolith position, transport, etc...
Muscovite (or Illite)	WM	Both	The wavelength minima observed in HyMap data of both block a & b suggest an Al rich white mica perhaps paragonite. Suggests relatively high temperatures and relatively acid conditions
Nontronite?	No		Generally spotty spatial distribution. Nontronite is a Fe rich phyllosilicate usually a weathering product of mafic rocks. It is possible the mineral maybe talc or an amphibole such as actinolite.

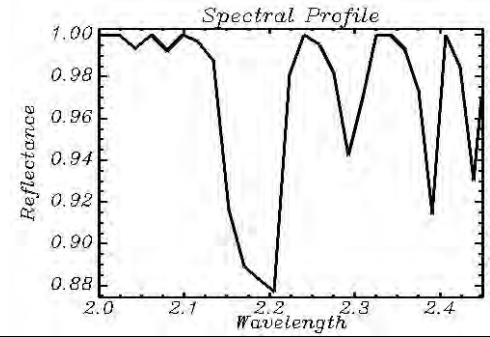
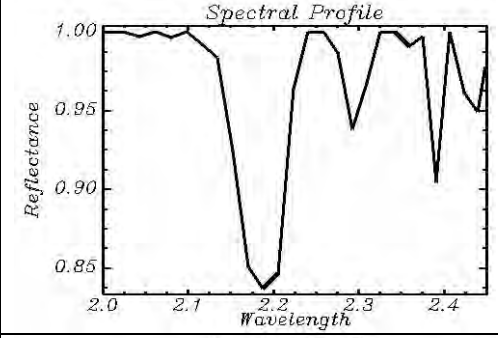
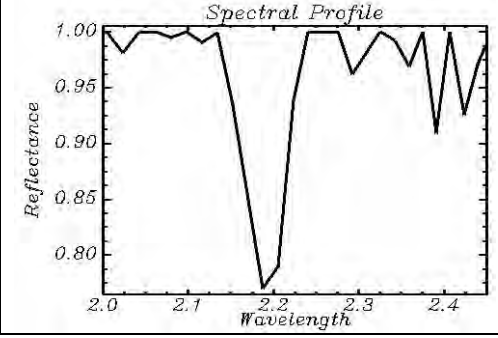
Table 2: Standard File Name Abbreviations

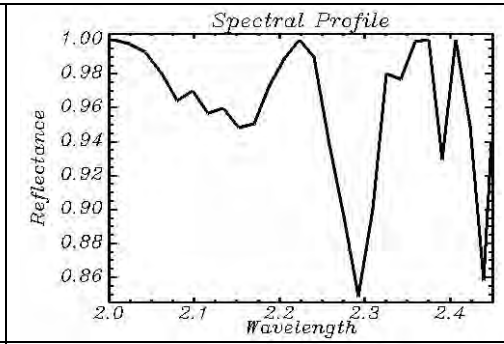
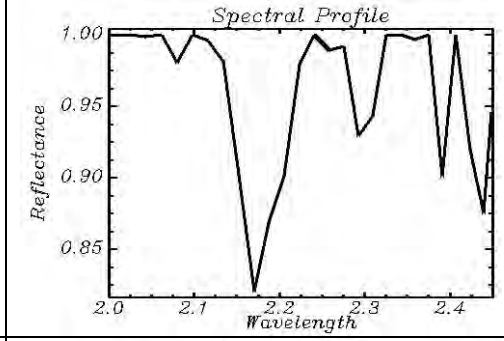
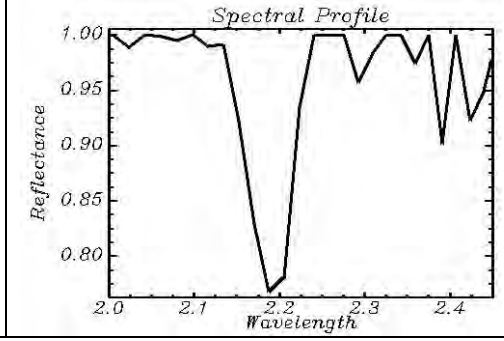
AB#	Abundance Band Number Of Unmixing Image
AAM	Modified white mica wavelength absorption minima images displaying potential advanced argillic minerals in warm hues
BG	Background Image – colour image overlain on background image
CC	Colour Composite
DB	Band Depth - Index image that maps the relative depth of a specified absorption feature, identifies classes rather than individual minerals
DCS	Decorrelation Stretch Image
DVeg	Dry Vegetation
EQUALISE OR HE	Histogram Equalize contrast stretch
GEO	Geo-Corrected Data using a HyMap glt (geometric lookup table) file
G	Gaussian contrast filter applied to image to reduced contrast effects of bright & dark areas
GVeg	Green Vegetation
INDEX	Logical operator derived image based on presence and Band Depth of defining absorption features
INVERTED	Negative Image
MF	Match Filter Unmixed Abundance Output
MNF	Minimum Noise Fraction Transform Image
MOS	Mosaic of all survey strips that have been cross track corrected and leveled
MM	Mineral Map Produced from unmixing –Factorisation (# Number is number of endmember in unmixing image)
MMAM#	Mineral map produced from Unmixing Absorption Band Mapping (# Number is number of endmember in unmixing image)
LOMM	Mineral map produced from Logical Operators
MMCC	Mineral Map Colour Composite
OCC	Overview Colour Composite
PL	Unmixed Output
REF	Reflectance Data – Atmospherically Corrected
RC	Rule Classified Image - mineral maps combined into 1 image with each mineral mapped to a unique colour
RGB	Red, Green, Blue - following band numbers or mineral names displayed in these colours respectively
SCALED	Linear Contrast Stretch
SGA	Unmixed Output
SR	Square Root Contrast Stretch
SWIR	Shortwave Infra Red Bands from 2.00um to 2.45um image of these bands derived for processing
Th	Images thresholded >85% to > 99.5%
VNIR	Visible Near Infra Red Wavelengths from 0.45um to 1.13um image of these band derived for processing
W	Wallis contrast filter applied to reduce contrast effects of bright and dark areas
WM	White Mica mineralogically same as illite
WM WVL	Map of White Mica main absorption from 2.18 to 2.205um i.e. Al Rich To Al Poor
X_ab	Mineral Abundance file where *x* is number of endmembers derived from unmixing software
XTR	X-Track (BRDF) corrected results (removing illumination variations common to one survey strip)

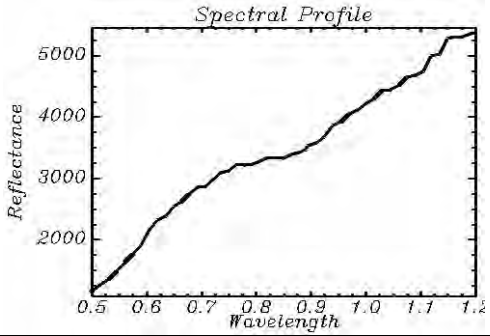
Table 3: Delivery Products - Image Names and Spectra

FOLDER DELIVERY IMAGE FILE NAMES	SPECTRA	THRESHOLD & COMMENT
BLOCK A		
Mineral Map Colour Composites	***See Selected Minerals below***	***See Selected Minerals below***
uxaarnhem_A_ref_LO_MM_RGB_Py-KaWM-Kaolinite		
uxaarnhem_A_ref_MM_FPL_RGB_(ab#070608)_KaPy-WM-Kaolinite		
Mineral Maps Greyscale		
uxaarnhem_A_ref_MM_FPL_AB#06_WM2187-2205_bw_TH		**0.113-0.318**
uxaarnhem_A_ref_MM_FPL_AB#07_Kaolinite-Pyrophyllite_bw_TH		**0.084-0.243**

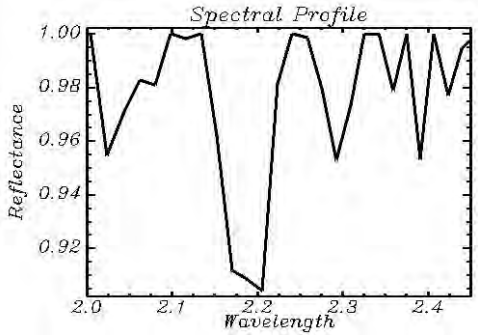
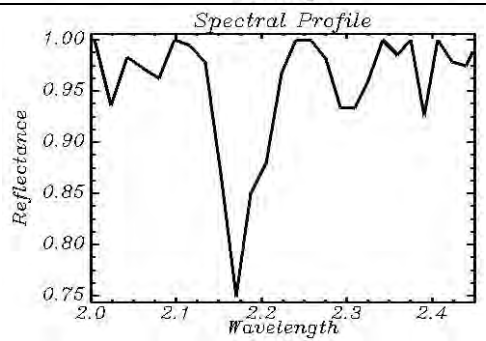
uxaarnhem_A_ref_MM_FPL_AB#08_Kaolinite_bw_TH		**0.060-0.465**
uxaarnhem_A_ref_MM_FPL_AB#12_Nontronite_bw_TH		**0.244-0.442**
uxaarnhem_A_ref_LO_MM_Dickite-Kaolinite_bw_TH		**0.099-0.220**

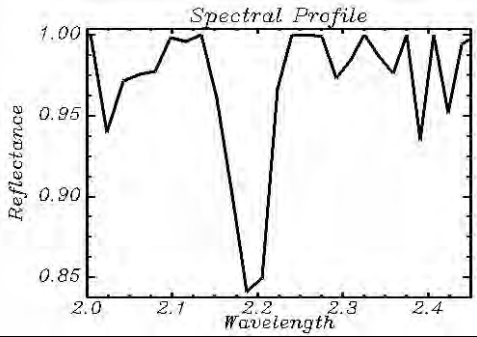
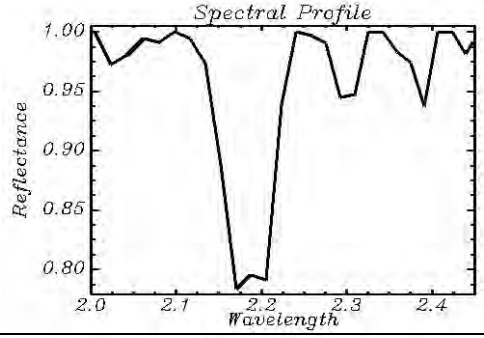
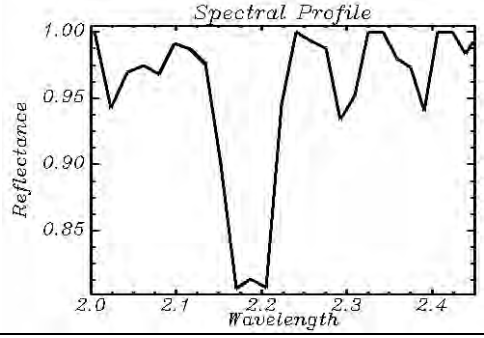
uxaarnhem_A_ref_LO_MM_Kaolinite_bw_TH		**0.059-0.148**
uxaarnhem_A_ref_LO_MM_Kaolinite-WM2187_bw_TH		**0.081-0.245**
uxaarnhem_A_ref_LO_MM_Kaolinite-WM2187-II_bw_TH		**0.066-0.122**

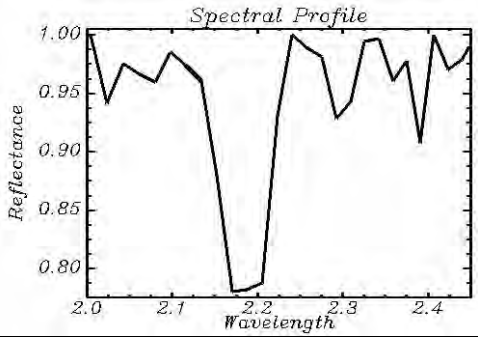
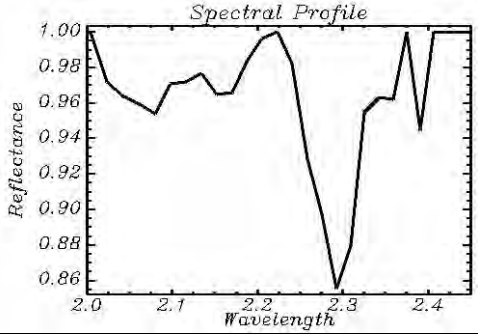
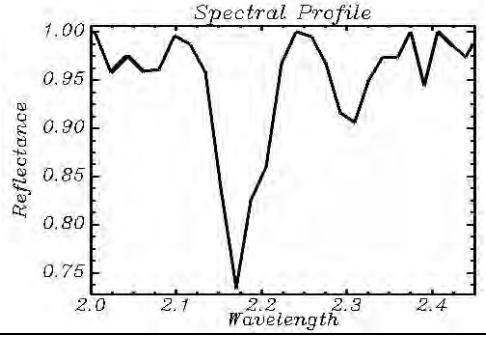
uxaarnhem_A_ref_LO_MM_Nontronite_bw_TH		**0.034-0.089**
uxaarnhem_A_ref_LO_MM_Pyrophylite_bw_TH		**0.144-0.268**
uxaarnhem_A_ref_LO_MM_WM2187-2206_bw_TH		**0.94-01.80**

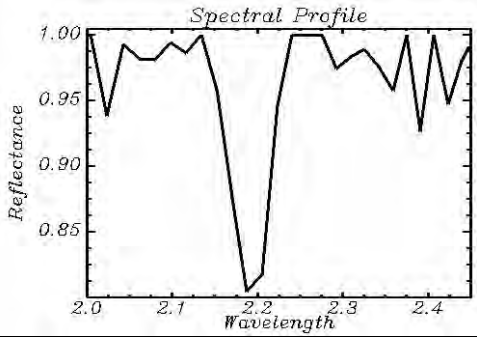
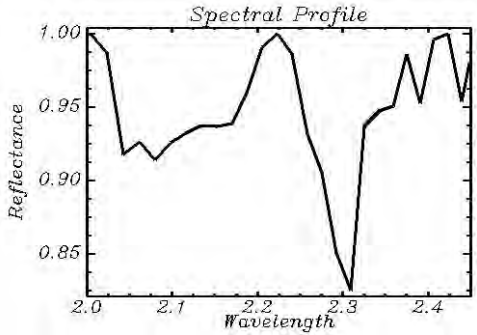
uxaarnhem_A_ref_LO_MM_Hematite_bw_TH		**0.001-0.166**
Mineral Maps Greyscale Rainbow	***See Selected Minerals above***	***See Selected Minerals above***
uxaarnhem_A_ref_MM_FPL_AB#06_WM2187-2206_rainbow_TH		
uxaarnhem_A_ref_MM_FPL_AB#07_Kaolinite-Pyrophyllite_rainbow_TH		
uxaarnhem_A_ref_MM_FPL_AB#08_Kaolinite_rainbow_TH		
uxaarnhem_A_ref_MM_FPL_AB#12_Nontronite_rainbow_TH		
uxaarnhem_A_ref_LO_MM_Dickite-Kaolinite_rainbow_scaled		
uxaarnhem_A_ref_LO_MM_Kaolinite_rainbow_TH		
uxaarnhem_A_ref_LO_MM_Kaolinite-WM2187_rainbow_TH		
uxaarnhem_A_ref_LO_MM_Kaolinite-WM2187-II_rainbow_TH		
uxaarnhem_A_ref_LO_MM_Nontronite_rainbow_TH		
uxaarnhem_A_ref_LO_MM_Pyrophylite_rainbow_TH		
uxaarnhem_A_ref_LO_MM_WM2187-2206_rainbow_TH		
MNF Colour Composites	***Not Applicable***	***Not Applicable***
Overview Colour Composites	***Not Applicable***	***Not Applicable***
uxaarnhem_A_ref_OCC 15-09-03_G		

uxaarnhem_A_ref_OCC_28-15-03_G		
uxaarnhem_A_ref_OCC 109-28-03_G		
Rule Classification		
uxaarnhem_B_LO_MM_Stacked_6-Minerals_RC_RGB		
Wavelength Shift White Mica	***Not Applicable***	
uxaarnhem_A_ref_WM_wvl_masked_rainbow_TH		
uxaarnhem_A_ref_AAM_wvl_masked_inverted_rainbow_TH	***(Colour Tables Inverted)***	***2.165um – 2.195um***

BLOCK B		
Mineral Map Colour Composites	***See Selected Minerals below***	***See Selected Minerals below***
uxaarnhem_B_ref_MM_FPL_RGB_(ab#080907)_Pyrophyllite-WM-Kaolinite		
uxaarnhem_B_ref_MM_FPL_RGB_(ab#080907)_Pyrophyllite-WM-Kaolinite_median		Median Filter applied to removed scattered pixels.
Mineral Maps Greyscale TH		
uxaarnhem_B_ref_MM_FPL_FPL_ab#07_Kaolinite_bw_TH		**0.189-0.422**
uxaarnhem_B_ref_MM_FPL_ab#08_Pyrophyllite-Kaolinite_bw_TH		**0.117-0.393**

uxaarnhem_B_ref_MM_FPL_ab#09_WM2187-2206_bw_TH		**0.119-0.387**
uxaarnhem_B_ref_LO_MM_Dickite-Kaolinite_bw_TH		**0.193-0.320**
uxaarnhem_B_ref_LO_MM_Kaolinite_bw_TH		**0.171-0.364**

uxaarnhem_B_ref_LO_MM_Kaolinite-WM2187_bw_TH		**0.105-0.207**
uxaarnhem_B_ref_LO_MM_Nontronite_bw_TH		**0.022-0.077**
uxaarnhem_B_ref_LO_MM_Pyrophylite_bw_TH		**0.120-0.456**

uxaarnhem_B_ref_LO_MM_WM2187-2206_bw_TH		**0.061-0.189.**
uxaarnhem_B_ref_LO_MM_AF_Serpentine_bw_TH		Possible but probably talc or an amphibole such as actinolite
Mineral Maps Greyscale Rainbow		
uxaarnhem_B_ref_MM_FPL_ab#07_Kaolinite_rainbow_TH		
uxaarnhem_B_ref_MM_FPL_ab#08_Pyrophyllite-Kaolinite_rainbow_TH		
uxaarnhem_B_ref_MM_FPL_ab#09_WM2187-2206_rainbow_TH		
uxaarnhem_B_ref_LO_MM_Dickite-Kaolinite_rainbow_scaled		
uxaarnhem_B_ref_LO_MM_Kaolinite_rainbow_scaled		
uxaarnhem_B_ref_LO_MM_Kaolinite-WM2187_rainbow_scaled		
uxaarnhem_B_ref_LO_MM_Nontronite_rainbow_scaled		
uxaarnhem_B_ref_LO_MM_Pyrophylite_rainbow_scaled		
uxaarnhem_B_ref_LO_MM_WM2187-2206_rainbow_scaled		
uxaarnhem_B_ref_LO_MM_AF_Serpentine_rainbow_scaled		
MNF Colour Composites		

uxaarnhem_B_ref_cc_MNF RGB 2_3_4_G		
Overview Colour Composites		
uxaarnhem_B_ref_OCC 15-09-03_G		
uxaarnhem_B_ref_OCC 28-15-03_G		
uxaarnhem_B_ref_OCC 109-28-03_G		
Rule Classification		
uxaarnhem_B_ref_LO_MM_Stacked_5-Minerals_RC_rgb		
WavelengTH Shift White Mica		
uxaarnhem_B_ref_WM_wvl_masked_rainbow_TH		***2.179um – 2.195um***
uxaarnhem_B_ref_AAM_wvl_masked_inverted_rainbow_TH	***(Colour Tables Inverted)***	***2.165um – 2.195um***

APPENDIX I

EXAMPLE IMAGE GALLERY BLOCK B

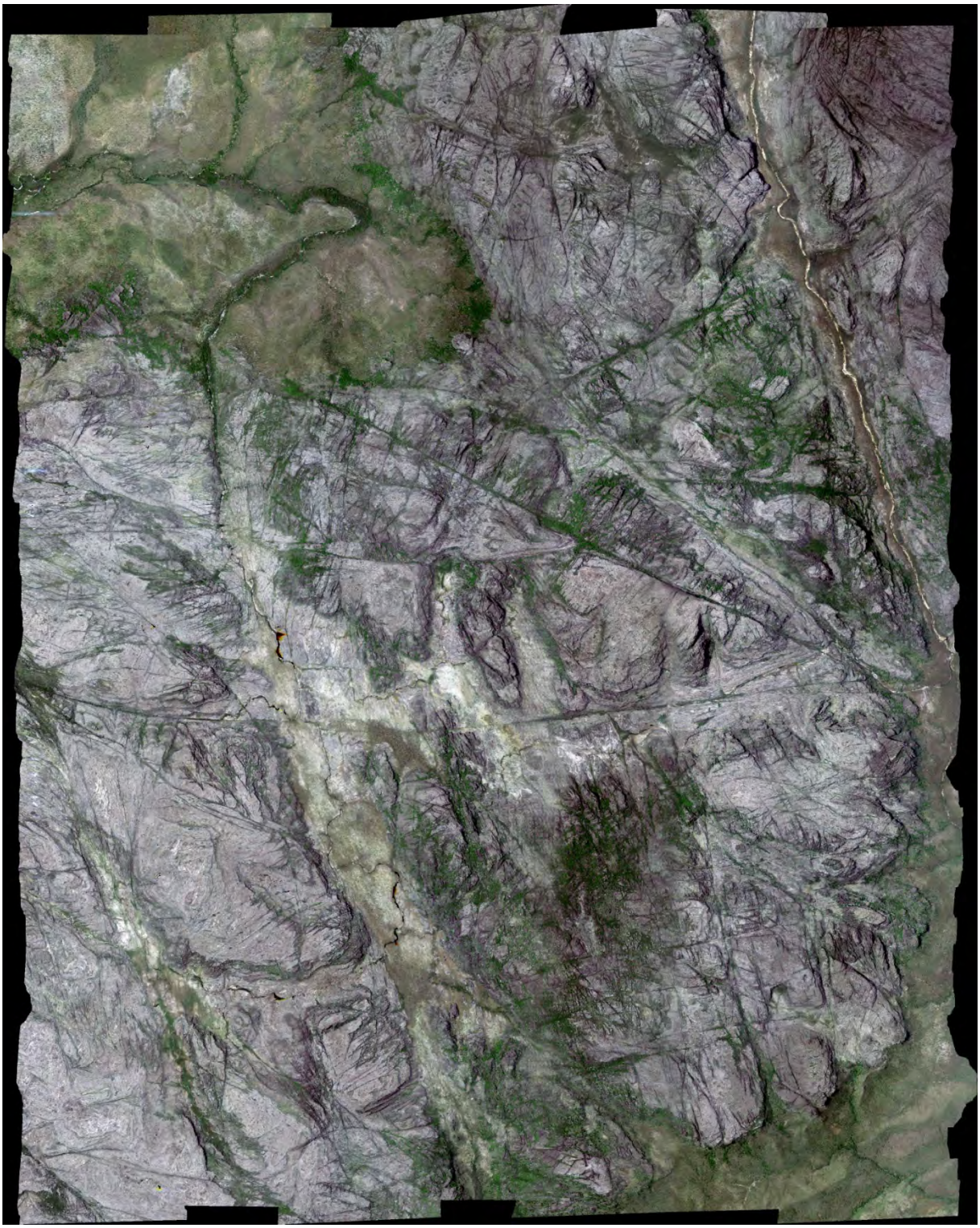


Plate 1: Overview Colour Composite Image–Natural Colour Bands15, 09, 03 (RGB)

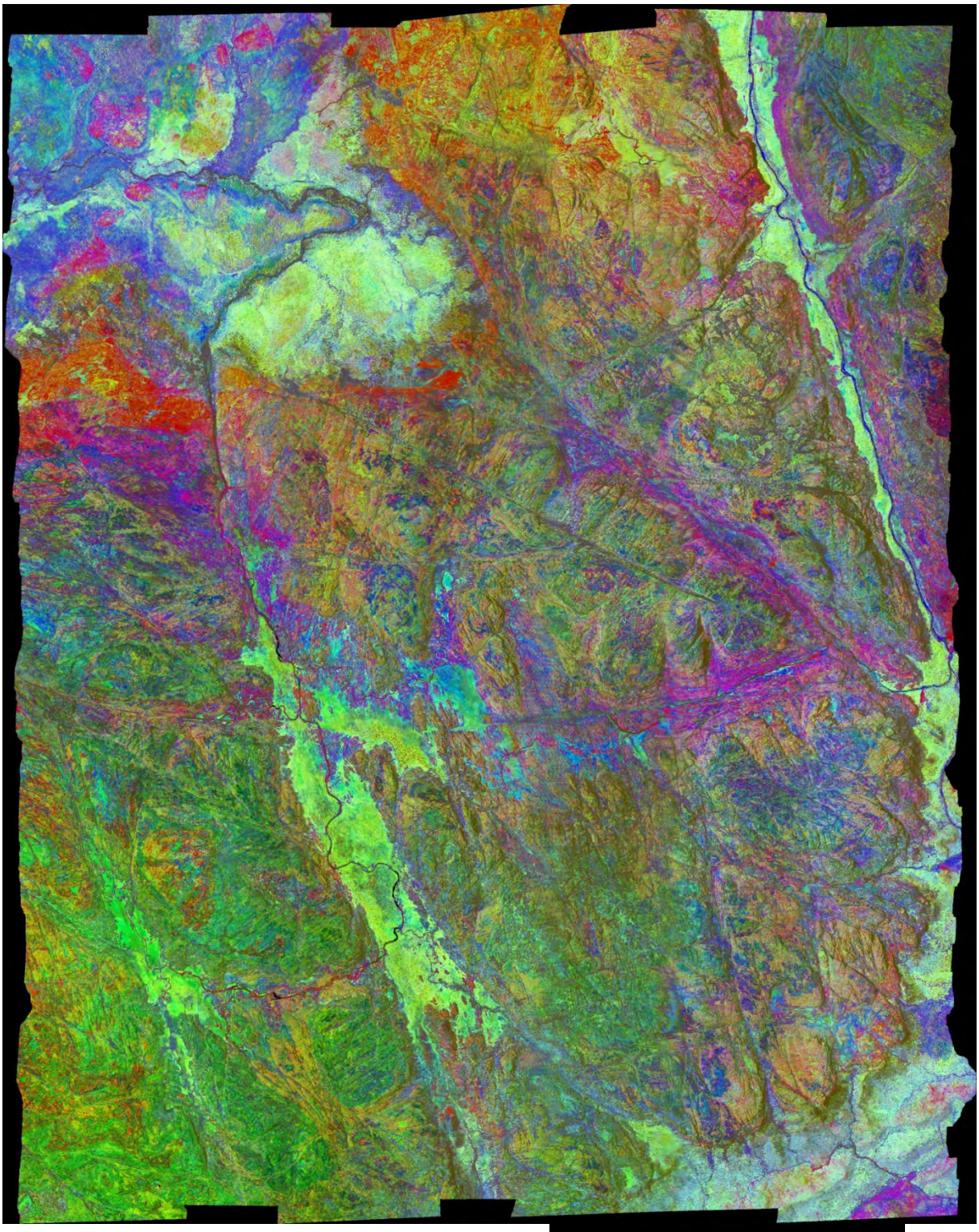


Plate 2: MNF Colour Composite Bands2-3-4 (RGB)

Plate 3: Greyscale Thresholded: Pyrophyllite-Kaolinite unmixing derived mineral abundance image.

Plate 5: Mineral Map greyscale rainbow coloured Pyrophyllite-Kaolinite unmixing derived mineral abundance image.

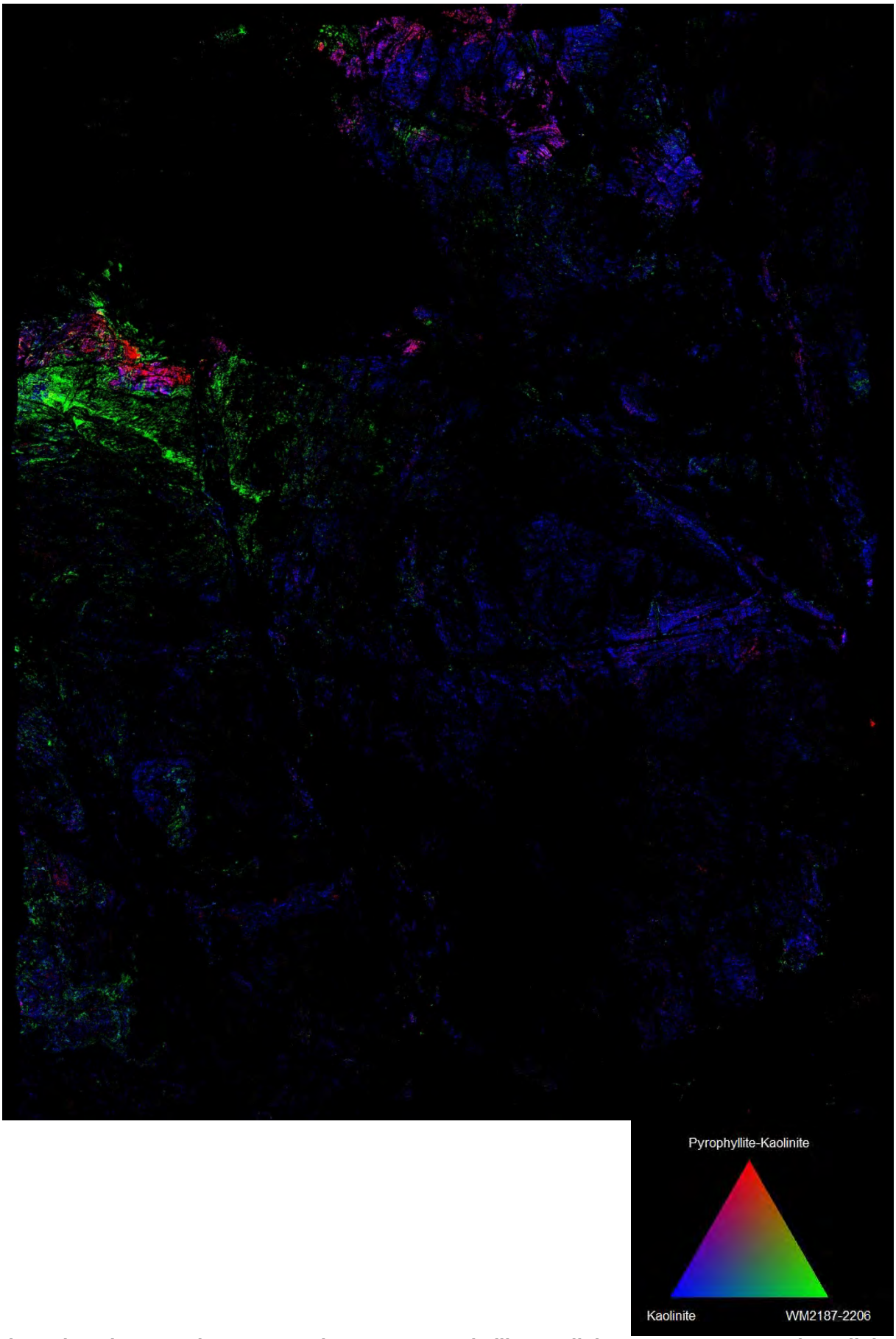
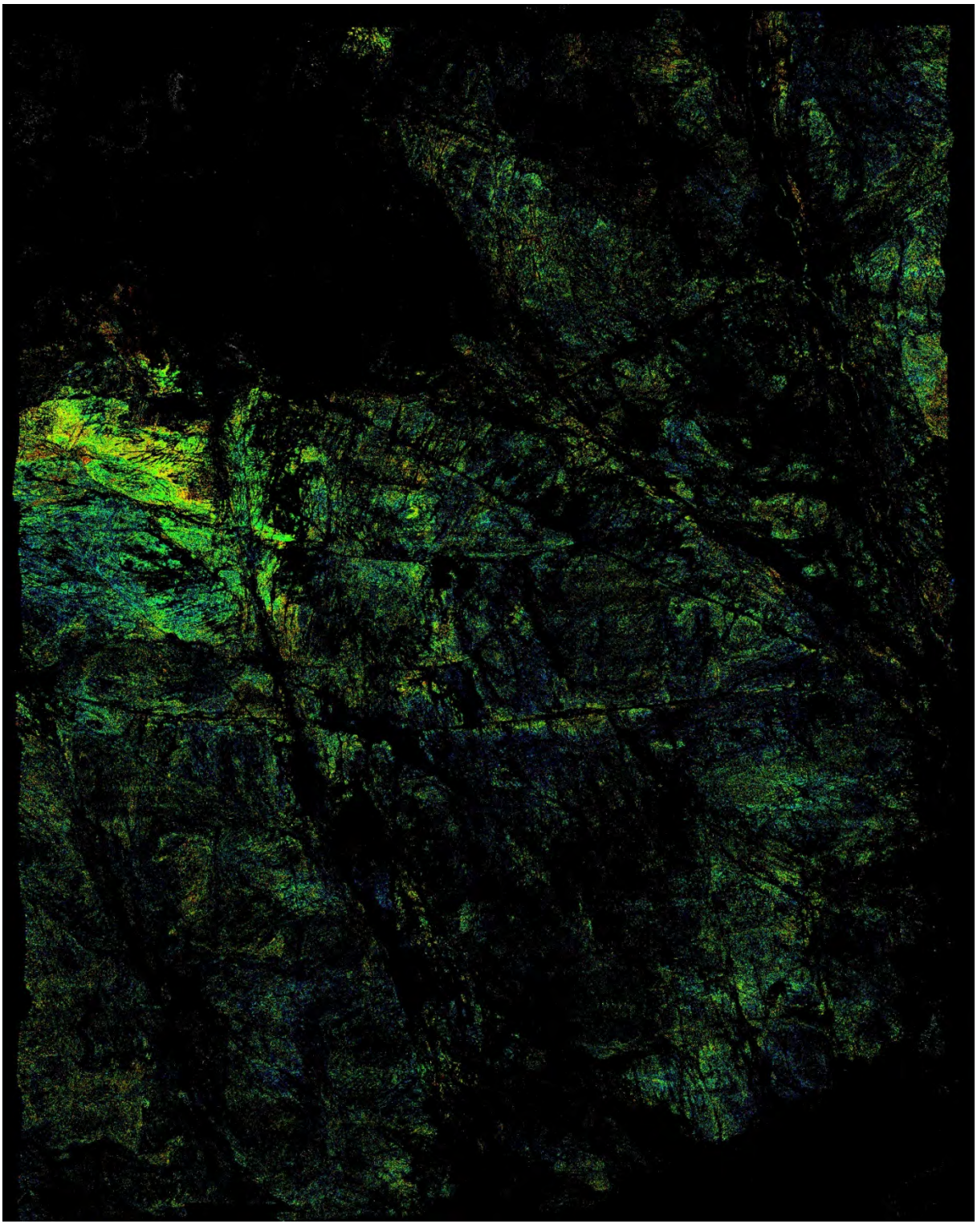
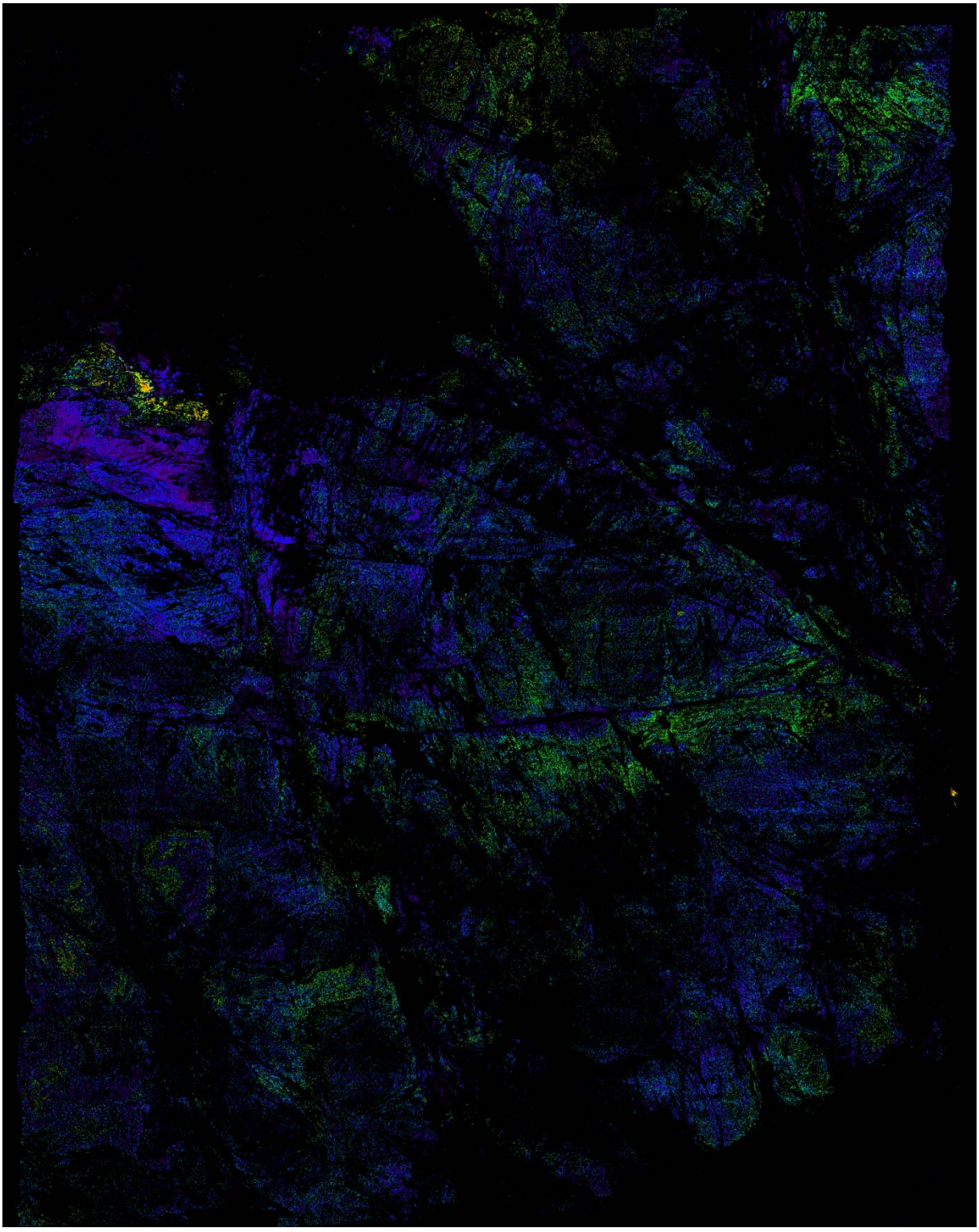


Plate 6: Unmixing Mineral Map Colour Composite, RGB, Pyrophyllite-Kaolinite, WM2187-2206 and Kaolinite abundance image



2.179um *2.195um*

Plate 7: White Mica Wavelength Shift Image scaled from 2.179um to 2.195um rainbow coloured.

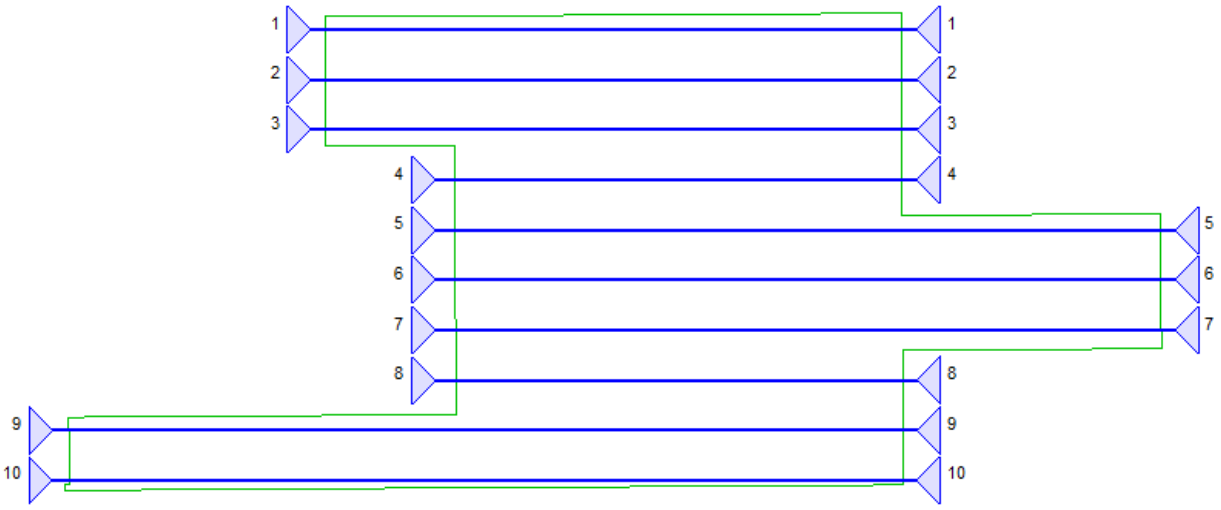


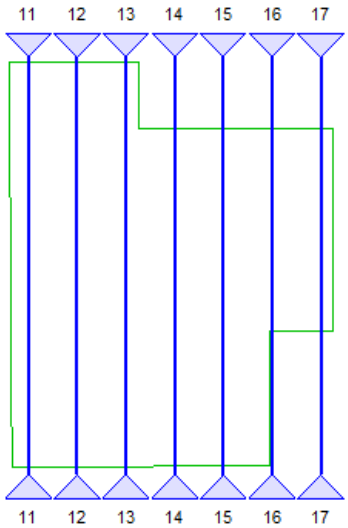
2.195um *2.165um*

Plate 8: Wavelength Shift Image scaled from 2.165um to 2.205um inverted rainbow coloured, highlights (red) potential advanced argillic minerals such as pyrophyllite.

APPENDIX 3
SURVEY FLIGHTLINE SPECIFICATIONS

Site Name: NT – UXA ARNHEM





Project name: AUS2010B
Project number: NT – UXA ARNHEM

Footprint across: 1649.00
Sidelap: 20.0
Flying height agl: 1400 m
Field of view: 61

TOTAL QUANTITIES

Totals for runs + strips
Total lines: 17
Total length (km): 269 km
Total length (nm): 145 nm

Coordinate system: UTM coordinate system
Projection: Transverse Mercator
Ellipsoid: wgs-84

Strips

Total strips: 17
Total length (km): 269 km
Total length (nm): 145 nm

Strip number: 1

WGS84 Start: -12 08.191 / 133 15.856
WGS84 End: -12 08.248 / 133 25.242

UTM WGS84 Start: [53] 311119 / 8657748
UTM WGS84 End: [53] 328146 / 8657748

Strip number: 2

WGS84 Start: -12 08.936 / 133 15.851
WGS84 End: -12 08.992 / 133 25.237

UTM WGS84 Start: [53] 311119 / 8656376
UTM WGS84 End: [53] 328146 / 8656376

Strip number: 3

WGS84 Start: -12 09.677 / 133 15.847
WGS84 End: -12 09.733 / 133 25.233

UTM WGS84 Start: [53] 311119 / 8655009
UTM WGS84 End: [53] 328146 / 8655009

Strip number: 4

WGS84 Start: -12 10.433 / 133 17.774
WGS84 End: -12 10.477 / 133 25.223

UTM WGS84 Start: [53] 314624 / 8653637
UTM WGS84 End: [53] 328135 / 8653637

Strip number: 5

WGS84 Start: -12 11.174 / 133 17.769
WGS84 End: -12 11.241 / 133 29.222

UTM WGS84 Start: [53] 314624 / 8652271
UTM WGS84 End: [53] 335396 / 8652271

Strip number: 6

WGS84 Start: -12 11.918 / 133 17.764
WGS84 End: -12 11.985 / 133 29.217

UTM WGS84 Start: [53] 314624 / 8650899
UTM WGS84 End: [53] 335396 / 8650899

Strip number: 7

WGS84 Start: -12 12.659 / 133 17.760
WGS84 End: -12 12.726 / 133 29.213

UTM WGS84 Start: [53] 314624 / 8649532
UTM WGS84 End: [53] 335396 / 8649532

Strip number: 8

WGS84 Start: -12 13.400 / 133 17.755
WGS84 End: -12 13.445 / 133 25.205

UTM WGS84 Start: [53] 314624 / 8648166
UTM WGS84 End: [53] 328135 / 8648166

Strip number: 9

WGS84 Start: -12 14.107 / 133 11.817
WGS84 End: -12 14.190 / 133 25.207

UTM WGS84 Start: [53] 303864 / 8646793
UTM WGS84 End: [53] 328146 / 8646793

Strip number: 10

WGS84 Start: -12 14.848 / 133 11.812
WGS84 End: -12 14.930 / 133 25.202

UTM WGS84 Start: [53] 303864 / 8645427
UTM WGS84 End: [53] 328146 / 8645427

Strip number: 11

WGS84 Start: -12 17.913 / 133 09.297
WGS84 End: -12 24.112 / 133 09.253

UTM WGS84 Start: [53] 299341 / 8639744
UTM WGS84 End: [53] 299341 / 8628314

Strip number: 12

WGS84 Start: -12 17.918 / 133 10.054
WGS84 End: -12 24.117 / 133 10.011

UTM WGS84 Start: [53] 300714 / 8639744

UTM WGS84 End: [53] 300714 / 8628314

Strip number: 13

WGS84 Start: -12 17.923 / 133 10.807
WGS84 End: -12 24.122 / 133 10.764

UTM WGS84 Start: [53] 302080 / 8639744
UTM WGS84 End: [53] 302080 / 8628314

Strip number: 14

WGS84 Start: -12 17.928 / 133 11.561
WGS84 End: -12 24.127 / 133 11.519

UTM WGS84 Start: [53] 303447 / 8639744
UTM WGS84 End: [53] 303447 / 8628314

Strip number: 15

WGS84 Start: -12 17.933 / 133 12.318
WGS84 End: -12 24.132 / 133 12.276

UTM WGS84 Start: [53] 304819 / 8639744
UTM WGS84 End: [53] 304819 / 8628314

Strip number: 16

WGS84 Start: -12 17.938 / 133 13.071
WGS84 End: -12 24.137 / 133 13.029

UTM WGS84 Start: [53] 306185 / 8639744
UTM WGS84 End: [53] 306185 / 8628314

Strip number: 17

WGS84 Start: -12 17.943 / 133 13.828
WGS84 End: -12 24.142 / 133 13.786

UTM WGS84 Start: [53] 307557 / 8639744
UTM WGS84 End: [53] 307557 / 8628314

APPENDIX 3

Radon Cup Survey Co-ordinates and
Total Count Results

ID	east_MGAz53	north_MGAz53	Scintillometer Counts(cps)	Radon Cup counts	Soil Condition	Soil Description
U0001	327600	8645400	77	129.15	dry	cream sandy soi
U0002	327393	8645398	57	71.75	dry	Sandy soi
U0003	327200	8645400	122	124.37	dry	brown soil
U0004	326996	8645402	207	339.63	dry	Lateritic soi
U0005	326802	8645400	145	239.17	dry	Lateritic soi
U007	326396	8645400	79	117.19	dry	Sandy soi
U008	326200	8645400	143	186.56	dry	Lateritic soi
U009	325998	8645400	118	3.24	dry	Lateritic soi
U010	325800	8645400	110	3.24	dry	Lateritic soi
U011	325600	8645398	96	57.40	dry	Lateritic soi
U012	325399	8645400	78	176.99	dry	Cream soil
U013	327603	8645598	59	93.01	dry	yellow soi
U014	327398	8645598	94	72.08	dry	Sandy soi
U015	327202	8645600	80	81.39	dry	yellow soi
U016	327001	8645602	96	132.54	dry	Sandy soi
U017	326795	8645594	103	165.10	dry	brown soil
U018	326592	8645592	117	179.05	dry	Lateritic soi
U019	326406	8645620	101	111.61	dry	Sandy soi
U020	326200	8645600	146	155.79	dry	pisolitic soil
U021	325996	8645596	131	116.26	dry	Pisolitic soil
U022	325800	8645600	120	51.16	dry	Pisolitic soil
U023	325600	8645600	101	97.66	dry	yellow soi
U024	325402	8645598	66	90.69	dry	Sandy soi
U025	325206	8645600	72	46.51	dry	cream soil
U026	327600	8645800	91	111.61	dry	black soil
U027	327400	8645800	77	76.73	dry	black soil
U028	327203	8645804	84	260.43	dry	black soil
U029	327002	8645800	80	137.19	dry	yellow soi
U030	326807	8645802	98	172.07	dry	yellow soi
U031	326599	8645800	84	39.53	dry	yellow soi
U032	326399	8645792	89	25.58	dry	yellow soi
U033	326188	8645798	87	60.46	dry	yellow soi
U034	325998	8645794	86	97.66	dry	brown soil
U035	325800	8645792	115	118.59	damp	yellow soi
U036	325600	8645794	79	58.13	dry	Sandy soi
U037	325405	8645792	78	132.54	dry	Sandy soi
U038	325202	8645800	70	46.51	dry	brown soil
U039	325000	8645742	89	NR	damp	brown soil
U040	327600	8646000	54	53.27	dry	Lateritic soi
U041	327402	8646000	56	58.34	dry	soil
U042	327210	8646000	43	16.44	dry	black soil
U043	326993	8646002	61	20.29	damp	grey soil
U044	326800	8646002	86	65.77	dry	Grey soil
U045	326600	8646000	116	113.76	dry	Grey soil
U046	326397	8646004	106	105.17	dry	Grey soil
U047	326198	8646020	116	128.79	dry	dark soil
U048	325998	8646022	88	77.27	dry	Grey soil
U049	325795	8646000	102	47.22	dry	dark soil
U050	325603	8646000	103	45.07	dry	dark soil
U051	325398	8646006	96	88.00	dry	dark soil
U052	325196	8646000	101	118.05	dry	Grey soil
U053	325000	8645998	110	169.57	dry	Grey soil
U054	327600	8646200	60	43.12	dry	Lateritic soi
U055	327402	8646176	54	16.44	dry	soil
U056	327191	8646184	56	96.39	damp	Grey soil
U057	326999	8646247	70	55.81	dry	grey soil
U058	326802	8646300	50	122.58	dry	Grey soil
U059	325401	8646186	82	90.32	dry	Sandy soi
U060	325198	8646202	69	NR	dry	Sandy soi
U061	324996	8646194	62	125.57	damp	Sandy soi
U062	327594	8646512	75	2.68	damp	Lateritic soi
U063	327403	8646494	69	86.25	dry	grey soil
U064	327199	8646396	44	63.42	dry	grey sand
U065	326992	8646404	78	134.44	dry	grey soil
U066	326803	8646400	60	98.66	dry	Lateritic soi
U067	325598	8646396	36	5.53	damp	Sandy soi
U068	325393	8646400	40	2.43	Damp	Sandy soi
U069	325202	8646400	46	48.46	dry	Sandy soi
U070	324999	8646400	42	83.71	dry	Sandy soi
U071	324801	8646402	52	22.47	dry	Grey soil
U072	327602	8646596	77	93.86	dry	Lateritic soi
U073	327398	8646618	80	58.34	dry	Lateritic soi
U074	327214	8646606	88	88.78	dry	grey soil
U075	327007	8646598	95	116.69	dry	Lateritic soi
U076	325567	8646606	60	60.46	damp	Sandy soi

U077	325399	8646600	111	118.59	dry	Lateritic soi
U078	325198	8646598	114	178.44	dry	Grey soil
U079	325001	8646606	89	125.57	dry	Lateritic soi
U080	324800	8646596	48	85.91	dry	Grey soil
U081	324601	8646600	51	92.52	dry	Grey soil
U082	327602	8646804	46	53.27	dry	Sand
U083	327409	8646802	46	21.28	dry	grey sand
U084	327196	8646792	47	104.00	dry	cream soil
U085	327000	8646804	61	147.13	dry	grey sand
U086	325563	8646802	35	5.84	damp	dark soil
U087	325399	8646802	100	179.05	dry	Lateritic soi
U088	325202	8646800	125	46.51	dry	Lateritic soi
U089	325000	8646802	53	57.28	dry	Sandy soi
U090	324806	8646804	35	NR	dry	Sandy soi
U091	324604	8646804	39	4.09	dry	Grey soil
U092	324402	8646802	35	7.86	dry	Grey soil
U093	327598	8647002	42	53.27	dry	sand
U094	327402	8647000	47	119.22	dry	grey sand
U095	327200	8647002	45	1.66	dry	cream soil
U096	326987	8647004	44	63.42	dry	Grey soil
U097	325799	8647000	43	62.78	dry	Sandy soi
U098	325600	8647000	64	118.59	dry	grey soil
U099	325407	8646998	70	116.26	dry	Grey soil
U100	325202	8647004	63	104.64	dry	dark soil
U101	324995	8647006	59	113.94	dry	Sandy soi
U102	324799	8646996	48	NR	dry	Sandy soi
U103	324597	8646998	30	6.97	Damp	Grey soil
U104	324398	8647002	28	3.21	dry	dark soil
U105	324197	8646998	27	3.76	damp	dark soil
U106	327601	8647198	45	65.95	dry	cream soil
U107	327400	8647202	54	24.60	dry	grey sand
U108	327203	8647194	65	86.25	dry	cream soil
U109	327002	8647196	50	71.03	dry	grey soil
U110	325798	8647202	59	127.89	dry	grey soil
U111	325600	8647198	65	79.06	dry	Grey soil
U112	325398	8647202	63	1.52	dry	cream soil
U113	325199	8647200	62	83.71	dry	cream soil
U114	324998	8647202	85	139.52	dry	grey soil
U115	324802	8647202	45	51.16	dry	Sandy soi
U116	324600	8647200	30	12.38	dry	Sandy soi
U117	324405	8647204	27	1.77	dry	Sandy soi
U118	324197	8647248	26	3.54	dry	Sandy soi
U119	324003	8647200	60	59.48	dry	Sandy soi
U120	323800	8647198	109	70.49	dry	Lateritic soi
U121	327601	8647402	47	111.61	dry	cream soil
U122	326993	8647406	55	1.78	dry	grey soil
U123	327196	8647404	48	81.17	dry	cream soil
U124	327407	8647402	45	48.20	dry	grey sand
U125	325800	8647402	63	62.78	dry	grey soil
U126	325601	8647400	62	109.29	dry	cream soil
U127	325405	8647402	57	97.29	dry	Cream soil
U128	325202	8647406	52	61.09	dry	Cream soil
U129	325003	8647404	62	54.30	dry	Sandy soi
U130	324804	8647404	52	45.25	dry	Sandy soi
U131	324599	8647406	42	49.77	dry	Sandy soi
U132	324404	8647402	50	11.73	dry	cream soil
U133	324198	8647400	42	59.48	dry	Sandy soi
U134	324004	8647404	43	90.32	dry	Sandy soi
U135	323799	8647402	59	19.81	dry	cream sandy soi
U136	327600	8647596	56	83.71	dry	grey sand
U137	327392	8647596	67	50.73	dry	grey sand
U138	327203	8647598	58	48.20	dry	grey sand
U139	327003	8647590	56	18.35	dry	grey sand
U140	326204	8647604	42	43.05	dry	grey sandy soi
U141	326001	8647598	58	35.88	dry	cream soil
U142	325802	8647606	66	71.75	dry	grey soil
U143	325600	8647604	68	62.19	dry	Grey soil
U144	325402	8647604	65	104.64	dry	Grey soil
U145	325203	8647602	60	74.41	dry	cream soil
U146	325004	8647602	56	48.83	dry	Sandy soi
U147	324804	8647604	55	44.18	dry	Grey soil
U148	324599	8647606	51	13.95	dry	Cream soil
U149	324405	8647600	57	55.81	dry	Cream soil
U150	324198	8647602	64	1.59	dry	cream sandy soi
U151	323999	8647604	53	54.30	dry	cream sandy soi
U152	323800	8647602	69	108.60	dry	grey sands

U153	323594	8647600	71	99.55	dry	cream sandy soi
U154	323398	8647600	82	47.51	dry	Lateritic soi
U155	327595	8647798	54	101.47	dry	grey sand
U156	327392	8647796	67	86.25	dry	grey sand
U157	327214	8647800	60	78.64	dry	grey sand
U158	326990	8647800	66	68.49	dry	grey sand
U159	326802	8647802	48	116.26	dry	cream sandy soi
U160	326600	8647804	53	44.18	dry	cream soil
U161	326404	8647798	56	53.48	dry	cream sandy soi
U162	326202	8647802	55	25.12	dry	Sandy soi
U163	326001	8647806	41	5.26	dry	Grey soil
U164	325795	8647805	51	44.18	dry	cream soil
U165	325594	8647802	58	86.04	dry	Sandy soi
U166	325401	8647796	63	125.57	dry	Grey soil
U167	325200	8647808	59	62.78	dry	Sandy soi
U168	325004	8647798	59	69.76	dry	cream soil
U169	324800	8647794	53	37.20	dry	cream soil
U170	324602	8647804	54	41.86	dry	Grey soil
U171	324400	8647806	51	79.06	dry	Cream soil
U172	324203	8647800	48	9.35	dry	Cream soil
U173	324010	8647810	80	97.29	dry	Lateritic soi
U174	323806	8647802	66	42.99	dry	cream soil
U175	323604	8647802	65	95.02	dry	cream soil
U176	323404	8647804	63	61.09	dry	Grey soil
U177	323204	8647798	72	56.56	dry	Grey soil
U178	323002	8647805	63	54.30	dry	Grey soil
U179	322804	8647804	56	NR	dry	Grey soil
U180	322599	8647810	61	NR	dry	Grey soil
U181	322402	8647810	95	52.04	dry	Grey soil
U182	322190	8647794	61	52.04	dry	Grey soil
U183	322000	8647806	68	54.30	dry	Grey soil
U184	321795	8647802	69	56.56	dry	Grey soil
U185	321601	8647808	58	97.29	dry	Lateritic soi
U186	321404	8647800	58	122.17	dry	Lateritic soi
U187	321197	8647804	55	97.29	dry	cream soil
U188	321004	8647805	47	74.66	dry	Grey soil
U189	320797	8647805	48	92.76	dry	cream soil
U190	320597	8647806	58	113.12	dry	Reddish soil
U191	320400	8647810	68	119.91	dry	Reddish soil
U192	320200	8647800	43	83.71	dry	Reddish soil
U193	327598	8648000	60	106.96	dry	cream soil
U194	327400	8647996	60	102.31	dry	cream soil
U195	327208	8647998	61	104.64	dry	Sandy soi
U196	327000	8648000	63	74.41	dry	grey sandy soi
U197	326803	8647998	56	46.51	dry	cream soil
U198	326599	8647998	50	60.46	dry	Sandy soi
U199	326401	8647998	52	109.29	dry	cream soil
U200	326196	8648002	48	53.48	dry	Sandy soi
U201	326000	8648000	39	48.83	dry	cream soil
U202	325801	8648002	41	51.16	dry	Sandy soi
U203	325600	8647998	40	46.51	dry	Grey soil
U204	325398	8647998	53	88.36	dry	Sandy soi
U205	325203	8647998	59	104.64	dry	Grey soil
U206	325000	8648006	64	109.29	dry	Grey soil
U207	324805	8648001	56	111.61	dry	cream soil
U208	324601	8648002	58	102.31	dry	Grey soil
U209	324395	8647996	54	116.26	dry	Grey soil
U210	324206	8647998	53	90.69	dry	cream soil
U211	324001	8648002	67	72.08	dry	Lateritic soi
U212	323797	8647998	63	85.97	dry	Cream soil
U213	323601	8648002	53	83.71	dry	Grey soil
U214	323396	8648002	60	21.94	dry	cream soil
U215	323198	8648000	64	95.02	dry	Grey soil
U216	323000	8647998	53	65.61	dry	Grey soil
U217	322796	8648001	51	88.24	dry	Grey soil
U218	322610	8648005	53	95.02	dry	cream soil
U219	322401	8648002	57	72.40	dry	Grey soil
U220	322201	8648001	59	NR	dry	Grey soil
U221	321997	8648002	52	76.92	dry	Grey soil
U222	321804	8648005	57	74.66	dry	cream soil
U223	321600	8648002	52	36.20	dry	Grey soil
U224	321403	8647996	54	58.82	dry	cream soil
U225	321203	8648005	53	117.65	dry	cream soil
U226	320998	8648004	46	54.30	dry	cream soil
U227	320796	8648000	52	65.61	dry	Grey soil
U228	320596	8647998	51	61.09	dry	cream soil

U229	320395	8648002	56	63.35	dry	cream soil
U230	320202	8648000	49	72.40	dry	Reddish soil
U231	327596	8648198	57	59.09	dry	Reddish soil
U232	327397	8648202	52	88.63	dry	Reddish soil
U233	327200	8648204	52	81.25	dry	Sandy soi
U234	327002	8648200	48	96.02	dry	Sandy soi
U235	326801	8648202	52	78.79	dry	Sandy soi
U236	326604	8648204	52	88.63	dry	Grey soil
U237	326402	8648200	49	76.32	dry	Grey soil
U238	326199	8648200	44	66.48	dry	grey sandy soi
U239	326000	8648196	33	59.09	dry	grey sandy soi
U240	325806	8648204	42	73.86	dry	Grey soil
U241	325599	8648198	33	11.38	dry	Dark sandy soi
U242	325401	8648200	26	6.56	dry	Dark sandy soi
U243	325201	8648202	28	5.44	damp	Dark sandy soi
U244	324994	8648196	33	41.86	dry	Sandy soi
U245	324799	8648202	NA	56.50	dry	Grey soil
U246	324599	8648202	NA	102.55	dry	Grey soil
U247	324395	8648204	NA	46.04	dry	Grey soil
U248	324199	8648204	NA	58.60	dry	dark soil
U249	323998	8648206	NA	52.32	dry	Lateritic soi
U250	323802	8648198	50	49.37	dry	grey soil
U251	323604	8648200	53	54.30	dry	cream soil
U252	323404	8648204	62	81.45	dry	Grey soil
U253	323201	8648200	76	92.76	dry	Lateritic soi
U254	323002	8648200	58	67.87	dry	Grey soil
U255	322806	8648212	40	38.46	Damp	dark soil
U256	322599	8648200	52	40.72	dry	Grey soil
U257	322397	8648198	43	58.82	dry	Grey soil
U258	322200	8648202	69	52.04	dry	Lateritic soi
U259	321997	8648200	60	104.07	dry	Lateritic soi
U260	321801	8648198	49	NR	dry	Grey soil
U261	321602	8648200	57	3.24	dry	Grey soil
U262	321401	8648204	60	56.56	dry	cream soil
U263	321201	8648198	52	23.19	dry	Grey soil
U264	321004	8648200	60	108.60	dry	cream soil
U265	320799	8648196	55	61.09	dry	cream soil
U266	320600	8648202	55	61.09	dry	Grey soil
U267	320398	8648196	58	115.38	dry	Grey soil
U268	320202	8648204	51	31.67	dry	Reddish soil
U269	326799	8648402	45	98.48	dry	Grey soil
U270				NR		
U271				NR		
U272	326200	8648396	50	57.40	dry	Reddish soil
U273	326004	8648400	45	59.79	dry	Sandy soi
U274	325796	8648398	31	50.23	dry	Sandy soi
U275	325598	8648396	31	14.66	dry	Sandy soi
U276	325401	8648362	23	4.33	Damp	Sandy soi
U277	325200	8648402	72	95.67	dry	Lateritic soi
U278	325002	8648400	38	47.83	dry	Cream soil
U279	324801	8648400	71	121.98	dry	Lateritic soi
U280	324603	8648402	63	105.24	dry	Lateritic soi
U281	324402	8648406	42	64.58	dry	Cream soil
U282	324198	8648400	36	55.01	dry	Cream soil
U283	324001	8648402	48	66.97	dry	Cream soil
U284	323804	8648402	50	105.24	dry	Dark soil
U285	323602	8648398	60	107.25	dry	cream soil
U286	323402	8648396	72	109.87	dry	Grey soil
U287	323202	8648400	58	101.81	dry	Grey soil
U288	323002	8648406	60	106.34	dry	Lateritic soi
U289	322802	8648404	59	58.82	dry	Lateritic soi
U290	322600	8648398	68	92.76	dry	Grey soil
U291	322402	8648400	80	115.38	dry	Grey soil
U292	322184	8648378	72	88.24	Damp	Grey soil
U293	322004	8648396	45	76.92	dry	Grey soil
U294	321794	8648398	44	58.82	dry	cream soil
U295	321601	8648398	42	74.66	dry	Grey soil
U296	321400	8648402	51	81.45	dry	Grey soil
U297	321199	8648400	44	54.30	dry	cream soil
U298	321003	8648400	48	52.04	dry	Grey soil
U299	320797	8648400	60	88.24	dry	cream soil
U300	320602	8648398	55	18.53	dry	Grey soil
U301	320401	8648400	46	24.89165838	dry	Grey soil
U302	320195	8648400	35	8.297219459	dry	Grey soil
U303	326801	8648608	55	81.56425231	dry	Sandy soi
U304	326595	8648596	48	55.80712	dry	Sandy soi

U305	326399	8648596	45	51.70365529	dry	Sandy soi
U306	326222	8648614	26	4.700197647	Damp	Dark soil
U307	325999	8648602	40	66.47612824	dry	grey sandy soi
U308	325799	8648596	40	39.39326118	dry	Grey soil
U309	325594	8648598	30	4.947576471	dry	Cream soil
U310	325402	8648602	29	1.607962353	Damp	Dark soil
U312	325001	8648596	42	11.50311529	dry	Lateritic soi
U313	324806	8648602	52	55.00987543	dry	Lateritic soi
U314	324599	8648604	65	45.44294057	dry	Lateritic soi
U315	324400	8648600	60	17.06207086	dry	Lateritic soi
U316	324204	8648604	48	59.79334286	dry	Lateritic soi
U317	324001	8648604	47	43.05120686	dry	Lateritic soi
U318	323797	8648604	64	64.57681029	dry	Lateritic soi
U319	323597	8648604	51	81.31894629	dry	Lateritic soi
U320	323400	8648600	36	10.934144	dry	Grey sand
U321	323200	8648598	44	16.94191543	dry	Sandy soi
U322	323001	8648602	38	7.173985882	dry	cream sandy soi
U323	322800	8648604	64	73.86236471	dry	Lateritic soi
U324	326801	8648786	53	79.06008667	dry	brown sand
U325	326596	8648798	47	46.50593333	dry	brown sand
U326	326407	8648788	47	60.45771333	dry	Sandy soi
U327	326197	8648814	48	65.10830667	dry	Sandy soi
U328	326012	8648798	41	15.65358222	damp	brown soil
U329	325803	8648858	26	10.04632889	dry	Sandy soi
U330	325600	8648820	51	60.45771333	dry	yellow soi
U331	325408	8648826	60	44.18063667	dry	Pisolitic soil
U332	325213	8648814	35	27.90356	damp	Sandy soi
U333	325004	8648802	43	3.270897778	dry	Sandy soi
U334	324794	8648800	35	1.985902222	dry	Sandy soi
U335	324613	8648798	35	18.69084444	dry	Sandy soi
U336	324405	8648796	46	48.83123	dry	Sandy soi
U337	324200	8648804	63	62.78301	dry	Lateritic soi
U338	324003	8648802	57	111.61424	dry	Pisolitic soil
U339	323804	8648760	54	58.13241667	Damp	Pisolitic soil
U340	323598	8648794	30	39.53004333	dry	Sandy soi
U341	323403	8648808	30	14.01813333	dry	Sandy soi
U342	323211	8648802	30	10.63041778	dry	dark soil
U343	322996	8648810	36	48.83123	dry	brown soil
U344	322807	8648796	64	48.83123	dry	Lateritic soi
U345	326806	8649002	63	86.03597667	dry	brown soil
U346	326603	8649006	35	19.15811556	dry	brown soil
U347	326406	8649002	56	62.78301	dry	cream soil
U348	326201	8649000	68	62.78301	dry	brown sand
U349	326000	8648996	47	55.80712	dry	brown sand
U350	325798	8649010	43	51.15652667	dry	cream soil
U351	325600	8649000	47	53.48182333	dry	brown soil
U352	325404	8649004	44	83.71068	dry	brown soil
U353	325202	8648998	33	48.83123	damp	brown soil
U354	324985	8649002	28	5.490435556	dry	cream soil
U355	324807	8649076	36	NR	damp	Sandy soi
U356	324613	8648998	38	46.50593333	dry	brown soil
U357	324401	8649000	39	46.50593333	dry	brown sand
U358	324203	8649000	36	9.46224	dry	grey sand
U359	324004	8649002	43	6.191342222	dry	Grey sand
U360	323797	8649008	22	4.322257778	damp	brown sand
U361	323590	8649008	31	48.83123	dry	brown soil
U362	323006	8649006	31	10.86405333	dry	Sandy soi
U363	323198	8649004	41	12.84995556	dry	Sandy soi
U364	322994	8649006	38	51.15652667	dry	Sandy soi
U365	322800	8649000	40	37.20474667	dry	Sandy soi
U366	318203	8645402	84	160.6340076	dry	Lateritic soi
U367	317998	8645396	77	104.0727373	dry	Lateritic soi
U368	317798	8645398	68	104.63835	dry	Lateritic soi
U369	317596	8645400	80	153.46958	dry	Lateritic soi
U370	317396	8645406	76	81.38538333	dry	yellow lateritic soi
U371	317199	8645398	68	174.39725	dry	brown soil
U372	317004	8645396	87	167.42136	dry	brown soil
U373	316802	8645394	63	23.36355556	dry	Sandy soi
U374	316604	8645410	75	90.68657	dry	Sandy soi
U375	318608	8645608	53	46.50593333	dry	Lateritic soi
U376	318398	8645606	80	113.9395367	dry	Sandy soi
U377	318199	8645596	82	95.33716333	dry	brown soil
U378	317991	8645594	64	53.48182333	dry	Sandy soi
U379	317804	8645590	63	37.20474667	dry	Lateritic soi
U380	317602	8645604	65	7.35952	dry	Lateritic soi
U381	317404	8645600	68	123.2407233	dry	Lateritic soi

U382	317200	8645600	78	83.71068	dry	Lateritic soi
U383	317007	8645580	80	344.1439067	dry	Lateritic soi
U384	316811	8645600	70	160.44547	dry	Lateritic soi
U385	316601	8645598	105	155.7948767	dry	Lateritic soi
U386	318598	8645796	66	51.15652667	dry	Lateritic soi
U387	318397	8645806	96	88.36127333	dry	Sandy soi
U388	318198	8645806	65	153.46958	dry	Lateritic soi
U389	317994	8645806	78	34.87945	dry	Sandy soi
U390	317797	8645816	100	102.3130533	dry	Lateritic soi
U391	317602	8645796	75	46.50593333	dry	Sandy soi
U392	317394	8645792	83	183.6984367	dry	Sandy soi
U393	317202	8645808	60	118.59013	dry	Sandy soi
U394	317000	8645804	71	76.73479	dry	Sandy soi
U395	316793	8645796	74	127.8913167	dry	Sandy soi
U396	316591	8645792	73	76.73479	dry	Lateritic soi
U397	318595	8645996	57	111.61424	dry	Lateritic soi
U398	318405	8645994	78	120.9154267	dry	Lateritic soi
U399	318200	8645990	128	182.4463538	dry	brown soil
U400	318000	8645990	67	13.91030154	damp	Sandy soi
U401	317807	8646002	84	98.73567385	dry	Sandy soi
U402	317604	8646000	100	51.51426462	dry	Sandy soi
U403	317406	8645956	117	148.1035108	damp	black soil
U404	317219	8645992	110	106.9636467	dry	Sandy soi
U405	316997	8646004	83	102.3130533	damp	Sandy soi
U406	316806	8645998	58	48.83123	damp	Sandy soi
U407	316626	8646000	64	55.80712	damp	Sandy soi
U408	318803	8646198	68	144.1683933	dry	Lateritic soi
U409	318606	8646200	73	139.5178	dry	Lateritic soi
U410	318402	8646202	70	76.32444353	dry	Lateritic soi
U411	318199	8646200	82	19.04816941	Damp	Grey soil
U412	317996	8646200	184	125.56602	dry	Lateritic soi
U413	317797	8646198	211	71.40028588	dry	Lateritic soi
U414	317605	8646200	173	108.3314682	dry	Lateritic soi
U415	317402	8646198	124	113.2556259	dry	Lateritic soi
U416	317201	8646200	168	118.8151587	dry	Lateritic soi
U417	316998	8646200	134	126.9161923	dry	Grey soil
U418	316801	8646202	146	132.3168813	dry	Grey soil
U419	316598	8646200	165	70.20895742	dry	Grey soil
U420	318811	8646410	61	7.35952	dry	black soil
U421	318604	8646412	64	55.80712	dry	brown sand
U422	318392	8646438	39	2.473788235	Damp	dark soil
U423	318201	8646402	71	83.71068	dry	Grey soil
U424	317998	8646398	111	46.77949765	dry	Lateritic soi
U425	317799	8646402	121	64.01404941	dry	Lateritic soi
U426	317601	8646404	127	120.6418624	dry	Sandy soi
U427	317401	8646404	113	54.16573412	dry	Grey lateritic soil
U428	317198	8646405	124	91.09691647	dry	Grey soil
U429	316996	8646402	148	51.70365529	dry	Grey soil
U430	316799	8646402	112	150.1868082	dry	Lateritic soi
U431	316601	8646402	135	56.62781294	dry	Lateritic soi
U432	319214	8646616	107	100.8821015	dry	Lateritic soi
U433	319011	8646606	80	103.0285292	dry	brown soil
U434	318804	8646606	109	169.5677877	dry	Grey soil
U435	318514	8646632	68	137.3713723	damp	brown sand
U436	318402	8646596	56	54.16573412	dry	Grey soil
U437	318202	8646602	69	49.24157647	dry	Grey soil
U438	318001	8646602	68	51.70365529	dry	Sandy soi
U439	317798	8646600	88	54.16573412	dry	Sandy soi
U440	317601	8646602	90	108.3314682	dry	Sandy soi
U441	317398	8646602	97	64.01404941	dry	Lateritic soi
U442	317196	8646602	99	61.55197059	dry	dark soil
U443	317001	8646604	92	130.4901776	dry	Reddish soil
U444	316798	8646604	98	164.9592812	dry	dark soil
U445	316597	8646596	100	41.85534	dry	Lateritic soi
U446	319399	8646798	40	3.881944615	damp	Grey sand
U447	319194	8646806	51	70.83211385	dry	Grey sand
U448	318997	8646790	68	6.938976	dry	Lateritic soi
U449	318800	8646742	47	4.310576	damp	brown soil
U450	318592	8646786	86	83.71068	dry	brown sand
U451	318401	8646798	63	67.43360333	dry	Grey soil
U452	318199	8646796	73	48.83123	dry	Lateritic soi
U453	318005	8646798	82	48.83123	dry	Grey soil
U454	317801	8646800	88	53.48182333	dry	cream sandy soi
U455	317606	8646800	77	23.36355556	dry	cream soil
U456	317407	8646802	89	86.03597667	dry	grey soil
U457	317202	8646800	73	79.06008667	dry	Grey soil

U458	316998	8646802	76	76.73479	dry	cream soil
U459	316799	8646794	101	65.10830667	dry	Lateritic soi
U460	316603	8646796	114	90.68657	dry	Lateritic soi
U461	319408	8647006	48	30.62585854	dry	grey sand
U462	319192	8647012	54	67.37688878	dry	Grey sand
U463	319001	8646990	53	44.91792585	dry	Grey sand
U464	318815	8646992	34	3.282294634	damp	brown sand
U465	318598	8646990	48	53.08482146	dry	brown sand
U466	318399	8647004	63	5.2568	dry	grey soil
U467	318198	8646998	64	81.38538333	dry	cream soil
U468	318000	8647004	71	69.7589	dry	cream soil
U469	317798	8647000	67	79.06008667	dry	cream soil
U470	317596	8646996	77	86.03597667	dry	dark soil
U471	317404	8647000	79	81.38538333	dry	cream sandy soi
U472	317204	8647004	70	97.66246	dry	cream sandy soi
U473	317003	8647004	73	83.71068	dry	cream soil
U474	316804	8647008	64	65.10830667	dry	Lateritic soi
U475	327549	8645404	76	107.6280171	dry	cream sandy soi
U476	327499	8645400	68	59.79334286	dry	Sandy soi
U477	327448	8645402	58	57.40160914	damp	Sandy soi
U478	327347	8645400	67	90.88588114	dry	Sandy soi
U479	327297	8645404	70	129.1536206	dry	Sandy soi
U480	327349	8645400	95	165.0296263	dry	yellow soi
U481	327150	8645412	109	160.2461589	dry	brown soil
U482	327099	8645378	145	267.874176	dry	Sandy soi
U483	327048	8645396	225	466.3880743	dry	Lateritic soi
U484	326948	8645402	150	193.7304309	dry	Lateritic soi
U485	326897	8645397	162	358.7600571	dry	Lateritic soi
U486	326850	8645400	149	287.0080457	dry	Lateritic soi
U487	326750	8645398	175	442.4707371	dry	Pisolitic soil
U488	326700	8645400	155	420.9451337	dry	Lateritic soi
U489	326647	8645406	177	401.811264	dry	Lateritic soi
U490	326548	8645398	115	418.5534	dry	Sandy soi
U491	326500	8645404	110	310.9253829	damp	yellow soi
U492	326443	8645400	80	78.92721257	dry	Sandy soi
U493	326347	8645400	97	112.4114846	dry	Sandy soi
U494	326294	8645394	123	167.42136	dry	Yellow pisolitic soi
U495	326247	8645396	142	203.2973657	damp	Lateritic soi
U496	326151	8645400	154	279.8328446	dry	Lateritic soi
U497	326106	8645400	165	231.9981703	dry	Lateritic soi
U498	326050	8645400	119	165.0296263	dry	Lateritic soi
U499	325948	8645400	115	1.682176	dry	Lateritic soi
U500	325895	8645400	113	172.2048274	dry	Lateritic soi
U501	325849	8645400	102	2.042642286	dry	Lateritic soi
U502	325748	8645400	88	150.679224	dry	Lateritic soi
U503	325700	8645400	90	121.9784194	dry	Lateritic soi
U504	325647	8645396	105	62.18507657	dry	Lateritic soi
U505	325553	8645406	94	129.1536206	dry	Lateritic soi
U506	325503	8645400	98	176.9882949	dry	Lateritic soi
U507	325447	8645400	101	315.7088503	dry	Lateritic soi
U508	325347	8645398	70	78.92721257	dry	Cream soil
U509	325300	8645406	103	191.3386971	dry	Cream soil
U510	325240	8645384	169	121.9784194	dry	Cream soil
U511	325204	8645408	182	119.5866857	dry	Cream soil
U513	327598	8645512	61	101.8102865	dry	Sandy soi
U514	327551	8645522	63	85.97313081	dry	Sandy soi
U515	327495	8645504	87	52.03636865	dry	Sandy soi
U516	327448	8645504	79	52.03636865	dry	Sandy soi
U517	327398	8645502	69	74.66087676	dry	Sandy soi
U518	327346	8645502	68	117.6474422	dry	Sandy soi
U519	327302	8645500	76	101.8102865	dry	Sandy soi
U520	327250	8645502	92	108.5976389	dry	Sandy soi
U521	327200	8645496	79	90.49803243	dry	Sandy soi
U522	327147	8645502	83	58.82372108	dry	Sandy soi
U523	327103	8645500	102	138.0094995	dry	Sandy soi
U524	327048	8645502	88	24.09603459	damp	Grey soil
U526	326947	8645498	100	171.9462616	dry	cream sandy soi
U527	326902	8645500	124	233.0324335	dry	Sandy soi
U528	326850	8645502	103	337.1051708	dry	Sandy soi
U529	326795	8645484	109	226.2450811	dry	Sandy soi
U530	326748	8645496	152	384.6166378	dry	cream sandy soi
U531	326700	8645500	155	380.0917362	dry	Sandy soi
U532	326645	8645500	159	441.1779081	dry	Sandy soi
U533	326593	8645502	107	158.3715568	dry	Sandy soi
U534	326550	8645496	109	187.7834173	dry	Sandy soi
U535	326499	8645500	91	131.222147	dry	Sandy soi

U536	326455	8645508	64	88.23558162	damp	cream sandy soi
U537	326400	8645500	98	106.3351881	dry	cream sandy soi
U538	326360	8645500	103	79.18577838	dry	cream sandy soi
U539	326298	8645502	125	178.7336141	dry	cream sandy soi
U540	326248	8645500	160	323.5304659	dry	cream sandy soi
U541	326197	8645496	164	237.5573351	dry	cream sandy soi
U542	326148	8645497	170	319.0055643	dry	cream sandy soi
U543	326100	8645502	155	119.909893	dry	cream sandy soi
U544	326051	8645490	160	219.4577286	dry	cream sandy soi
U545	326000	8645504	138	133.4845978	dry	qtz grave
U546	325948	8645504	131	192.3083189	dry	qtz grave
U547	325897	8645500	144	160.6340076	dry	grey qtz grave
U548	325830	8645500	145	253.3944908	dry	grey qtz grave
U549	325802	8645497	111	140.2719503	dry	grey qtz grave
U550	325748	8645498	87	58.82372108	dry	Sandy soi
U551	325699	8645500	90	90.49803243	dry	Sandy soi
U552	325651	8645500	101	104.0727373	dry	Sandy soi
U553	325600	8645500	89	61.08617189	dry	cream soil
U554	325550	8645500	101	156.1091059	dry	cream soil
U555	325500	8645500	83	153.8466551	dry	Sandy soi
U556	325450	8645500	81	149.3217535	dry	cream sandy soi
U557	325400	8645500	94	124.4347946	dry	cream sandy soi
U558	325349	8645500	95	113.1225405	dry	cream sandy soi
U559	325300	8645500	63	47.51146703	dry	cream sandy soi
U560	325248	8645502	91	99.54783568	dry	gravel soi
U561	325199	8645498	158	108.5976389	dry	Sandy soi
U562	325148	8645505	167	122.1723438	dry	Grey soil
U564	316602	8647000	78	112.5764317	dry	Sandy soi

APPENDIX 4

Soil Geochemical Survey Results

Amdel Pty Ltd
PO Box 338
Torrensville Plaza SA 5031

ABN 30 008 127 802
Telephone (08) 8416 5200
Facsimile (08) 8234 0355

Mr Simon Powell
UXA Resources
43a Fullarton Road
KENT TOWN SA 5067

FINAL ANALYSIS REPORT

Your Order No:	*F0062*	*Our Job Number:*	*1DN0309A*
Sample rec'd:	*21/09/11*	*Results reported:*	*10/10/11*
No. of samples:	*299*	*Type of Sample:*	*SOILS AND ROCKS*

Results apply to sample(s) submitted by the client.

Report comprises a letter and report pages: 1 to 12

This report supersedes any preliminary results previously reported.

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Approved:

Darryl Hartley
Business Unit Manager
Adelaide Geoanalytical

Robert Silvani
Senior Chemist

Neville Walkom
Senior Chemist

Report Codes:

N.A.	-	*Not Available*	*I.S.*	-	*Insufficient Sample*
L.N.R.	-	*Listed But Not Received*	*R.N.L.*	-	*Received But Not Listed*

******* ***Please Note*** *******

1) The results for elements 'Al, Ba, Cr, Ti, W, Zr, Sn' by code IC3E digest are acid soluble only, and results may be semi-quantative.
'K' values > 1% by code IC3E may bias low due to the insolubility of potassium perchlorate.

2) For scheme IC4, Total 'Fe' is analysed but is calculated and reported as 'Fe2O3'

Job: 1DN0309A
O/N: F0062

Final

ANALYTICAL REPORT

AMDEL

SAMPLE	As	Cu	Li	Ni	Pb	V	F
0001	< 3	4	5	10	5	100	0.005
0002	< 3	4	5	14	< 5	80	0.004
0003	< 3	17	34	30	10	165	0.011
0004	12	< 2	10	48	10	245	0.012
0005	8	< 2	11	14	5	250	0.011
007	< 3	4	8	8	< 5	33	0.006
008	8	< 2	4	20	5	140	0.012
009	8	< 2	5	7	< 5	70	0.010
010	8	7	8	22	5	125	0.010
011	6	9	14	15	5	120	0.009
012	< 3	3	10	7	< 5	40	0.006
013	4	15	8	22	10	205	0.006
014	< 3	3	9	7	10	45	0.004
015	< 3	5	10	9	5	48	0.004
016	< 3	8	15	11	10	60	0.006
017	14	7	9	10	10	295	0.009
018	4	4	11	12	10	125	0.008
019	< 3	4	9	6	10	34	0.006
020	16	10	9	35	10	270	0.013
021	14	8	4	31	10	170	0.013
022	12	11	6	25	5	130	0.013
023	8	11	17	14	10	125	0.009
024	< 3	4	5	5	< 5	24	0.004
025	< 3	3	7	6	< 5	27	0.004
026	< 3	21	16	24	15	120	0.008
027	< 3	15	14	20	10	100	0.007
028	< 3	11	18	15	10	80	0.010
029	< 3	7	10	11	10	70	0.005
030	< 3	7	12	10	10	60	0.005
031	< 3	4	10	9	10	48	0.004
032	< 3	7	11	8	10	48	0.005
033	< 3	7	11	9	10	85	0.006
034	< 3	4	12	8	< 5	39	0.006
035	4	8	21	13	5	60	0.010
036	< 3	6	11	9	< 5	40	0.008
037	< 3	3	6	7	< 5	34	0.005
038	< 3	3	8	7	< 5	60	0.004
039	< 3	9	15	12	10	65	0.009
040	10	60	8	40	10	545	0.006
041	< 3	30	8	24	10	255	0.005
042	< 3	23	8	31	5	205	0.008
043	6	25	21	60	10	260	0.013
044	< 3	9	12	12	5	75	0.006
045	4	16	22	21	10	115	0.009
046	< 3	11	17	15	10	80	0.006
047	< 3	16	32	19	15	100	0.011
048	< 3	13	20	18	10	90	0.011
049	< 3	12	21	14	10	80	0.008
050	< 3	9	15	11	10	60	0.008
051	< 3	14	21	15	10	80	0.009
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
052	< 3	11	14	11	10	60	0.006
053	< 3	11	15	11	10	75	0.008
054	10	38	9	39	10	400	0.006
055	4	25	10	31	5	240	0.006
056	4	28	17	55	10	235	0.007
057	12	49	8	55	10	730	0.008
058	< 3	15	11	28	< 5	85	0.005
059	< 3	10	15	14	10	95	0.007
060	< 3	7	23	11	5	60	0.006
061	< 3	5	10	7	< 5	50	0.005
062	18	55	9	55	15	960	0.007
063	10	65	7	28	10	535	0.006
064	< 3	11	5	9	< 5	135	0.004
065	8	41	13	65	5	275	0.006
066	8	50	11	47	10	405	0.005
067	< 3	4	4	6	< 5	28	0.004
068	< 3	3	4	4	< 5	26	0.003
069	< 3	< 2	4	3	< 5	28	0.003
070	< 3	3	4	4	< 5	26	0.005
071	< 3	5	4	7	< 5	32	0.006
072	16	47	11	70	20	795	0.008
073	20	55	7	55	15	730	0.010
074	14	36	16	48	15	480	0.008
075	12	24	7	14	10	420	0.007
076	< 3	8	5	5	< 5	31	0.007
077	12	12	15	12	10	260	0.007
078	8	20	17	24	15	210	0.008
079	6	14	7	15	10	110	0.006
080	< 3	8	4	7	< 5	50	0.005
081	< 3	9	5	9	5	18	0.005
082	< 3	8	5	9	< 5	55	0.005
083	< 3	12	4	10	< 5	23	0.005
084	< 3	10	5	7	< 5	37	0.005
085	6	40	8	29	5	150	0.007
086	< 3	4	2	< 2	< 5	5	0.005
087	8	15	4	15	10	155	0.010
088	12	41	11	31	30	250	0.013
089	4	5	4	7	< 5	50	0.006
090	< 3	< 2	3	5	< 5	17	0.006
091	< 3	< 2	3	6	5	13	0.006
092	< 3	< 2	4	4	< 5	10	0.006
093	< 3	< 2	2	3	< 5	10	0.006
094	4	< 2	3	7	< 5	37	0.006
095	< 3	< 2	3	6	< 5	19	0.006
096	< 3	< 2	3	3	< 5	13	0.006
097	< 3	< 2	3	5	< 5	8	0.006
098	4	< 2	5	8	5	36	0.007
099	6	5	4	10	10	80	0.007
100	< 3	< 2	4	8	5	46	0.007
101	< 3	5	5	7	< 5	47	0.007
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
102	< 3	9	5	12	< 5	14	0.007
103	< 3	< 2	2	3	< 5	4	0.005
104	< 3	< 2	2	< 2	< 5	4	0.006
105	< 3	< 2	< 2	< 2	< 5	3	0.005
106	< 3	< 2	3	4	< 5	7	0.006
107	< 3	< 2	4	6	< 5	31	0.006
108	10	4	4	11	10	155	0.007
109	< 3	2	4	8	< 5	28	0.007
110	< 3	26	6	11	10	39	0.008
111	4	4	6	10	5	46	0.007
112	< 3	< 2	6	9	5	42	0.007
113	< 3	4	6	12	5	44	0.007
114	6	4	5	10	5	120	0.007
115	< 3	4	4	6	< 5	14	0.007
116	< 3	< 2	2	3	< 5	7	0.006
117	< 3	< 2	< 2	3	< 5	5	0.006
118	< 3	< 2	< 2	< 2	< 5	3	0.007
119	6	5	4	11	5	125	0.007
120	18	10	13	25	20	295	0.009
121	< 3	< 2	4	9	< 5	25	0.011
122	< 3	< 2	5	9	5	55	0.011
123	< 3	< 2	4	8	< 5	32	0.010
124	< 3	< 2	3	5	< 5	19	0.009
125	4	4	6	10	10	40	0.010
126	< 3	< 2	5	9	5	42	0.010
127	4	< 2	6	10	5	42	0.010
128	< 3	< 2	4	8	< 5	34	0.009
129	4	< 2	5	10	5	41	0.008
130	< 3	3	5	9	< 5	29	0.008
131	< 3	4	4	12	< 5	26	0.007
132	< 3	4	4	7	< 5	22	0.009
133	< 3	3	3	4	< 5	15	0.008
134	< 3	3	3	4	< 5	12	0.007
135	4	8	13	13	5	115	0.008
136	4	< 2	3	8	5	70	0.009
137	4	< 2	3	7	5	65	0.008
138	4	< 2	4	8	5	50	0.009
139	4	3	5	9	5	29	0.008
140	< 3	< 2	3	4	5	19	0.008
141	< 3	4	5	9	5	35	0.008
142	4	495	5	10	5	43	0.009
143	6	3	5	11	10	100	0.009
144	4	3	6	10	10	65	0.009
145	4	3	5	9	5	46	0.008
146	< 3	2	5	8	5	36	0.008
147	< 3	4	5	9	5	38	0.008
148	< 3	< 2	6	8	5	35	0.008
149	4	3	5	8	5	39	0.008
150	4	4	5	8	5	48	0.008
151	4	5	4	7	5	49	0.008
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
152	4	5	5	7	5	55	0.007
153	8	13	7	14	10	120	0.008
154	12	11	5	15	10	175	0.009
155	< 3	< 2	4	6	< 5	26	0.009
156	6	3	3	7	5	65	0.008
157	< 3	< 2	6	10	5	42	0.008
158	< 3	< 2	5	8	5	28	0.008
159	< 3	< 2	4	8	< 5	28	0.008
160	4	< 2	4	8	< 5	28	0.007
161	< 3	5	5	9	5	30	0.008
162	< 3	< 2	5	10	5	34	0.007
163	< 3	< 2	3	6	< 5	17	0.008
164	< 3	2	4	7	5	25	0.008
165	< 3	3	6	10	5	36	0.009
166	< 3	< 2	5	8	5	50	0.009
167	4	3	6	10	< 5	45	0.008
168	4	2	5	9	5	48	0.009
169	< 3	5	5	11	5	44	0.009
170	< 3	2	5	9	5	40	0.008
171	< 3	7	4	8	< 5	38	0.008
172	< 3	2	4	8	5	32	0.015
173	14	5	5	13	10	245	0.014
174	6	4	5	11	5	75	0.013
175	8	5	5	12	10	105	0.011
176	4	5	5	11	5	50	0.010
177	4	7	5	13	10	75	0.010
178	4	6	6	15	5	65	0.010
179	< 3	7	5	11	< 5	29	0.010
180	< 3	13	8	12	5	26	0.009
181	10	15	6	15	10	135	0.011
182	< 3	7	6	9	5	25	0.009
183	< 3	5	6	12	5	48	0.009
184	4	6	5	13	10	60	0.009
185	< 3	8	4	10	5	30	0.008
186	< 3	6	4	8	5	23	0.008
187	< 3	< 2	4	6	5	22	0.008
188	< 3	4	4	6	5	20	0.008
189	< 3	3	5	7	< 5	25	0.006
190	< 3	7	5	10	5	32	0.006
191	< 3	4	5	9	5	28	0.005
192	< 3	4	5	10	5	28	0.005
193	< 3	3	5	10	5	35	0.005
194	< 3	5	6	13	10	44	0.005
195	< 3	3	5	12	5	37	0.005
196	< 3	3	5	11	5	34	0.005
197	< 3	2	4	10	5	23	0.005
198	< 3	8	4	8	< 5	18	0.004
199	< 3	3	4	10	5	27	0.005
200	< 3	4	4	11	5	25	0.004
201	< 3	3	3	6	< 5	15	0.004
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
202	< 3	3	3	6	< 5	15	0.004
203	< 3	2	3	6	< 5	19	0.004
204	< 3	5	5	9	5	22	0.004
205	6	4	4	12	5	75	0.005
206	6	4	5	13	5	95	0.007
207	< 3	6	5	12	5	37	0.006
208	< 3	5	5	11	5	35	0.006
209	4	5	5	14	5	38	0.005
210	< 3	4	5	11	5	38	0.005
211	8	6	4	21	10	135	0.005
212	< 3	7	5	12	5	41	0.005
213	4	25	4	21	5	135	0.005
214	< 3	11	6	14	5	49	0.005
215	6	12	5	22	10	150	0.004
216	< 3	5	4	10	< 5	33	0.004
217	< 3	9	5	12	5	35	0.004
218	< 3	10	7	15	10	23	0.004
219	6	9	6	15	10	90	0.004
220	< 3	7	9	12	5	27	0.004
221	< 3	6	4	14	5	70	0.004
222	< 3	7	7	15	5	40	0.004
223	< 3	4	4	9	5	26	0.007
224	< 3	4	4	8	< 5	25	0.006
225	4	5	5	10	5	33	0.006
226	< 3	6	4	8	< 5	25	0.006
227	< 3	4	4	7	5	15	0.006
228	< 3	4	5	9	5	16	0.005
229	< 3	6	5	11	5	16	0.005
230	< 3	6	5	12	5	17	0.005
231	< 3	4	4	11	< 5	22	0.005
232	< 3	11	4	11	5	28	0.005
233	< 3	4	4	11	< 5	31	0.005
234	< 3	6	4	10	< 5	23	0.005
235	< 3	8	5	12	5	27	0.005
236	< 3	4	4	10	< 5	25	0.005
237	< 3	3	4	10	5	18	0.005
238	< 3	4	4	10	5	24	0.005
239	< 3	4	4	8	< 5	13	0.005
240	< 3	8	3	11	< 5	20	0.005
241	< 3	4	2	5	< 5	10	0.005
242	< 3	5	< 2	3	< 5	4	0.004
243	< 3	3	< 2	3	< 5	3	0.004
244	< 3	5	2	5	< 5	5	0.004
245	< 3	9	6	15	5	26	0.005
246	< 3	5	4	6	< 5	7	0.004
247	< 3	15	6	15	< 5	18	0.005
248	10	10	8	33	10	190	0.006
249	8	10	5	19	10	135	0.006
250	< 3	12	6	15	< 5	26	0.005
251	4	30	8	50	5	140	0.006
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
252	4	30	4	28	10	160	0.006
253	10	41	6	41	15	305	0.007
254	< 3	18	6	26	5	110	0.006
255	< 3	7	3	8	< 5	27	0.005
256	< 3	7	5	10	< 5	18	0.005
257	< 3	5	4	7	< 5	14	0.007
258	8	26	12	14	10	185	0.007
259	8	8	10	18	10	210	0.006
260	4	9	5	13	10	90	0.006
261	< 3	8	5	16	5	34	0.005
262	< 3	5	4	8	5	40	0.005
263	< 3	5	5	9	5	36	0.005
264	< 3	6	5	10	5	37	0.005
265	< 3	4	5	8	< 5	35	0.005
266	< 3	6	5	10	5	37	0.005
267	< 3	6	6	12	5	38	0.005
268	< 3	6	5	9	< 5	28	0.005
269	< 3	3	4	8	< 5	24	0.005
270	< 3	4	4	8	< 5	23	0.005
271	< 3	3	4	7	< 5	21	0.005
272	< 3	4	4	9	< 5	30	0.005
273	< 3	3	4	8	5	25	0.005
274	< 3	5	3	6	< 5	12	0.006
275	< 3	4	2	5	< 5	7	0.004
276	< 3	4	< 2	2	< 5	< 2	0.008
277	16	20	8	60	25	330	0.007
278	< 3	10	4	18	5	50	0.004
279	10	50	8	50	30	235	0.006
280	14	25	5	35	15	235	0.009
281	< 3	8	3	17	< 5	26	0.004
282	< 3	8	3	12	5	27	0.004
283	8	17	8	24	10	135	0.006
284	4	9	5	17	10	130	0.005
285	4	15	6	26	10	100	0.005
286	10	48	6	50	15	305	0.005
287	8	22	7	33	10	190	0.005
288	14	30	7	44	15	395	0.005
289	14	38	9	29	15	455	0.006
290	8	23	8	32	10	185	0.004
291	12	23	7	37	15	340	0.009
292	6	11	17	16	10	165	0.007
293	< 3	10	11	11	< 5	37	0.004
294	< 3	6	6	12	< 5	38	0.004
295	4	5	3	8	5	115	0.004
296	< 3	7	4	12	< 5	22	0.004
297	< 3	5	3	6	< 5	21	0.003
298	< 3	5	5	8	< 5	42	0.004
299	< 3	5	5	9	5	34	0.004
300	< 3	6	5	9	< 5	29	0.004
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
0001	16	< 2	6.5	6.5	2.0	11	6.16
0002	13	< 2	7.5	4.5	1.5	11	6.46
0003	65	< 2	24.0	10.5	5.5	23	6.35
0004	13	4	6.5	15.5	11.0	19	6.30
0005	23	< 2	8.0	8.5	5.5	14	5.96
007	22	< 2	9.5	6.0	2.0	16	5.98
008	14	< 2	5.5	14.5	3.5	11	5.99
009	22	< 2	9.0	7.0	2.0	15	5.66
010	13	2	5.0	11.0	2.5	24	5.82
011	19	< 2	8.0	8.5	2.5	17	5.62
012	18	< 2	7.0	5.5	1.5	21	5.70
013	32	< 2	11.0	4.5	2.0	10	6.03
014	32	< 2	14.5	7.5	2.5	18	6.01
015	26	< 2	11.0	7.5	2.0	14	6.14
016	36	< 2	17.0	8.5	3.0	19	6.08
017	24	2	6.5	5.5	7.5	9	6.31
018	32	< 2	13.0	9.0	4.5	20	6.07
019	42	< 2	16.5	7.5	2.5	19	6.48
020	26	3	7.0	15.0	5.0	13	6.44
021	22	3	5.5	14.0	3.5	13	6.31
022	16	3	6.5	13.0	3.5	20	6.24
023	27	< 2	10.5	9.5	3.0	19	5.99
024	20	< 2	8.0	4.5	2.0	15	5.97
025	18	< 2	6.5	5.0	1.0	9	5.80
026	80	< 2	39.5	11.5	3.0	33	5.80
027	80	< 2	20.0	7.5	2.0	17	5.96
028	50	< 2	21.0	9.5	3.0	20	6.00
029	34	< 2	12.0	7.0	2.0	13	6.09
030	35	< 2	15.0	8.5	3.0	19	5.69
031	33	< 2	13.5	7.0	2.0	17	5.75
032	36	< 2	15.0	7.0	2.5	17	5.93
033	27	< 2	10.5	7.0	2.5	14	6.14
034	20	< 2	8.0	6.5	1.5	15	5.92
035	33	< 2	13.5	11.0	3.0	21	5.91
036	26	< 2	11.0	8.0	2.0	20	5.47
037	15	< 2	6.5	5.0	1.5	10	6.11
038	18	< 2	7.5	7.0	1.5	12	6.06
039	44	< 2	19.0	8.0	2.0	17	5.88
040	32	2	6.5	5.0	2.0	7	6.02
041	33	3	13.0	4.5	1.5	13	5.92
042	32	< 2	11.0	4.0	1.0	11	6.26
043	60	< 2	27.0	7.5	2.0	25	6.26
044	32	< 2	16.0	8.0	2.0	17	6.13
045	70	< 2	34.0	12.5	3.5	29	6.08
046	46	< 2	19.5	10.0	2.5	21	6.07
047	70	< 2	29.5	13.0	4.0	28	5.94
048	37	< 2	14.0	9.0	2.5	15	6.27
049	48	< 2	19.5	10.0	3.0	21	6.25
050	45	< 2	18.5	9.0	2.5	16	5.90
051	55	< 2	24.0	10.5	3.5	23	6.04
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

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SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
052	40	< 2	17.0	10.0	3.0	19	5.74
053	55	< 2	25.0	11.5	3.5	24	5.81
054	41	< 2	7.5	5.5	2.0	10	5.98
055	30	< 2	14.0	5.5	2.0	16	5.95
056	46	< 2	22.0	7.5	2.0	22	6.13
057	46	2	9.0	5.0	3.0	8	6.18
058	17	< 2	10.5	4.0	1.5	13	6.01
059	28	< 2	11.5	8.0	2.5	15	5.80
060	22	< 2	9.5	6.5	2.0	14	5.90
061	15	< 2	6.5	6.0	1.5	11	5.80
062	25	4	7.0	6.0	3.5	7	6.07
063	26	3	10.5	5.5	3.5	12	6.10
064	6	< 2	3.0	2.5	0.5	4	5.97
065	34	< 2	20.5	5.0	2.5	15	6.12
066	45	< 2	8.5	3.5	2.0	12	6.18
067	11	< 2	4.5	2.5	1.0	8	6.10
068	8	< 2	3.0	2.5	0.5	6	5.93
069	7	2	3.0	2.0	0.5	6	5.97
070	6	< 2	2.5	2.0	0.5	18	5.77
071	9	< 2	4.0	3.5	1.0	8	5.82
072	39	3	9.5	6.0	2.5	10	6.19
073	32	3	8.0	7.5	2.5	8	6.12
074	24	2	6.5	8.5	2.0	9	6.10
075	16	3	5.5	4.5	3.0	7	5.89
076	21	< 2	7.5	4.0	1.0	10	5.22
077	19	3	6.0	7.0	2.5	11	5.93
078	46	2	9.0	8.5	2.5	12	6.25
079	27	2	8.0	7.0	2.0	11	6.08
080	17	< 2	6.5	4.0	1.0	10	6.04
081	25	< 2	10.0	4.0	1.0	11	5.87
082	12	< 2	5.0	4.0	0.5	7	6.11
083	22	< 2	9.0	3.5	0.5	8	5.96
084	13	< 2	5.0	3.5	0.5	8	5.57
085	32	< 2	12.0	4.5	1.5	13	5.95
086	8	3	3.0	2.0	< 0.5	6	5.24
087	42	3	8.5	7.5	2.0	12	6.01
088	46	2	12.0	11.5	6.0	13	6.10
089	14	2	5.0	3.5	1.0	8	5.92
090	10	< 2	3.5	2.5	0.5	5	5.82
091	14	< 2	5.0	3.0	0.5	7	5.73
092	10	< 2	3.5	2.5	0.5	5	5.78
093	11	< 2	4.0	2.5	1.0	7	5.86
094	12	< 2	4.5	3.0	1.0	7	5.69
095	10	< 2	4.0	2.5	0.5	6	5.59
096	13	< 2	4.5	3.0	0.5	7	5.61
097	11	< 2	4.0	3.0	0.5	5	5.74
098	26	< 2	10.5	7.0	1.5	10	5.71
099	22	3	8.0	8.5	2.0	12	5.64
100	20	3	8.0	6.0	1.5	10	5.70
101	15	< 2	5.5	4.5	1.0	8	5.70
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

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SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
102	27	< 2	11.5	4.5	1.0	12	5.80
103	5	2	2.0	1.5	0.5	5	5.70
104	6	2	2.5	1.5	< 0.5	4	5.59
105	4	2	1.5	1.0	0.5	4	5.32
106	11	< 2	3.5	2.5	0.5	5	5.35
107	14	< 2	5.0	4.5	1.5	8	5.52
108	16	3	5.0	7.5	1.5	8	5.64
109	17	< 2	6.0	4.0	1.0	8	5.76
110	25	< 2	9.5	6.0	1.5	10	5.66
111	23	< 2	8.5	6.5	1.5	9	5.54
112	21	< 2	8.0	6.0	1.5	9	5.51
113	23	< 2	9.0	7.0	1.5	10	5.25
114	27	3	8.5	9.0	1.5	10	5.36
115	20	2	9.5	4.0	1.0	9	5.57
116	8	< 2	3.0	2.0	0.5	4	5.40
117	6	2	2.0	1.5	< 0.5	3	5.15
118	5	3	2.0	1.5	0.5	4	5.10
119	16	2	5.0	5.0	1.5	7	5.31
120	65	3	8.5	13.5	2.5	10	5.91
121	13	< 2	5.0	4.5	1.0	7	5.78
122	18	< 2	5.5	5.5	1.5	10	5.82
123	15	< 2	5.0	4.5	1.0	8	5.90
124	13	< 2	4.0	3.5	1.0	7	5.81
125	28	2	10.5	7.5	1.5	11	5.62
126	20	3	7.5	6.5	1.5	9	5.64
127	23	< 2	8.0	6.0	1.5	9	5.41
128	15	< 2	5.5	5.0	1.0	7	5.14
129	23	< 2	8.5	6.5	1.5	9	5.58
130	17	2	6.5	5.0	1.0	8	5.63
131	15	< 2	5.5	4.5	1.0	7	5.79
132	15	< 2	6.0	4.5	1.0	7	5.82
133	14	< 2	5.0	4.0	1.0	6	5.82
134	10	3	4.0	3.0	1.0	5	5.96
135	24	2	7.5	6.0	1.5	9	5.99
136	17	2	5.0	7.0	1.0	8	5.84
137	14	< 2	5.0	6.0	1.0	8	5.77
138	16	< 2	5.5	5.5	1.5	8	5.73
139	20	< 2	8.5	4.5	1.0	9	6.16
140	11	3	4.0	3.0	1.0	5	5.62
141	24	< 2	9.5	6.0	1.5	10	5.72
142	22	< 2	7.5	5.5	1.5	9	5.83
143	19	< 2	6.5	6.5	1.5	8	5.76
144	25	< 2	9.0	6.5	1.5	10	5.84
145	23	< 2	9.0	6.5	1.5	9	5.81
146	19	2	7.0	5.0	1.0	8	5.74
147	18	< 2	6.5	5.0	1.0	8	5.70
148	18	< 2	6.5	5.0	1.0	7	5.70
149	19	< 2	7.0	5.5	1.5	8	5.75
150	18	< 2	6.5	6.0	1.5	9	5.75
151	15	< 2	5.5	6.0	1.0	8	5.76
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

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SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
152	19	< 2	7.0	5.5	1.0	8	6.02
153	23	3	8.5	7.0	2.0	11	6.07
154	16	3	6.5	9.0	1.5	8	6.11
155	17	< 2	6.0	6.0	1.5	10	6.02
156	14	2	5.0	7.0	1.0	8	5.88
157	20	< 2	7.0	6.5	1.5	11	5.61
158	18	< 2	8.0	5.5	1.5	10	5.68
159	15	< 2	6.5	4.5	1.0	8	5.57
160	15	< 2	6.0	4.5	1.0	9	5.64
161	18	< 2	7.5	5.5	1.5	9	5.61
162	17	2	7.0	5.0	1.0	8	5.76
163	12	< 2	4.5	3.5	1.0	6	5.42
164	17	2	6.5	4.0	1.0	8	5.62
165	20	< 2	7.5	4.5	1.0	8	5.59
166	14	2	5.5	4.5	1.0	8	5.72
167	18	< 2	7.5	5.0	1.5	9	5.79
168	14	< 2	5.5	4.5	1.0	7	5.86
169	18	< 2	7.0	4.5	1.5	9	5.83
170	13	< 2	5.0	4.5	1.0	7	5.88
171	13	< 2	5.0	4.0	1.0	6	5.71
172	14	< 2	5.5	4.5	1.0	8	5.66
173	22	3	6.5	11.5	1.5	9	5.79
174	14	< 2	5.0	6.0	1.0	7	5.84
175	16	2	5.5	7.0	1.5	9	5.78
176	16	< 2	6.0	5.5	1.0	8	5.73
177	17	2	6.5	6.5	1.5	8	5.70
178	18	< 2	7.0	5.0	1.5	9	5.75
179	19	< 2	7.0	4.0	1.0	7	5.64
180	19	< 2	6.5	4.5	1.5	9	5.82
181	15	3	5.0	8.0	1.5	7	5.72
182	15	< 2	5.5	4.0	1.0	8	5.66
183	15	< 2	5.5	5.5	1.0	7	5.79
184	19	3	7.0	6.0	1.5	8	5.86
185	15	< 2	5.0	4.0	1.0	8	5.92
186	14	2	4.5	4.0	1.0	7	5.91
187	10	< 2	3.5	4.0	1.0	6	5.72
188	11	< 2	3.5	3.5	1.0	6	5.43
189	10	< 2	3.5	3.5	1.0	6	5.59
190	17	< 2	6.5	6.0	1.5	8	5.65
191	17	2	6.0	5.0	1.5	8	5.62
192	17	< 2	6.0	4.0	1.0	7	5.53
193	19	< 2	7.5	5.5	1.5	10	5.83
194	23	< 2	9.5	6.5	1.5	11	5.83
195	17	2	6.5	6.0	1.5	10	5.86
196	20	< 2	8.0	6.0	1.5	10	5.95
197	14	< 2	6.0	5.0	1.0	8	5.93
198	13	< 2	5.0	4.5	1.0	7	5.70
199	15	< 2	6.0	5.0	1.0	8	5.73
200	14	< 2	5.5	4.5	1.0	7	5.83
201	9	< 2	3.5	3.0	0.5	5	5.63
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

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SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
202	10	< 2	4.0	4.5	1.0	5	5.53
203	12	< 2	4.5	4.0	1.0	5	5.00
204	18	< 2	6.5	5.0	1.0	8	5.40
205	13	< 2	5.0	6.5	1.0	8	5.35
206	13	2	5.0	6.5	1.5	8	5.55
207	18	2	7.0	5.5	1.5	9	5.68
208	17	< 2	6.5	5.0	1.5	8	5.61
209	13	< 2	5.0	5.5	1.5	8	5.60
210	17	< 2	6.0	5.0	1.5	8	5.71
211	15	2	5.0	8.5	1.5	8	5.57
212	21	< 2	7.5	6.0	1.5	10	5.72
213	21	2	4.5	5.0	1.5	7	5.93
214	20	< 2	8.0	5.5	1.5	10	5.77
215	21	2	5.5	6.0	1.5	8	5.94
216	13	< 2	5.0	4.0	1.0	7	5.87
217	21	< 2	7.5	5.0	1.5	8	5.81
218	19	< 2	7.0	5.0	1.5	8	5.78
219	15	2	5.0	6.0	1.5	7	5.92
220	19	< 2	6.5	4.5	1.5	9	5.89
221	19	2	6.5	4.5	1.0	7	6.04
222	16	2	5.5	5.0	1.0	8	6.04
223	17	< 2	6.0	4.5	1.0	9	6.08
224	11	< 2	3.5	4.0	1.0	6	6.01
225	19	2	6.0	5.5	1.5	9	5.89
226	11	< 2	3.5	4.0	1.0	6	5.89
227	10	< 2	3.5	3.5	1.0	5	5.63
228	13	< 2	4.0	4.5	1.0	7	5.62
229	15	< 2	4.5	4.0	1.0	7	5.74
230	18	2	5.5	4.5	1.0	8	5.62
231	15	< 2	5.0	5.0	1.0	8	5.89
232	13	< 2	5.0	5.0	1.0	8	5.84
233	15	< 2	5.5	5.0	1.0	7	5.67
234	13	< 2	5.0	4.5	1.0	7	5.63
235	17	< 2	6.0	5.5	1.0	8	5.75
236	14	< 2	5.5	5.0	1.0	7	5.41
237	13	< 2	5.5	4.5	1.0	6	5.67
238	15	< 2	5.5	4.5	1.0	8	5.68
239	11	< 2	4.0	3.0	0.5	5	5.69
240	11	2	4.0	3.5	1.0	6	5.44
241	7	3	2.5	2.5	0.5	4	5.60
242	5	< 2	2.0	1.5	< 0.5	3	5.22
243	4	< 2	2.0	1.5	< 0.5	3	5.66
244	8	2	3.0	2.0	0.5	4	5.90
245	21	< 2	8.5	5.0	1.5	9	5.70
246	13	< 2	5.0	3.0	1.0	7	6.04
247	20	< 2	7.0	4.5	1.0	9	5.81
248	16	3	5.0	7.0	1.5	6	5.73
249	14	3	5.0	6.5	1.5	9	5.92
250	18	< 2	7.0	3.5	1.5	7	5.89
251	23	3	9.0	5.5	1.5	12	6.14
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

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SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
252	43	< 2	8.5	7.0	2.0	12	6.18
253	75	< 2	11.0	7.5	2.0	14	6.14
254	21	< 2	8.0	4.5	1.5	9	6.08
255	14	< 2	4.0	3.0	0.5	4	5.68
256	14	< 2	5.5	6.0	1.0	7	5.86
257	16	< 2	6.5	4.0	1.0	7	5.70
258	15	3	5.5	6.5	1.5	6	5.45
259	10	2	4.5	6.0	1.5	8	5.79
260	23	2	4.5	4.0	1.5	6	5.73
261	22	3	9.5	4.5	1.5	10	5.98
262	23	< 2	7.5	5.5	1.5	9	5.94
263	17	< 2	5.5	5.0	1.0	7	5.90
264	23	< 2	8.0	5.5	1.5	10	5.81
265	18	< 2	5.5	5.5	1.5	9	5.72
266	20	< 2	7.0	5.5	1.5	8	5.65
267	23	< 2	7.5	5.5	1.5	9	5.75
268	18	< 2	6.5	5.0	1.0	7	5.77
269	15	< 2	6.0	4.5	1.0	7	5.66
270	14	< 2	5.5	4.5	1.0	8	5.16
271	13	< 2	5.5	4.0	1.0	7	5.40
272	16	< 2	6.5	6.0	1.5	8	5.52
273	15	2	5.5	4.0	1.0	7	5.04
274	11	< 2	4.5	3.0	1.0	5	5.57
275	8	3	3.5	3.0	0.5	4	5.68
276	4	3	1.5	1.5	< 0.5	3	5.54
277	70	3	7.5	8.0	3.0	10	6.05
278	14	< 2	5.0	3.0	1.0	7	5.88
279	245	3	14.0	8.0	2.5	16	6.14
280	49	3	13.5	7.0	2.5	13	6.24
281	17	< 2	11.0	3.5	1.0	10	6.17
282	24	< 2	4.5	3.0	1.0	6	5.96
283	20	2	8.5	4.0	1.5	9	6.11
284	14	< 2	5.0	4.0	1.5	6	5.96
285	24	< 2	11.0	5.5	1.5	12	6.24
286	75	2	12.5	7.5	2.0	15	6.25
287	24	3	9.0	5.0	1.5	12	6.17
288	38	3	7.0	7.0	2.0	10	6.21
289	60	3	6.5	6.5	2.0	8	6.06
290	29	< 2	9.0	6.0	1.5	11	6.21
291	43	2	7.5	8.0	2.5	9	6.12
292	24	< 2	9.0	4.5	2.0	8	5.65
293	10	< 2	3.5	3.0	1.0	6	5.64
294	11	2	5.0	3.0	1.0	7	5.67
295	8	2	2.5	2.0	1.0	5	5.78
296	20	< 2	8.5	4.0	1.5	10	6.00
297	22	< 2	7.0	3.5	2.0	8	5.96
298	20	< 2	6.0	4.0	1.0	7	5.97
299	24	< 2	7.5	4.5	1.5	8	5.40
300	20	< 2	6.5	4.5	1.5	7	5.81
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

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Mr Simon Powell
UXA Resources
43a Fullarton Road
KENT TOWN SA 5067

FINAL ANALYSIS REPORT

Your Order No:	*F0062*	*Our Job Number:*	*1DN0309B*
Sample rec'd:	*21/09/11*	*Results reported:*	*13/10/11*
No. of samples:	*260*	*Type of Sample:*	*SOILS ROCKS*

Results apply to sample(s) submitted by the client.

Report comprises a letter and report pages: 1 to 12

This report supersedes any preliminary results previously reported.

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Approved:

Darryl Hartley
Business Unit Manager
Adelaide Geoanalytical

Robert Silvani
Senior Chemist

Neville Walkom
Senior Chemist

Report Codes:

N.A.	-	*Not Available*	*I.S.*	-	*Insufficient Sample*
L.N.R.	-	*Listed But Not Received*	*R.N.L.*	-	*Received But Not Listed*

******* ***Please Note*** *******

1) The results for elements 'Al, Ba, Cr, Ti, W, Zr, Sn' by code IC3E digest are acid soluble only, and results may be semi-quantative.
'K' values > 1% by code IC3E may bias low due to the insolubility of potassium perchlorate.

2) For scheme IC4, Total 'Fe' is analysed but is calculated and reported as 'Fe2O3'

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AMDEL

SAMPLE	As	Cu	Li	Ni	Pb	V	F
301	< 3	5	6	9	< 5	18	0.004
302	< 3	< 2	4	3	< 5	6	0.003
303	< 3	3	5	11	5	30	0.005
304	< 3	< 2	4	8	< 5	20	0.004
305	< 3	< 2	3	7	< 5	18	0.004
306	< 3	11	3	4	5	7	0.004
307	< 3	2	3	5	5	16	0.004
308	< 3	7	6	10	< 5	14	0.005
309	< 3	< 2	2	4	< 5	4	0.004
310	< 3	< 2	3	4	< 5	20	0.003
311	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
312	4	9	7	20	10	140	0.006
313	4	39	6	19	15	185	0.006
314	< 3	36	5	39	15	115	0.005
315	6	16	5	29	30	295	0.007
316	6	18	5	23	20	305	0.007
317	10	9	5	18	15	240	0.007
318	10	18	9	41	25	335	0.008
319	12	16	5	27	15	340	0.009
320	< 3	10	3	7	< 5	29	0.004
321	< 3	45	5	22	10	335	0.007
322	< 3	6	4	9	< 5	36	0.004
323	< 3	21	6	32	15	110	0.005
324	< 3	4	5	8	5	23	0.005
325	< 3	4	3	8	< 5	19	0.004
326	< 3	4	5	8	5	22	0.004
327	< 3	4	4	8	5	32	0.005
328	< 3	3	4	6	< 5	19	0.004
329	< 3	2	< 2	3	< 5	4	0.006
330	< 3	4	8	11	5	49	0.006
331	8	15	5	47	20	360	0.005
332	< 3	4	5	8	< 5	21	0.005
333	< 3	4	7	12	5	27	0.006
334	< 3	3	4	7	< 5	32	0.003
335	< 3	5	4	7	< 5	43	0.005
336	< 3	16	6	14	5	125	0.006
337	12	25	12	42	30	330	0.011
338	8	21	8	16	20	210	0.007
339	10	13	5	20	20	350	0.007
340	< 3	3	3	3	< 5	19	0.004
341	< 3	4	3	7	< 5	25	0.004
342	< 3	4	4	7	< 5	44	0.004
343	< 3	7	5	11	< 5	65	0.004
344	8	38	5	26	15	400	0.006
345	< 3	8	7	12	10	33	0.005
346	< 3	9	4	17	< 5	28	0.004
347	< 3	4	4	12	5	65	0.004
348	4	5	6	14	5	65	0.005
349	< 3	3	4	7	< 5	22	0.004
350	< 3	4	4	9	< 5	19	0.004
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
351	< 3	14	8	28	10	60	0.008
352	6	11	7	33	15	190	0.006
353	< 3	5	5	9	< 5	22	0.004
354	< 3	3	3	6	< 5	27	0.004
356	< 3	9	8	15	10	110	0.008
357	< 3	9	5	14	10	65	0.005
358	< 3	4	3	5	< 5	16	0.004
359	< 3	11	4	11	10	170	0.006
360	< 3	4	< 2	3	< 5	36	0.003
361	< 3	3	5	6	< 5	28	0.004
362	< 3	3	3	4	< 5	29	0.004
363	< 3	3	4	6	< 5	31	0.004
364	< 3	7	5	9	< 5	40	0.004
365	< 3	3	4	6	< 5	13	0.004
366	< 3	60	8	27	5	420	0.007
367	< 3	55	12	28	10	225	0.007
368	< 3	40	6	19	10	220	0.006
369	4	50	11	33	15	275	0.007
370	6	43	12	33	10	345	0.012
371	< 3	16	11	14	< 5	80	0.009
372	8	34	11	26	15	445	0.009
373	< 3	8	8	11	< 5	28	0.007
374	< 3	15	18	13	5	41	0.008
375	< 3	6	4	7	< 5	20	0.006
376	< 3	27	15	24	5	155	0.008
377	< 3	39	11	23	10	70	0.007
378	< 3	50	12	19	10	160	0.010
379	< 3	90	8	29	10	635	0.012
380	< 3	37	6	18	10	165	0.010
381	6	55	10	19	10	360	0.012
382	14	70	15	30	15	740	0.010
383	8	55	15	26	10	485	0.010
384	12	75	16	37	15	765	0.010
385	< 3	19	16	17	10	275	0.011
386	< 3	11	5	10	5	80	0.006
387	< 3	14	14	12	5	85	0.009
388	8	80	22	60	15	455	0.010
389	< 3	12	8	8	< 5	47	0.006
390	14	47	15	24	10	505	0.016
391	< 3	10	8	6	< 5	65	0.006
392	< 3	34	14	13	10	185	0.006
393	4	44	12	21	10	320	0.009
394	< 3	35	9	13	5	95	0.007
395	< 3	24	12	13	10	180	0.008
396	10	65	19	25	20	465	0.008
397	< 3	8	5	9	5	60	0.006
398	4	14	10	15	10	100	0.006
399	12	37	14	32	10	380	0.010
400	< 3	6	10	5	< 5	38	0.006
401	< 3	8	10	9	< 5	70	0.005
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
402	6	13	10	19	5	295	0.008
403	< 3	19	33	37	10	55	0.010
404	10	29	19	28	15	330	0.011
405	< 3	13	9	12	5	50	0.008
406	< 3	7	6	8	< 5	27	0.006
407	< 3	7	8	7	< 5	26	0.006
408	6	42	11	38	10	300	0.008
409	4	70	6	31	10	265	0.008
410	< 3	8	5	11	< 5	60	0.007
411	< 3	11	9	5	5	34	0.005
412	16	16	8	26	15	440	0.013
413	12	18	7	34	10	265	0.036
414	12	16	7	27	10	225	0.022
415	8	42	10	55	15	315	0.010
416	24	19	12	39	15	450	0.015
417	22	23	15	35	15	415	0.012
418	12	23	8	29	10	290	0.011
419	18	28	8	33	15	385	0.011
420	< 3	9	6	4	< 5	13	0.005
421	< 3	55	21	40	10	165	0.010
422	< 3	4	3	3	< 5	14	0.005
423	4	14	7	13	5	105	0.007
424	10	19	6	21	10	180	0.008
425	16	14	5	21	15	300	0.008
426	10	12	5	15	10	165	0.008
427	16	14	5	19	10	280	0.009
428	22	15	7	22	15	285	0.010
429	20	16	6	28	15	280	0.011
430	14	23	7	20	15	240	0.009
431	20	23	6	28	15	280	0.009
432	12	36	17	37	15	580	0.008
433	< 3	37	9	40	10	180	0.006
434	8	18	7	17	10	215	0.009
435	6	6	5	10	5	145	0.006
436	< 3	3	4	6	< 5	36	0.005
437	4	4	5	11	5	75	0.006
438	< 3	4	4	8	5	35	0.005
439	4	6	7	13	10	75	0.007
440	6	4	6	12	10	90	0.006
441	8	3	4	11	10	120	0.006
442	8	5	5	9	10	105	0.008
443	6	5	7	10	10	65	0.008
444	10	5	6	13	10	150	0.008
445	8	8	9	11	10	110	0.007
446	< 3	< 2	3	< 2	< 5	4	0.005
447	< 3	5	5	8	< 5	55	0.005
448	8	7	5	13	10	135	0.006
449	< 3	3	3	3	< 5	11	0.004
450	6	4	4	10	10	140	0.006
451	< 3	< 2	5	6	< 5	26	0.005
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
452	4	9	5	11	5	70	0.006
453	< 3	3	4	8	5	47	0.005
454	4	5	6	12	10	70	0.006
455	8	3	6	11	10	125	0.008
456	10	3	6	12	15	175	0.007
457	4	3	6	9	5	55	0.006
458	6	< 2	5	10	10	95	0.007
459	8	4	6	14	10	150	0.008
460	12	7	7	17	15	225	0.008
461	< 3	3	4	3	< 5	13	0.005
462	< 3	5	4	5	< 5	27	0.006
463	< 3	4	4	5	< 5	10	0.009
464	< 3	< 2	2	< 2	< 5	7	0.007
465	< 3	< 2	4	5	< 5	37	0.008
466	< 3	< 2	5	8	5	40	0.007
467	4	5	6	10	10	60	0.007
468	4	5	5	11	10	80	0.007
469	6	3	5	10	10	90	0.007
470	8	7	7	16	10	105	0.008
471	6	3	7	12	10	85	0.007
472	6	2	5	10	10	85	0.008
473	4	2	5	8	5	70	0.007
474	< 3	4	4	7	5	36	0.006
475	< 3	13	6	13	10	105	0.006
476	< 3	6	4	8	5	23	0.005
477	< 3	4	4	5	< 5	48	0.005
478	< 3	10	8	14	5	43	0.005
479	< 3	10	10	13	5	90	0.006
480	< 3	12	15	13	10	75	0.007
481	< 3	9	16	12	5	47	0.008
482	< 3	7	12	13	< 5	80	0.009
483	12	180	7	32	10	220	0.014
484	12	< 2	7	18	5	155	0.016
485	8	< 2	12	21	10	220	0.018
486	10	3	9	11	5	190	0.012
487	18	4	11	23	10	485	0.015
488	14	5	10	19	10	480	0.014
489	14	8	12	21	15	485	0.013
490	8	6	11	14	10	250	0.011
491	< 3	9	22	12	< 5	42	0.010
492	< 3	8	11	8	< 5	33	0.008
493	< 3	4	7	9	< 5	50	0.009
494	8	2	4	22	5	150	0.015
495	8	3	4	17	5	125	0.014
496	12	4	4	29	5	190	0.012
497	12	3	4	15	5	150	0.013
498	8	4	5	11	5	110	0.013
499	10	6	4	11	5	85	0.012
500	8	11	5	14	5	100	0.012
501	6	12	5	16	5	90	0.010
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
502	10	24	11	20	10	175	0.011
503	8	16	12	17	10	175	0.010
504	6	10	12	13	5	120	0.010
505	< 3	11	13	11	< 5	80	0.008
506	8	10	11	17	10	185	0.011
507	6	10	10	12	10	170	0.009
508	< 3	10	6	4	< 5	13	0.006
509	< 3	6	7	5	< 5	22	0.007
510	< 3	4	9	4	5	13	0.008
511	< 3	4	11	5	5	46	0.008
513	< 3	8	6	13	< 5	90	0.006
514	< 3	11	5	10	5	65	0.006
515	6	22	6	16	20	235	0.007
516	< 3	15	6	13	10	110	0.005
517	< 3	13	7	13	5	23	0.005
518	< 3	6	7	8	5	23	0.005
519	< 3	4	8	5	5	15	0.004
520	< 3	5	8	6	5	15	0.005
521	< 3	4	7	5	5	14	0.005
522	< 3	5	9	6	5	16	0.005
523	< 3	8	12	10	10	39	0.006
524	< 3	5	8	6	5	18	0.006
526	6	4	8	10	< 5	95	0.009
527	8	3	11	15	5	145	0.011
528	< 3	2	13	11	< 5	60	0.009
529	< 3	4	16	13	< 5	85	0.009
530	18	7	12	19	15	550	0.014
531	14	9	12	26	15	395	0.011
532	14	9	13	27	15	310	0.009
533	< 3	6	13	10	5	110	0.007
534	< 3	5	14	11	10	85	0.007
535	< 3	8	16	12	< 5	22	0.006
536	< 3	3	8	4	< 5	25	0.005
537	< 3	5	8	7	< 5	24	0.006
538	< 3	6	9	10	< 5	30	0.008
539	10	6	7	15	10	160	0.013
540	12	6	6	30	10	215	0.014
541	10	6	5	31	10	170	0.013
542	12	5	5	32	10	185	0.016
543	10	8	5	20	5	130	0.016
544	10	7	5	20	5	150	0.016
545	12	11	5	22	5	120	0.015
546	10	10	5	22	10	135	0.017
547	14	12	5	28	10	155	0.018
548	18	21	6	24	5	145	0.017
549	12	12	7	23	5	140	0.014
550	6	20	17	18	5	155	0.012
551	4	125	46	27	15	190	0.011
552	4	15	13	17	10	170	0.011
553	< 3	12	15	13	5	85	0.011
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	As	Cu	Li	Ni	Pb	V	F
554	4	9	11	12	5	115	0.010
555	< 3	7	10	8	< 5	46	0.007
556	< 3	5	7	5	< 5	48	0.006
557	8	8	8	11	10	210	0.008
558	< 3	5	12	8	< 5	21	0.008
559	< 3	3	5	3	< 5	19	0.007
560	< 3	5	9	7	< 5	46	0.008
561	< 3	5	13	6	5	18	0.011
562	< 3	4	12	5	5	23	0.012
564	4	5	6	10	5	47	0.009
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%
DET.LIM	3	2	2	2	5	2	0.002
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	SIE3S

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SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
301	18	< 2	6.0	3.5	1.0	8	6.03
302	7	< 2	2.5	2.0	0.5	4	5.96
303	22	< 2	7.5	5.0	1.5	10	5.76
304	16	3	5.5	3.5	1.0	7	5.63
305	16	< 2	5.5	3.0	1.0	7	5.49
306	9	3	3.5	1.5	0.5	4	5.81
307	15	< 2	5.5	3.0	1.0	6	5.70
308	12	< 2	5.0	2.5	1.0	7	5.56
309	4	< 2	2.0	1.0	0.5	4	6.04
310	4	< 2	2.0	1.0	0.5	5	5.85
311	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
312	13	< 2	4.5	2.5	1.0	8	5.84
313	16	2	4.0	3.5	2.0	9	5.71
314	55	2	13.0	5.5	2.0	17	5.89
315	50	3	8.0	5.5	2.0	9	6.06
316	44	3	6.0	4.0	2.0	8	6.10
317	37	2	6.5	3.0	2.5	8	5.97
318	65	3	8.5	6.0	2.0	10	5.93
319	22	3	7.0	4.5	2.0	10	5.85
320	7	< 2	2.5	2.0	1.0	6	5.96
321	10	2	3.5	2.5	1.5	6	5.79
322	6	< 2	3.5	2.0	1.0	6	5.72
323	32	2	5.5	5.5	2.0	10	5.80
324	20	< 2	8.0	4.5	1.5	10	5.59
325	17	< 2	7.0	3.0	1.5	8	5.96
326	16	< 2	6.0	4.0	1.0	8	5.90
327	14	< 2	5.0	3.5	1.0	6	5.39
328	14	2	5.0	3.0	1.0	6	5.83
329	7	< 2	2.5	1.0	0.5	3	5.61
330	13	2	5.5	2.5	1.0	7	5.46
331	39	3	11.0	2.5	2.5	10	5.78
332	9	< 2	3.5	2.5	1.0	6	5.91
333	11	< 2	5.5	2.5	1.0	11	5.90
334	6	< 2	2.5	1.5	1.0	6	5.76
335	6	< 2	3.0	2.0	1.0	6	5.75
336	12	2	5.0	3.5	1.5	9	5.47
337	80	3	9.5	6.5	2.0	11	6.11
338	55	3	5.0	5.0	2.0	11	6.12
339	48	3	7.0	4.0	2.0	8	6.05
340	6	< 2	2.0	2.0	0.5	5	5.86
341	5	2	2.0	2.0	0.5	5	5.90
342	7	< 2	2.5	2.0	1.0	5	5.69
343	11	2	5.5	2.5	1.0	8	5.70
344	15	3	4.5	6.0	2.5	8	5.74
345	32	2	12.5	6.0	2.0	12	5.75
346	20	< 2	9.0	3.0	1.0	9	6.21
347	20	2	6.0	5.0	1.5	8	6.03
348	23	2	8.5	6.5	1.5	10	5.55
349	14	< 2	5.0	4.5	1.5	8	5.49
350	15	< 2	5.5	3.5	1.5	7	5.54
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

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SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
351	26	< 2	10.0	4.0	1.5	9	5.62
352	26	3	8.0	4.0	1.5	8	6.14
353	5	< 2	2.5	2.0	1.0	6	6.07
354	6	< 2	2.0	1.5	0.5	4	6.05
356	34	2	7.5	3.0	1.5	9	5.70
357	17	2	4.5	3.0	1.5	9	5.92
358	4	3	2.0	2.0	1.0	5	6.37
359	21	3	3.5	3.0	1.5	6	5.89
360	3	< 2	1.0	1.0	0.5	2	6.45
361	9	5	4.5	2.5	1.0	7	6.27
362	4	3	2.0	2.0	1.0	6	6.15
363	7	3	3.5	2.5	1.0	7	5.98
364	12	3	6.5	2.5	1.0	8	6.06
365	6	< 2	3.0	2.0	1.0	7	6.16
366	34	3	10.0	8.0	2.5	13	5.98
367	35	2	10.5	7.5	2.5	16	5.97
368	18	2	7.5	6.0	2.5	11	5.96
369	35	3	13.5	8.0	3.0	17	6.06
370	41	2	12.0	7.0	2.0	14	6.03
371	15	< 2	9.0	6.0	1.5	12	5.93
372	28	4	6.5	9.0	3.0	13	6.03
373	10	3	5.5	5.5	1.5	8	6.00
374	17	< 2	7.5	6.0	2.5	10	5.67
375	15	< 2	4.5	4.0	1.0	6	5.61
376	25	3	8.0	7.5	2.5	11	5.92
377	31	2	13.0	8.0	2.5	16	5.95
378	29	3	9.5	5.0	3.0	11	5.96
379	25	3	10.0	4.5	3.0	11	5.95
380	19	3	7.5	4.5	2.0	9	5.86
381	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
382	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
383	75	4	11.5	7.5	4.0	13	5.98
384	50	3	8.0	6.5	3.5	11	5.98
385	37	3	12.5	11.5	3.5	16	5.96
386	26	2	7.0	5.0	1.5	8	5.88
387	24	< 2	8.5	9.0	2.0	15	5.49
388	70	3	18.0	7.0	3.0	22	6.02
389	27	< 2	11.5	8.0	2.0	14	5.99
390	30	2	10.0	7.5	5.5	12	5.95
391	16	< 2	6.5	5.0	1.5	9	5.75
392	40	2	7.5	7.0	2.5	13	5.77
393	35	3	11.0	6.0	2.5	14	5.88
394	21	2	8.0	6.0	2.5	14	5.67
395	17	< 2	6.0	5.0	2.5	8	5.65
396	70	3	10.0	8.5	3.0	13	5.92
397	36	2	11.5	5.5	1.5	9	5.71
398	31	< 2	11.5	6.5	1.5	10	5.41
399	28	3	9.5	14.0	3.0	15	5.82
400	23	< 2	9.5	5.5	1.5	10	5.48
401	14	< 2	5.5	4.5	1.5	6	5.47
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

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SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
402	15	< 2	6.0	7.0	2.0	11	5.57
403	70	2	28.5	13.0	4.5	26	5.22
404	30	4	8.0	13.0	3.5	11	5.70
405	32	< 2	13.0	7.5	2.0	12	5.34
406	14	< 2	5.0	4.5	1.0	7	5.31
407	18	2	8.5	5.5	1.5	9	5.26
408	42	3	11.0	7.5	2.5	14	5.89
409	35	< 2	6.5	7.0	3.0	9	5.82
410	23	< 2	8.5	5.0	1.5	7	5.77
411	20	3	7.5	4.5	1.5	9	5.67
412	36	4	10.5	17.5	4.0	18	6.10
413	41	3	13.5	24.0	3.5	18	6.11
414	42	3	12.5	17.5	3.0	15	6.00
415	48	3	13.5	11.0	3.5	14	6.00
416	31	5	9.5	22.0	4.5	14	5.92
417	43	4	7.5	16.5	4.5	11	5.77
418	30	3	9.0	14.0	3.0	12	5.72
419	50	4	7.5	17.5	3.5	12	5.68
420	14	< 2	6.0	5.0	1.5	10	5.89
421	48	2	7.5	6.0	2.0	10	5.84
422	10	< 2	3.5	2.0	0.5	4	5.63
423	26	2	9.5	6.5	1.5	10	5.42
424	36	3	10.0	13.0	2.5	14	5.52
425	20	3	5.5	13.0	2.0	9	5.83
426	28	3	8.5	13.5	2.5	14	5.66
427	33	4	11.0	16.0	3.0	12	5.59
428	34	4	11.0	19.0	2.5	12	5.61
429	33	4	11.0	19.0	3.5	13	5.61
430	36	3	14.0	13.0	2.5	13	5.51
431	35	3	10.0	17.5	3.0	13	5.62
432	23	4	7.5	12.5	4.0	12	5.69
433	50	11	12.5	8.0	3.0	17	5.74
434	25	4	7.5	10.0	2.5	12	5.64
435	17	3	6.5	6.5	1.5	11	5.40
436	18	3	7.0	4.5	1.0	8	5.31
437	27	< 2	8.0	7.0	1.5	8	5.53
438	28	2	10.5	6.0	1.5	11	5.44
439	33	< 2	13.0	8.5	2.0	13	5.27
440	26	2	9.0	9.0	1.5	11	5.40
441	21	3	7.0	10.0	1.5	10	5.72
442	35	3	12.5	10.5	1.5	12	5.56
443	48	2	22.5	9.5	2.0	15	5.28
444	32	3	11.5	11.5	2.0	12	5.35
445	46	2	18.5	10.5	2.0	14	5.51
446	9	< 2	3.5	2.5	0.5	5	5.13
447	21	< 2	6.5	5.5	1.5	9	5.56
448	21	3	7.0	9.5	1.5	8	5.44
449	11	< 2	4.5	3.5	1.0	7	5.47
450	17	3	5.5	8.0	1.5	9	5.48
451	17	< 2	6.0	5.0	1.5	9	5.37
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

Job: 1DN0309B
O/N: F0062

Final

ANALYTICAL REPORT

SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
452	25	2	7.5	7.5	1.5	10	5.40
453	24	2	7.5	6.5	1.5	10	5.55
454	31	2	11.5	8.5	2.0	12	5.34
455	24	2	9.0	8.0	1.5	10	5.33
456	39	3	14.5	11.0	1.5	11	5.28
457	21	< 2	8.5	6.0	1.5	9	5.36
458	26	< 2	10.5	9.5	1.5	11	5.31
459	35	3	11.5	14.0	2.0	12	5.41
460	27	3	9.0	14.0	3.0	12	5.31
461	15	< 2	5.5	4.5	1.0	7	5.48
462	19	2	7.5	5.0	1.5	10	5.44
463	15	< 2	6.0	4.0	1.0	8	5.49
464	6	2	2.5	2.0	0.5	5	5.25
465	14	< 2	4.0	4.5	1.0	7	5.32
466	19	< 2	6.5	5.5	1.5	9	5.39
467	26	< 2	8.5	7.0	2.0	10	5.34
468	21	< 2	6.5	7.0	1.5	10	5.32
469	20	2	7.0	7.0	1.5	9	5.45
470	21	2	6.5	9.0	2.0	10	5.68
471	27	< 2	9.5	7.5	1.5	10	5.31
472	25	< 2	8.5	7.5	1.5	10	5.22
473	21	< 2	7.0	7.0	1.5	9	5.32
474	24	< 2	8.0	6.0	2.0	10	5.45
475	35	< 2	8.0	7.5	2.5	12	5.82
476	13	< 2	5.5	6.5	2.0	12	5.91
477	8	< 2	3.5	4.0	1.0	7	5.82
478	16	< 2	9.0	5.5	1.5	13	5.86
479	17	< 2	7.5	5.0	1.5	10	5.60
480	30	< 2	10.5	8.0	2.5	15	5.85
481	33	< 2	13.5	8.0	4.0	17	6.01
482	13	< 2	5.5	11.5	5.0	13	5.62
483	12	5	6.0	13.5	11.5	14	4.82
484	13	3	5.0	11.0	5.5	16	5.51
485	27	3	5.0	9.5	16.0	11	5.66
486	28	3	5.0	8.5	7.0	11	5.50
487	16	4	5.0	10.5	9.0	13	5.63
488	12	4	4.5	12.0	9.5	16	5.62
489	28	4	5.0	12.0	9.5	14	5.72
490	8	3	3.0	8.0	5.5	8	5.54
491	20	< 2	7.5	8.5	4.0	19	5.41
492	23	< 2	9.5	7.0	2.0	16	5.52
493	22	< 2	9.0	7.5	2.0	17	5.60
494	11	2	4.5	14.0	3.5	12	5.79
495	12	2	5.0	12.5	2.5	10	5.93
496	16	3	5.5	15.0	5.0	10	5.74
497	21	2	8.0	14.5	4.5	13	5.66
498	26	< 2	10.5	10.5	3.0	12	5.39
499	19	< 2	7.5	9.5	2.5	14	5.59
500	18	3	6.5	11.0	3.0	15	5.71
501	20	3	7.0	9.5	2.5	15	5.83
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

Job: 1DN0309B
O/N: F0062

Final

ANALYTICAL REPORT

AMDEL

SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
502	23	4	6.0	10.0	3.0	15	6.06
503	22	3	7.5	9.0	3.5	35	6.00
504	24	3	9.0	10.0	2.5	19	6.08
505	22	2	8.5	8.5	2.5	17	5.90
506	23	3	6.0	9.5	3.0	14	5.96
507	19	3	6.0	8.0	3.0	14	5.97
508	16	< 2	6.0	5.5	1.5	11	5.74
509	32	< 2	11.5	10.0	2.0	14	5.68
510	80	< 2	28.5	20.5	3.0	26	6.19
511	85	3	30.5	24.0	4.0	31	6.18
513	19	< 2	9.0	6.0	1.5	10	5.94
514	22	< 2	7.0	6.5	2.0	11	5.93
515	75	3	7.0	8.5	4.0	10	5.96
516	35	2	7.5	7.5	3.0	13	6.04
517	33	3	12.5	6.5	2.0	14	5.93
518	20	< 2	10.0	5.5	1.5	12	5.94
519	26	< 2	11.5	7.5	2.0	15	5.90
520	29	< 2	12.0	7.5	2.5	17	5.87
521	27	3	12.5	6.5	2.0	13	5.95
522	32	2	14.0	7.0	2.5	14	5.92
523	49	< 2	19.5	9.0	3.0	19	5.91
524	31	< 2	12.5	6.0	2.0	13	5.86
526	17	< 2	7.0	7.0	3.0	13	5.92
527	17	3	7.5	9.5	4.5	16	5.94
528	17	< 2	7.5	7.5	3.0	24	5.83
529	17	< 2	6.5	6.5	3.0	12	5.74
530	38	4	6.0	13.0	9.5	12	5.97
531	95	4	6.5	12.0	7.0	25	6.01
532	105	2	7.5	11.5	8.5	13	6.06
533	37	< 2	7.5	7.0	4.0	13	5.92
534	21	< 2	8.0	6.5	4.0	14	5.87
535	25	< 2	12.0	7.5	3.0	18	5.85
536	12	< 2	5.5	3.5	1.5	9	5.77
537	25	< 2	11.0	7.5	2.5	21	5.87
538	25	3	9.0	7.0	2.5	17	5.93
539	15	3	6.0	11.5	3.5	13	5.95
540	35	3	7.0	15.5	5.0	16	5.95
541	25	3	5.5	14.0	5.0	13	5.99
542	33	3	6.5	15.5	5.5	15	5.96
543	20	3	7.5	12.5	3.5	13	5.72
544	27	3	10.0	13.5	4.5	15	5.96
545	16	3	5.5	12.5	3.5	11	5.86
546	21	3	7.5	14.0	3.5	15	5.86
547	19	3	7.0	15.5	4.0	16	5.90
548	17	3	6.5	15.0	4.0	15	5.87
549	15	3	6.0	13.0	3.0	14	5.93
550	23	< 2	7.5	9.0	2.5	17	5.89
551	23	2	9.0	9.5	3.0	21	5.89
552	23	4	9.5	10.0	3.0	16	5.92
553	28	< 2	11.5	9.0	2.5	19	5.85
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

Job: 1DN0309B
O/N: F0062

Final

ANALYTICAL REPORT

SAMPLE	Ce	Mo	Nd	Th	U	Y	pH
554	22	2	8.5	8.5	2.5	17	5.69
555	20	< 2	8.0	6.5	1.5	15	5.65
556	21	< 2	7.0	5.5	1.5	14	5.69
557	20	3	8.0	8.0	3.0	19	5.90
558	32	< 2	13.5	8.5	2.5	25	5.74
559	14	< 2	5.5	5.0	1.0	12	5.61
560	28	< 2	10.5	8.5	2.5	13	5.56
561	70	2	25.0	18.0	3.0	26	5.64
562	80	< 2	26.5	18.0	3.0	25	5.77
564	29	< 2	10.5	7.5	1.5	10	5.92
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	
DET.LIM	1	2	0.5	0.5	0.5	1	0.01
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	SIE4

APPENDIX 5

Drilling Geochemical Results

Amdel Pty Ltd
PO Box 338
Torrensville Plaza SA 5031

ABN 30 008 127 802
Telephone (08) 8416 5200
Facsimile (08) 8234 0355

Mr Simon Powell
Uranium Exploration Australia Limited
43a Fullarton Road
KENT TOWN SA 5067

FINAL ANALYSIS REPORT

Your Order No:	*NN0811_01*	*Our Job Number:*	*1AD4716*
Sample rec'd:	*18/08/11*	*Results reported:*	*31/08/11*
No. of samples:	*6*	*Type of Sample:*	*ROCK CHIPS*

Results apply to sample(s) submitted by the client.

Report comprises a letter and report pages: 1 to 4

This report supersedes any preliminary results previously reported.

This document should not be reproduced except in full.

Approved:

Darryl Hartley
Business Unit Manager
Adelaide Geoanalytical

Robert Silvani
Senior Chemist

Neville Walkom
Senior Chemist

Report Codes:

N.A.	-	*Not Available*	*I.S.*	-	*Insufficient Sample*
L.N.R.	-	*Listed But Not Received*	*R.N.L.*	-	*Received But Not Listed*

******* ***Please Note*** *******

1) The results for elements 'Al, Ba, Cr, Ti, W, Zr, Sn' by code IC3E digest are acid soluble only, and results may be semi-quantative. 'K' values > 1% by code IC3E may bias low due to the insolubility of potassium perchlorate.

2) For scheme IC4, Total 'Fe' is analysed but is calculated and reported as 'Fe2O3'

Job: 1AD4716
O/N: NN0811_01

Final

ANALYTICAL REPORT

SAMPLE	Al2O3	CaO	Fe2O3	K2O	MnO	MgO	Na2O
500000	11.8	0.87	5.07	3.17	0.06	2.30	1.04
500001	15.2	0.64	5.39	3.69	0.06	2.99	0.30
500002	13.9	1.41	13.3	2.28	0.22	7.07	0.23
500003	15.5	1.27	6.16	3.61	0.09	2.08	2.16
500004	15.3	8.33	12.2	2.76	0.19	5.34	1.73
500005	15.6	1.36	7.32	4.58	0.15	2.31	0.42
UNITS	%	%	%	%	%	%	%
DET.LIM	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SCHEME	IC4	IC4	IC4	IC4	IC4	IC4	IC4

Job: 1AD4716
O/N: NN0811_01

Final

ANALYTICAL REPORT

SAMPLE	P2O5	SiO2	TiO2	V	LOI	TOEC	B
500000	0.07	70.4	0.470	55	3.34	0.04	10
500001	0.05	67.5	0.480	60	4.16	< 0.02	15
500002	0.13	51.7	1.010	215	8.73	0.02	20
500003	0.07	66.5	0.655	85	2.67	0.04	10
500004	0.11	51.7	0.915	215	1.78	< 0.02	30
500005	0.10	64.3	0.540	90	4.22	< 0.02	25
UNITS	%	%	%	ppm	%	%	ppm
DET.LIM	0.01	0.01	0.005	20	0.01A	0.02	5
SCHEME	IC4	IC4	IC4	IC4	GRAV7	GRAV4B	COL7

Job: 1AD4716
O/N: NN0811_01

Final

ANALYTICAL REPORT

SAMPLE	Ce	Mo	U	Y	Nd
500000	95	< 2	4.0	23	37.5
500001	105	< 2	4.0	30	41.5
500002	35	< 2	2.5	24	16.5
500003	95	< 2	3.5	27	38.
500004	32	< 2	2.0	25	15.5
500005	80	3	3.5	23	32.0
UNITS	ppm	ppm	ppm	ppm	ppm
DET.LIM	1	2	0.5	1	0.5
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M

Job: 1AD4716
O/N: NN0811_01

Final

ANALYTICAL REPORT

SAMPLE	Cu	Li	Ni	Pb
500000	7	21	24	10
500001	39	37	31	< 5
500002	27	70	24	< 5
500003	4	32	40	10
500004	30	26	22	165
500005	43	30	42	20

UNITS	ppm	ppm	ppm	ppm
DET.LIM	2	2	2	5
SCHEME	IC3E	IC3E	IC3E	IC3E

Amdel Pty Ltd
PO Box 338
Torrensville Plaza SA 5031

ABN 30 008 127 802
Telephone (08) 8416 5200
Facsimile (08) 8234 0355

Mr Simon Powell
Uranium Exploration Australia Limited
43a Fullarton Road
KENT TOWN SA 5067

FINAL ANALYSIS REPORT

Your Order No:	*1001-1042*	*Our Job Number:*	*1DN0266*
Sample rec'd:	*06/09/11*	*Results reported:*	*15/09/11*
No. of samples:	*42*	*Type of Sample:*	*ROCK CHIPS*

Results apply to sample(s) submitted by the client.

Report comprises a letter and report pages: 1 to 4

This report supersedes any preliminary results previously reported.

This document should not be reproduced except in full.

Approved:

Darryl Hartley
Business Unit Manager
Adelaide Geoanalytical

Robert Silvani
Senior Chemist

Neville Walkom
Senior Chemist

Report Codes:

N.A.	-	*Not Available*	*I.S.*	-	*Insufficient Sample*
L.N.R.	-	*Listed But Not Received*	*R.N.L.*	-	*Received But Not Listed*

******* ***Please Note*** *******

1) The results for elements 'Al, Ba, Cr, Ti, W, Zr, Sn' by code IC3E digest are acid soluble only, and results may be semi-quantative. 'K' values > 1% by code IC3E may bias low due to the insolubility of potassium perchlorate.

2) For scheme IC4, Total 'Fe' is analysed but is calculated and reported as 'Fe2O3'

Job: 1DN0266
O/N: 1001-1042

Final

ANALYTICAL REPORT

SAMPLE	Al2O3	CaO	Fe2O3	K2O	MnO	MgO	Na2O
1001	16.0	0.12	6.07	2.78	0.03	5.58	0.04
1002	15.3	0.13	8.37	1.60	0.03	9.11	0.02
1003	14.7	0.22	6.81	2.54	0.02	5.46	0.04
1004	15.0	0.33	11.1	1.62	0.02	10.3	0.02
1005	15.6	0.33	11.4	1.71	0.02	10.4	0.02
1006	15.3	0.06	5.61	3.53	0.02	3.46	0.04
1007	16.4	0.08	5.80	3.97	0.03	3.27	0.04
1008	15.3	0.12	5.82	3.37	0.02	4.14	0.04
1009	16.1	0.17	12.5	1.55	0.03	10.1	0.02
1010	13.8	0.08	6.07	2.79	0.03	4.16	0.06
1011	17.9	0.69	7.79	3.21	0.04	6.38	0.05
1012	20.9	0.24	7.05	4.73	0.02	4.68	0.07
1013	13.3	0.13	2.63	3.81	< 0.01	1.96	0.05
1014	12.7	0.34	10.9	1.42	0.06	8.83	0.02
1015	18.3	0.03	14.4	0.21	0.09	9.09	0.01
1016	24.2	0.02	7.33	4.81	0.07	4.27	0.07
1017	23.6	0.02	9.13	3.43	0.20	5.38	0.05
1018	20.5	0.02	3.60	4.79	0.12	2.27	0.06
1019	15.3	0.02	2.50	3.53	< 0.01	1.51	0.05
1020	16.7	0.25	10.5	3.76	0.02	8.35	0.02
1021	16.5	0.27	11.1	3.69	0.02	8.88	0.02
1022	15.8	0.18	11.9	4.69	0.02	6.50	0.01
1023	18.5	0.26	7.92	5.21	0.02	6.58	0.02
1024	12.8	0.95	16.7	5.34	0.16	4.60	0.31
1025	14.9	7.01	10.3	3.81	0.17	6.82	0.79
1026	12.8	0.87	13.3	1.06	0.03	12.2	0.14
1027	13.5	0.97	12.9	1.21	0.06	14.6	0.04
1028	14.4	0.63	9.67	1.77	0.03	12.7	0.04
1029	12.6	0.98	5.83	2.80	0.03	4.58	0.06
1030	14.6	1.39	7.29	2.97	0.04	5.45	0.05
1031	17.7	0.27	6.21	4.19	0.03	3.81	0.06
1032	18.3	0.72	6.41	4.32	0.03	3.58	0.13
1033	15.5	1.71	13.0	3.44	0.07	3.37	0.08
1034	12.1	0.21	7.15	2.37	0.02	5.18	0.05
1035	12.3	0.14	6.18	2.45	0.01	4.65	0.04
1036	14.6	0.26	10.3	1.90	0.01	8.52	0.03
1037	17.6	0.12	18.3	0.07	0.05	12.2	< 0.01
1038	13.3	0.13	8.08	2.84	0.04	7.66	0.04
1039	10.4	0.12	5.19	2.08	0.02	3.64	0.02
1040	14.2	0.31	6.04	5.25	0.07	3.31	0.10
1041	14.3	0.29	6.24	5.14	0.07	3.28	0.10
1042	15.6	0.30	6.01	5.01	0.06	3.79	0.10
UNITS	%	%	%	%	%	%	%
DET.LIM	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SCHEME	IC4	IC4	IC4	IC4	IC4	IC4	IC4

Job: 1DN0266
O/N: 1001-1042

Final

ANALYTICAL REPORT

AMDEL

SAMPLE	P2O5	SiO2	TiO2	V	LOI	TOEC
1001	0.03	62.7	0.995	190	6.31	0.04
1002	0.05	55.7	2.010	295	7.80	0.10
1003	0.13	63.4	0.910	130	5.61	0.08
1004	0.22	52.8	1.610	300	7.82	0.04
1005	0.23	53.8	1.605	300	3.65	0.08
1006	0.03	66.4	0.655	85	3.72	0.04
1007	0.05	64.8	0.690	90	3.87	0.03
1008	0.07	64.4	0.690	125	4.15	0.06
1009	0.11	50.6	1.055	340	6.69	0.04
1010	0.04	66.7	0.570	75	3.86	0.04
1011	0.55	55.4	1.455	90	6.65	0.21
1012	0.17	54.5	1.280	125	5.67	< 0.02
1013	0.09	73.8	0.520	70	2.99	< 0.02
1014	0.07	58.0	0.715	180	6.65	0.02
1015	0.17	42.9	0.805	90	14.3	0.03
1016	0.08	46.6	1.835	425	9.17	0.04
1017	0.18	47.3	1.545	0.06%	9.24	0.03
1018	0.08	61.8	1.325	295	5.37	0.02
1019	0.06	71.7	0.765	130	3.99	0.03
1020	0.14	46.9	1.310	245	11.0	0.02
1021	0.14	47.6	1.310	250	11.5	0.03
1022	0.09	51.0	0.970	210	8.87	0.06
1023	0.12	48.3	1.205	245	11.8	0.03
1024	0.18	52.4	1.765	290	3.71	0.04
1025	0.06	51.6	0.680	215	3.05	0.03
1026	0.14	50.1	1.590	440	7.19	0.04
1027	0.10	46.6	1.205	345	8.63	0.02
1028	0.10	51.7	1.160	350	7.76	0.03
1029	0.05	66.9	0.560	100	4.83	0.03
1030	0.25	59.5	0.745	180	7.00	0.09
1031	0.06	63.1	0.635	90	4.53	0.04
1032	0.14	61.2	0.590	85	4.92	0.02
1033	1.13	51.9	1.875	250	7.41	0.03
1034	0.11	62.6	0.860	120	7.36	0.03
1035	0.06	66.2	0.580	85	5.39	0.03
1036	0.16	56.0	1.220	255	6.51	0.03
1037	0.09	41.1	0.815	265	10.4	0.03
1038	0.07	60.8	0.660	145	5.16	0.04
1039	0.08	73.3	0.480	60	3.15	0.03
1040	0.08	65.6	0.605	230	3.40	0.07
1041	0.07	65.0	0.580	205	3.39	0.08
1042	0.07	64.9	0.630	185	3.66	0.06
UNITS	%	%	%	ppm	%	%
DET.LIM	0.01	0.01	0.005	20	0.01A	0.02
SCHEME	IC4	IC4	IC4	IC4	GRAV7	GRAV4B

Job: 1DN0266
O/N: 1001-1042

Final

ANALYTICAL REPORT

SAMPLE	Ce	Mo	U	Y	Nd
1001	27	< 2	31.5	26	12.0
1002	9	< 2	36.5	11	4.5
1003	50	< 2	36.5	37	22.5
1004	35	< 2	43.5	39	16.5
1005	36	< 2	42.0	40	16.5
1006	105	< 2	11.5	29	40.5
1007	110	< 2	10.5	95	45.0
1008	85	< 2	135	26	34.5
1009	34	< 2	55	16	14.5
1010	70	< 2	35.5	33	30.0
1011	75	< 2	16.0	41	30.0
1012	75	< 2	8.5	33	31.5
1013	70	< 2	3.0	22	30.5
1014	40	< 2	8.0	26	18.0
1015	19	< 2	50	85	8.5
1016	22	< 2	42.5	75	11.0
1017	33	3	80	47	13.0
1018	30	< 2	50	36	14.0
1019	110	< 2	45.5	35	43.0
1020	26	< 2	10.5	16	12.5
1021	26	< 2	9.5	19	12.0
1022	5	< 2	2.0	18	2.5
1023	20	< 2	7.5	20	10.5
1024	55	< 2	2.5	40	26.0
1025	22	< 2	1.5	19	10.5
1026	90	< 2	3.0	39	40.5
1027	26	< 2	115	26	13.0
1028	10	< 2	205	23	5.5
1029	60	< 2	25.0	13	25.0
1030	95	< 2	125	38	41.0
1031	100	< 2	5.0	25	42.0
1032	115	< 2	8.5	21	46.5
1033	44	< 2	33.5	29	20.0
1034	35	3	95	33	15.5
1035	60	2	17.0	24	25.5
1036	85	4	8.0	28	35.5
1037	28	< 2	13.5	20	11.5
1038	70	< 2	2.0	20	29.5
1039	85	2	3.0	24	35.5
1040	90	< 2	8.5	24	36.0
1041	90	< 2	8.0	25	35.5
1042	105	3	7.5	28	41.5
UNITS	ppm	ppm	ppm	ppm	ppm
DET.LIM	1	2	0.5	1	0.5
SCHEME	IC4M	IC4M	IC4M	IC4M	IC4M

Job: 1DN0266
O/N: 1001-1042

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ANALYTICAL REPORT

SAMPLE	Cu	Li	Ni	Pb
1001	5	85	55	10
1002	3	120	160	5
1003	3	90	55	< 5
1004	2	140	41	< 5
1005	6	35	37	10
1006	4	38	37	< 5
1007	4	34	38	< 5
1008	11	47	42	40
1009	9	140	75	25
1010	5	50	46	25
1011	< 2	55	41	5
1012	< 2	40	39	< 5
1013	3	13	33	< 5
1014	12	85	75	< 5
1015	< 2	110	80	10
1016	< 2	60	85	10
1017	3	100	90	10
1018	3	70	49	20
1019	7	31	25	40
1020	< 2	29	41	< 5
1021	< 2	31	41	< 5
1022	3	24	28	< 5
1023	< 2	27	26	10
1024	14	40	7	10
1025	32	37	36	10
1026	36	175	44	< 5
1027	27	200	60	20
1028	50	200	50	25
1029	10	85	41	10
1030	16	105	40	20
1031	5	45	36	5
1032	4	44	36	5
1033	4	110	29	5
1034	85	75	42	20
1035	20	80	36	5
1036	10	150	50	< 5
1037	< 2	150	75	< 5
1038	80	75	70	< 5
1039	33	55	30	< 5
1040	10	45	37	5
1041	13	44	38	10
1042	33	49	44	5
UNITS	ppm	ppm	ppm	ppm
DET.LIM	2	2	2	5
SCHEME	IC3E	IC3E	IC3E	IC3E

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PO Box 338
Torrensville Plaza SA 5031

ABN 30 008 127 802
Telephone (08) 8416 5200
Facsimile (08) 8234 0355

Mr Simon Powell
UXA Resources
43a Fullarton Road
KENT TOWN SA 5067

FINAL ANALYSIS REPORT

Your Order No:	*AU.1087394-11*	*Our Job Number:*	*1AD5266*
Sample rec'd:	*19/09/11*	*Results reported:*	*29/09/11*
No. of samples:	*22*	*Type of Sample:*	*LIQUORS*

Results apply to sample(s) submitted by the client.

Report comprises a letter and report pages: 1 to 3

This report supersedes any preliminary results previously reported.

This document should not be reproduced except in full.

Approved:

Darryl Hartley
Business Unit Manager
Adelaide Geoanalytical

Robert Silvani
Senior Chemist

Neville Walkom
Senior Chemist

Report Codes:

N.A.	-	*Not Available*	*I.S.*	-	*Insufficient Sample*
L.N.R.	-	*Listed But Not Received*	*R.N.L.*	-	*Received But Not Listed*

******* ***Please Note*** *******

1) The results for elements 'Al, Ba, Cr, Ti, W, Zr, Sn' by code IC3E digest are acid soluble only, and results may be semi-quantative.
'K' values > 1% by code IC3E may bias low due to the insolubility of potassium perchlorate.

2) For scheme IC4, Total 'Fe' is analysed but is calculated and reported as 'Fe2O3'

Job: 1AD5266
O/N: AU.1087394-11

Final

ANALYTICAL REPORT

SAMPLE	As	Fe	Mn	Ni	Pb	V	Zn
NNRC-02	< 0.1	8.5	0.1	< 0.1	< 0.2	< 0.2	0.1
NNRC-03	< 0.1	< 0.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-04	< 0.1	< 0.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-04A	< 0.1	< 0.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-05	< 0.1	< 0.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-05A	< 0.1	4.0	< 0.1	< 0.1	< 0.2	< 0.2	0.2
NNRC-09	< 0.1	8.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-10	< 0.1	2.0	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-12	< 0.1	2.5	< 0.1	< 0.1	< 0.2	< 0.2	0.1
NNRC-13	< 0.1	6.5	< 0.1	< 0.1	< 0.2	< 0.2	0.3
NNRC-14	< 0.1	8.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-21	< 0.1	12.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-22	< 0.1	12.0	< 0.1	< 0.1	< 0.2	< 0.2	0.1
NNRC-23	< 0.1	2.0	< 0.1	< 0.1	< 0.2	< 0.2	0.2
NNRC-24	< 0.1	13.0	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-25	< 0.1	3.0	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-26	< 0.1	11.5	< 0.1	< 0.1	< 0.2	< 0.2	0.1
NNRC-42	< 0.1	7.0	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-43	< 0.1	10.0	< 0.1	< 0.1	< 0.2	< 0.2	0.1
NNRC-44	< 0.1	3.5	0.2	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-45	< 0.1	< 0.5	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
NNRC-46	< 0.1	1.0	< 0.1	< 0.1	< 0.2	< 0.2	< 0.1
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
DET.LIM	0.1	0.5	0.1	0.1	0.2	0.2	0.1
SCHEME	MET9L	MET9L	MET9L	MET9L	MET9L	MET9L	MET9L

Job: 1AD5266
O/N: AU.1087394-11

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ANALYTICAL REPORT

SAMPLE	Au	Co	Mo	Nd	Se	Th	U
NNRC-02	< 0.2	6	< 2	5.8	< 20	< 2	25.0
NNRC-03	< 0.2	8	< 2	0.8	< 20	< 2	2.2
NNRC-04	< 0.2	1	4	0.4	< 20	< 2	47.0
NNRC-04A	< 0.2	< 1	< 2	0.4	< 20	< 2	6.4
NNRC-05	< 0.2	< 1	< 2	0.2	< 20	< 2	8.2
NNRC-05A	< 0.2	56	< 2	2.8	< 20	< 2	84.4
NNRC-09	< 0.2	9	< 2	8.0	< 20	4	1.4
NNRC-10	< 0.2	1	< 2	1.6	< 20	< 2	1.0
NNRC-12	< 0.2	1	< 2	2.0	< 20	< 2	1.2
NNRC-13	< 0.2	2	< 2	6.8	< 20	2	1.4
NNRC-14	< 0.2	2	< 2	22.8	< 20	2	4.2
NNRC-21	< 0.2	6	4	5.6	< 20	2	28.4
NNRC-22	< 0.2	5	18	5.8	< 20	2	77.6
NNRC-23	< 0.2	2	112	2.2	< 20	124	17.2
NNRC-24	< 0.2	8	4	13.4	< 20	6	3.0
NNRC-25	< 0.2	1	18	1.8	< 20	< 2	1.0
NNRC-26	< 0.2	9	4	18.2	< 20	6	1.6
NNRC-42	< 0.2	1	< 2	2.0	< 20	< 2	0.8
NNRC-43	< 0.2	5	< 2	7.4	< 20	4	2.8
NNRC-44	< 0.2	4	2	2.4	< 20	< 2	1.4
NNRC-45	< 0.2	< 1	< 2	< 0.2	< 20	< 2	2.8
NNRC-46	< 0.2	< 1	< 2	1.0	< 20	< 2	2.8
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
DET.LIM	0.2	1	2	0.2	20	2	0.2
SCHEME	MET9LM	MET9LM	MET9LM	MET9LM	MET9LM	MET9LM	MET9LM

Job: 1AD5266
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Final

ANALYTICAL REPORT

SAMPLE	F	Cl	pH	SO4	Hg
NNRC-02	0.2	40	7.50	< 0.01	< 0.1
NNRC-03	0.3	160	7.20	< 0.01	< 0.1
NNRC-04	0.3	40	7.60	< 0.01	< 0.1
NNRC-04A	0.3	< 20	7.50	< 0.01	< 0.1
NNRC-05	0.5	< 20	7.70	< 0.01	< 0.1
NNRC-05A	0.4	< 20	7.40	< 0.01	< 0.1
NNRC-09	1.3	140	5.70	< 0.01	< 0.1
NNRC-10	0.3	< 20	7.20	< 0.01	< 0.1
NNRC-12	0.3	< 20	7.10	< 0.01	< 0.1
NNRC-13	0.3	< 20	7.60	< 0.01	< 0.1
NNRC-14	0.6	20	7.80	< 0.01	< 0.1
NNRC-21	0.4	40	7.50	< 0.01	< 0.1
NNRC-22	0.8	200	7.60	< 0.01	< 0.1
NNRC-23	0.7	80	7.60	< 0.01	< 0.1
NNRC-24	0.7	20	7.30	< 0.01	< 0.1
NNRC-25	1.2	360	7.80	< 0.01	< 0.1
NNRC-26	0.9	60	7.60	< 0.01	< 0.1
NNRC-42	0.3	40	6.90	< 0.01	< 0.1
NNRC-43	0.2	< 20	7.40	< 0.01	< 0.1
NNRC-44	0.8	60	7.60	< 0.01	< 0.1
NNRC-45	0.5	20	7.30	< 0.01	< 0.1
NNRC-46	0.5	20	7.00	< 0.01	< 0.1

UNITS	mg/L	mg/L		g/L	ug/L
DET.LIM	0.1	20	0.01	0.01	0.1
SCHEME	SIE3L	VOL3L	SIE4	GRAV2L	AA6L

APPENDIX 6

Downhole Gamma Logs

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY	***UXA RESOURCES***
WELL	**NNRC01**
UWI	
LOG TYPE	**GAMMA**

SCALE	1:100	STATE	**NT**	PROVINCE	NABARLEK
LAT.	LONG. ELEVATION m	UNIT	**AL23**	DRILLED BY	RIG NO
FIELD	**NABARLEK NORTH**	EASTING	**327500**	NORTHING **8645302**	DATUM GDA94 COORD MGA53
RECORDED BY	**GERARD CONLON**	LOCATION	**EL 24868**		
WITNESSED BY		LOG DATE	**18/08/2011**		
FLUID TEMP	degrees celsius	DATUM	**GL**		
FLUID TYPE		DRILLED DEPTH	**60** m		
FLUID LEVEL	m	LOGGED DEPTH	**4** m		
		INT LOGGED	**0-4** m		

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	4

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)

REMARKS Hole Blocked at 4m. Collar - 60 degrees towards 270. Hole Size Correction 1.03677

GAA Wireline (08) 8393 0900

GAA GAMMA

Tool ID SSG02

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

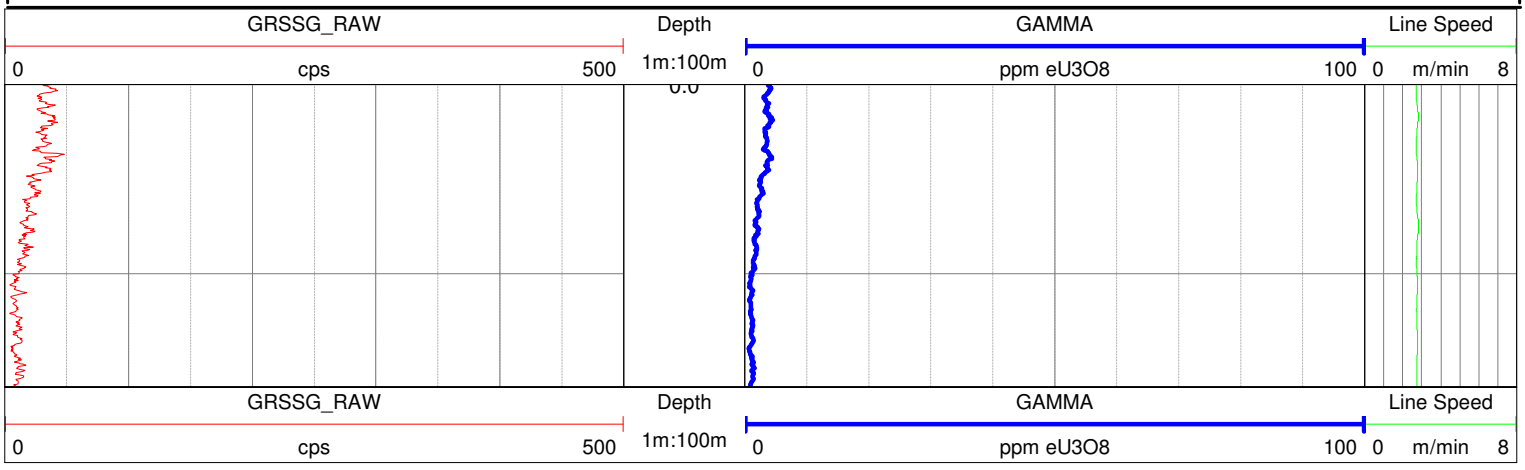
K Factor 0.0000105201662

Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm



GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC02		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**327453**	NORTHING	**8645302**	DATUM	GDA94
COORD	MGA53				

SCALE	1:100		
LAT.	LONG.	ELEVATION	m
FIELD	**NABARLEK NORTH**		
RECORDED BY	**GERARD CONLON**		
WITNESSED BY			
FLUID TEMP	degrees celsius		
FLUID TYPE			
FLUID LEVEL	m		

LOCATION	**EL 24868**		
LOG DATE	**18/08/2011**		
DATUM	**GL**		
DRILLED DEPTH	**60**	m	
LOGGED DEPTH	**39.5**	m	
INT LOGGED	**0-39.5**	m	

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	39.5

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)

REMARKS Hole Blocked at 39.5m. Collar - 60 degrees towards 270. Hole Size Correction 1.03677

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

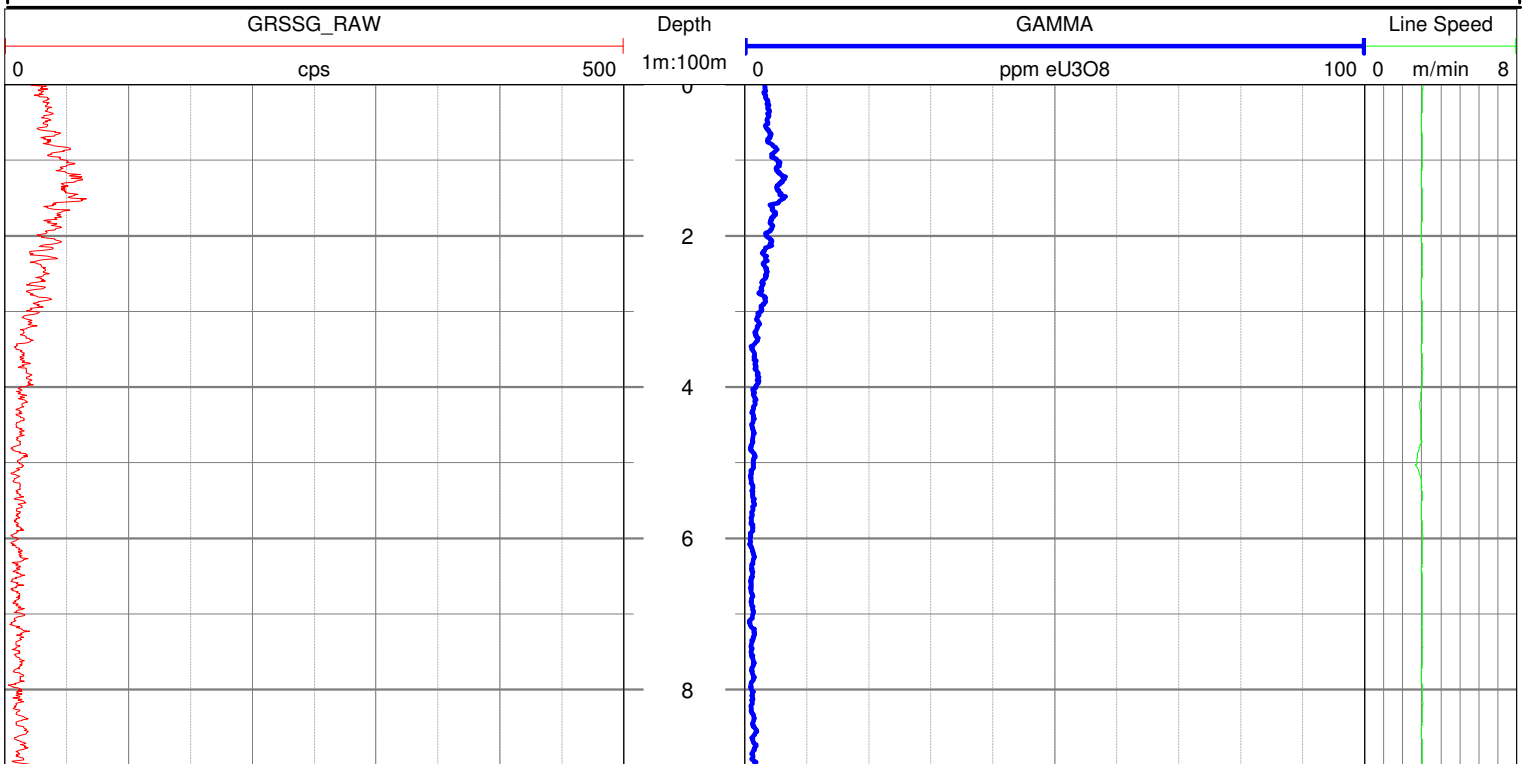
K Factor 0.0000105201662

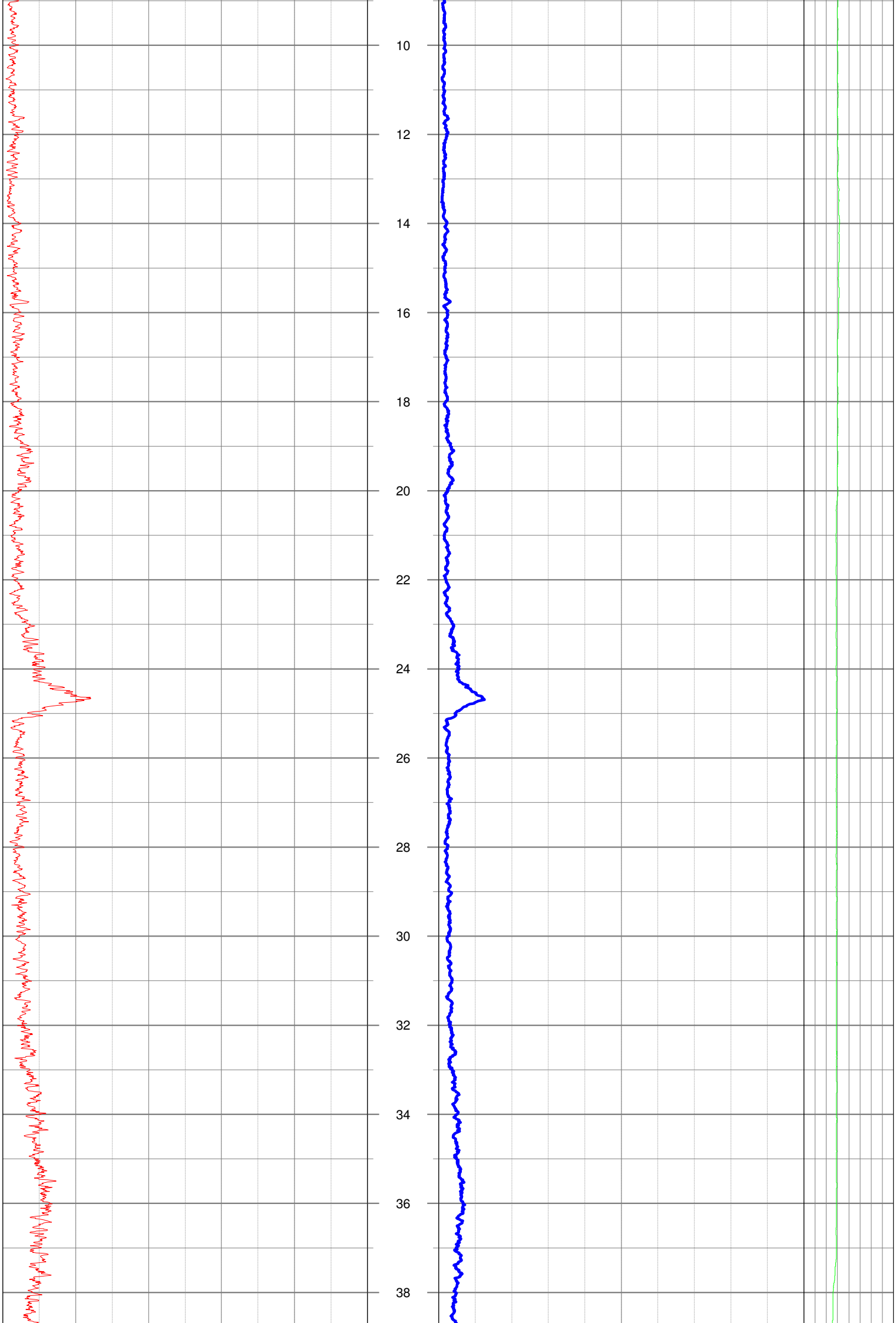
Hole Correction 0.1394ln(x) + 0.3482

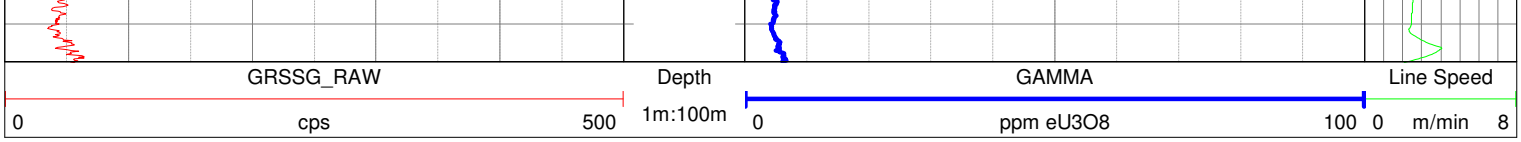
Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm




10
12
14
16
18
20
22
24
26
28
30
32
34
36
38


GRSSG_RAW
Depth
GAMMA
Line Speed
0
cps
500
1m:100m
0
ppm eU3O8
100
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY	***UXA RESOURCES***
WELL	**NNRC03**
UWI	
LOG TYPE	**GAMMA**

SCALE	1:100	STATE	**NT**	PROVINCE	NABARLEK
LAT.	LONG. ELEVATION m	UNIT	**AL23**	DRILLED BY	RIG NO
FIELD	**NABARLEK NORTH**	EASTING	**327400**	NORTHING **8645300**	DATUM GDA94 COORD MGA53
RECORDED BY	**GERARD CONLON**	LOCATION	**EL 24868**		
WITNESSED BY		LOG DATE	**18/08/2011**		
FLUID TEMP	degrees celsius	DATUM	**GL**		
FLUID TYPE		DRILLED DEPTH	**60** m		
FLUID LEVEL	m	LOGGED DEPTH	**4** m		
		INT LOGGED	**0-4** m		

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	Gamma			*SSG02*	
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)

REMARKS Hole Blocked at 4m. Collar - 60 degrees towards 270. Hole Size Correction 1.03677

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

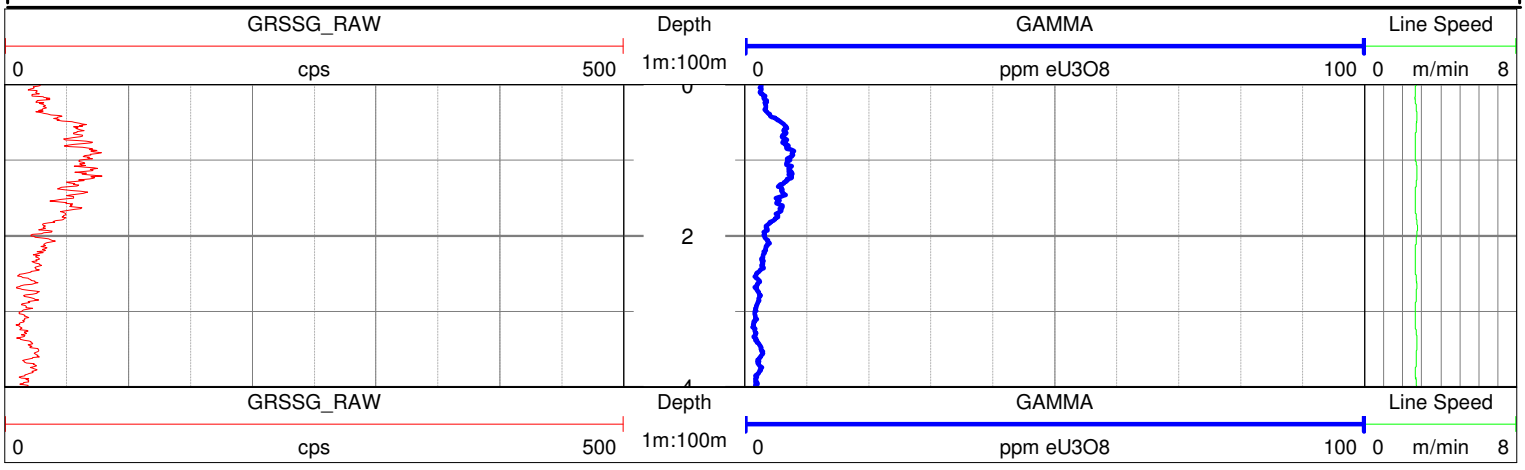
K Factor 0.0000105201662

Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm



GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC04		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**327350**	NORTHING	**8645299**	DATUM	GDA94
COORD	MGA53				

SCALE	1:100		LOCATION	**EL 24868**	
LAT.	LONG.	ELEVATION m	LOG DATE	**22/08/2011**	
FIELD	**NABARLEK NORTH**		DATUM	**GL**	
RECORDED BY	**GERARD CONLON**		DRILLED DEPTH	**90** m	
WITNESSED BY			LOGGED DEPTH	**81.2** m	
FLUID TEMP	degrees celsius		INT LOGGED	**0-81.2** m	
FLUID TYPE					
FLUID LEVEL	m				

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged through the drilling rods. Hole Size Correction 1.00875, Rods Correction Factor 2.45

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

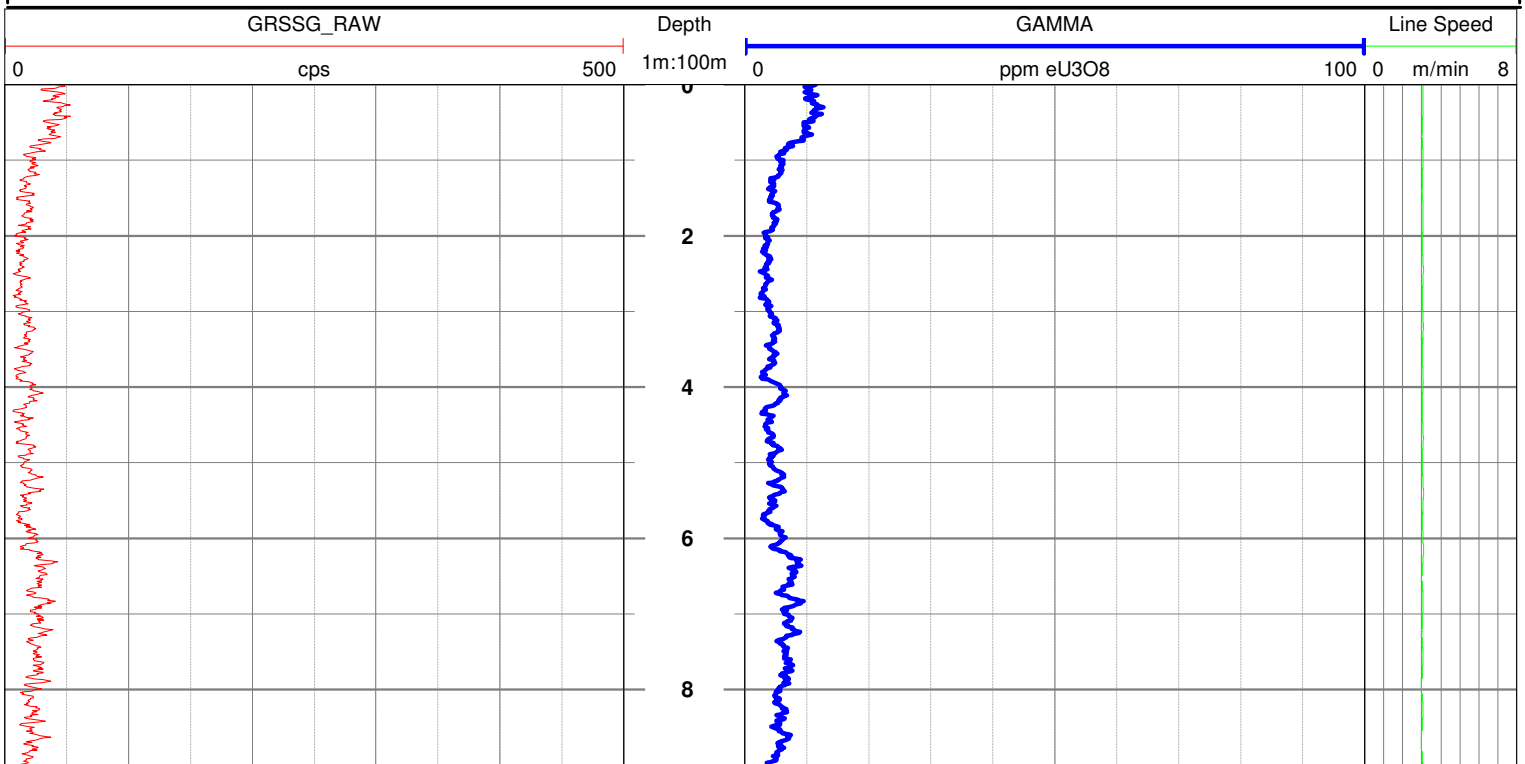
K Factor 0.0000105201662

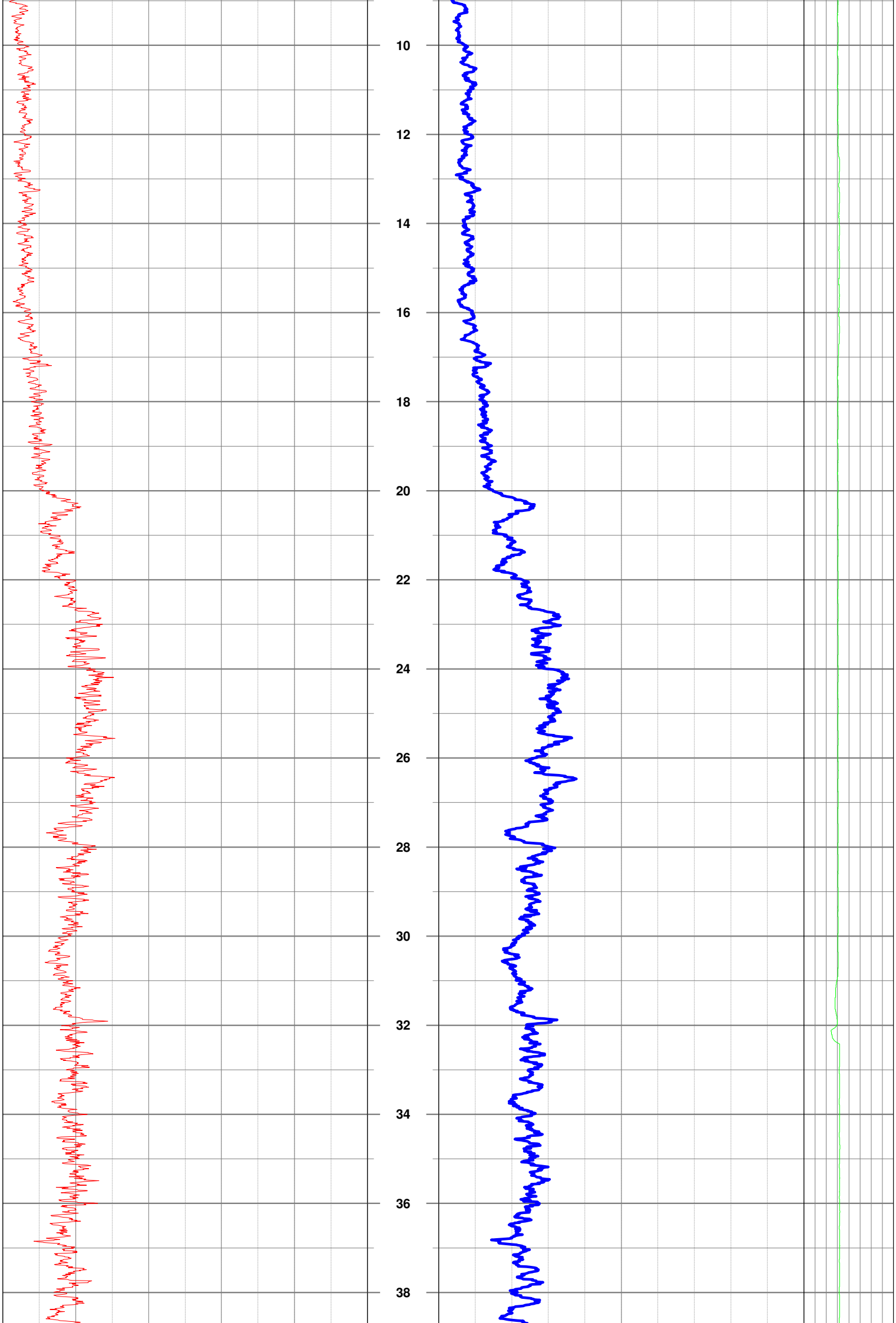
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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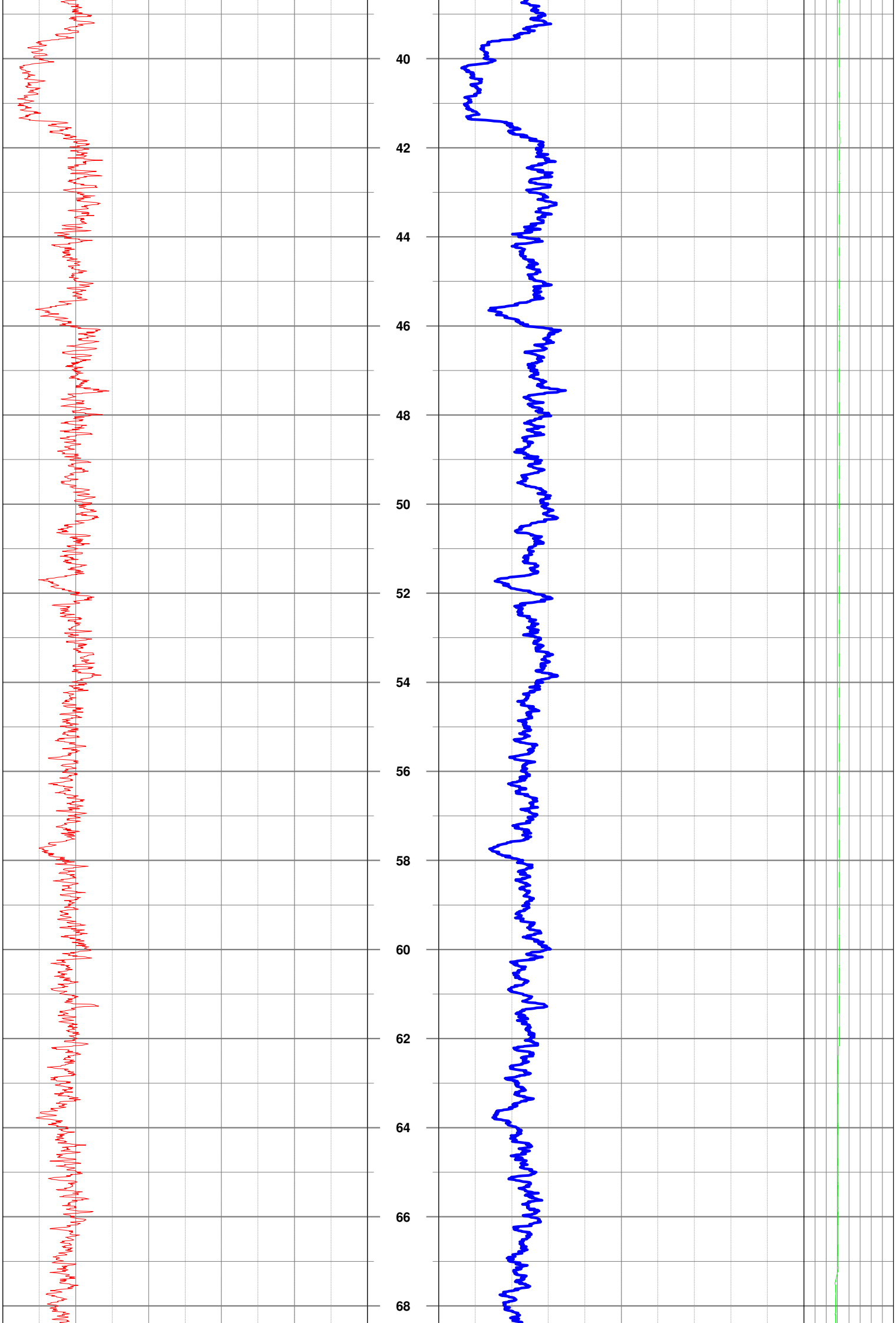
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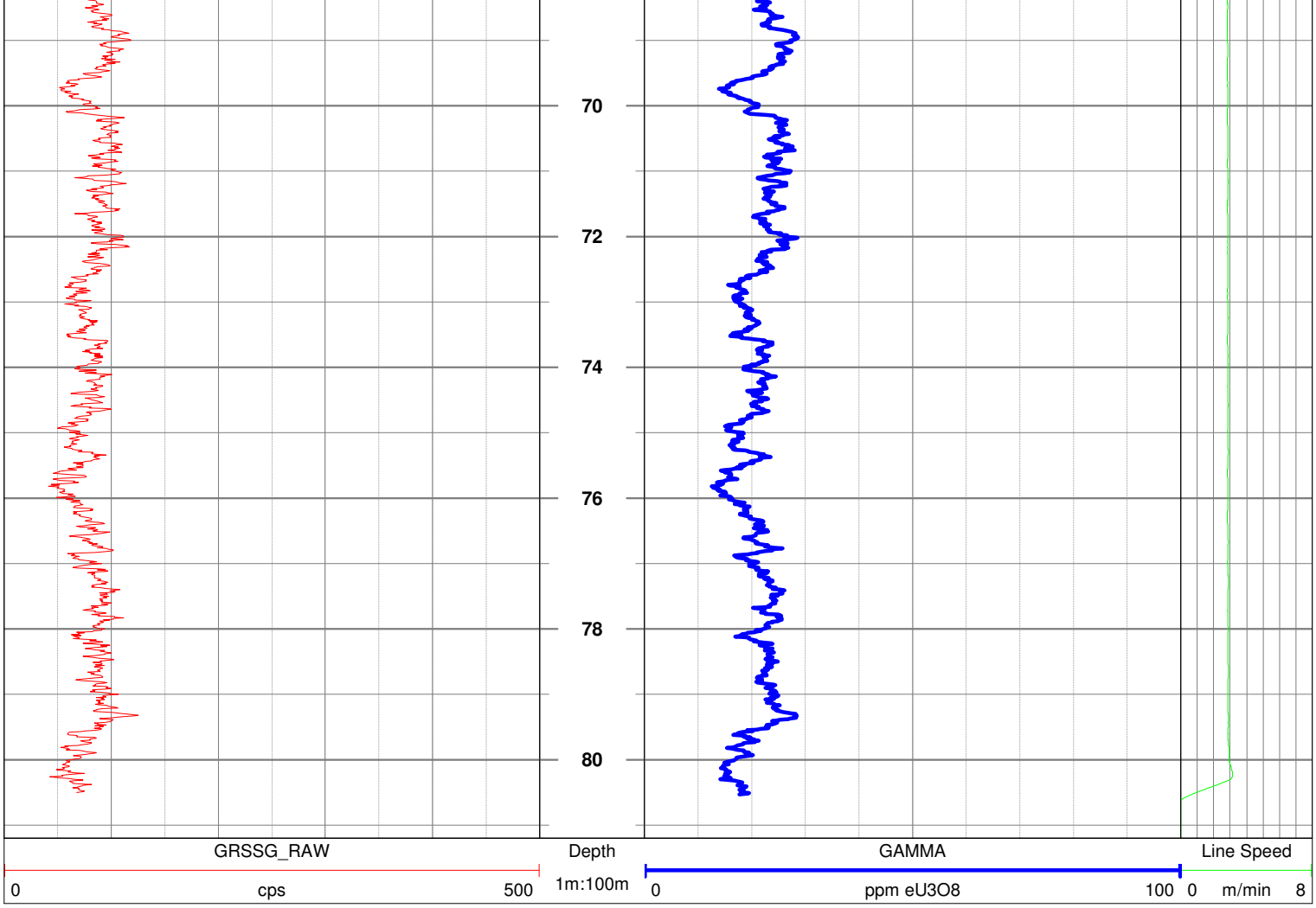
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78
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Depth
GAMMA
Line Speed
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cps
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1m:100m
0
ppm eU3O8
100
0
m/min
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GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC04A		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**327300**	NORTHING	**8645300**	DATUM	GDA94
COORD	MGA53				

SCALE	1:100		LOCATION	**EL 24868**	
LAT.	LONG.	ELEVATION m	LOG DATE	**22/08/2011**	
FIELD	**NABARLEK NORTH**		DATUM	**GL**	
RECORDED BY	**GERARD CONLON**		DRILLED DEPTH	**90** m	
WITNESSED BY			LOGGED DEPTH	**86.29** m	
FLUID TEMP	degrees celsius		INT LOGGED	**0-86.29** m	
FLUID TYPE					
FLUID LEVEL	m				

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Hole Size Correction 1.00875, Rods Correction Factor 2.45

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

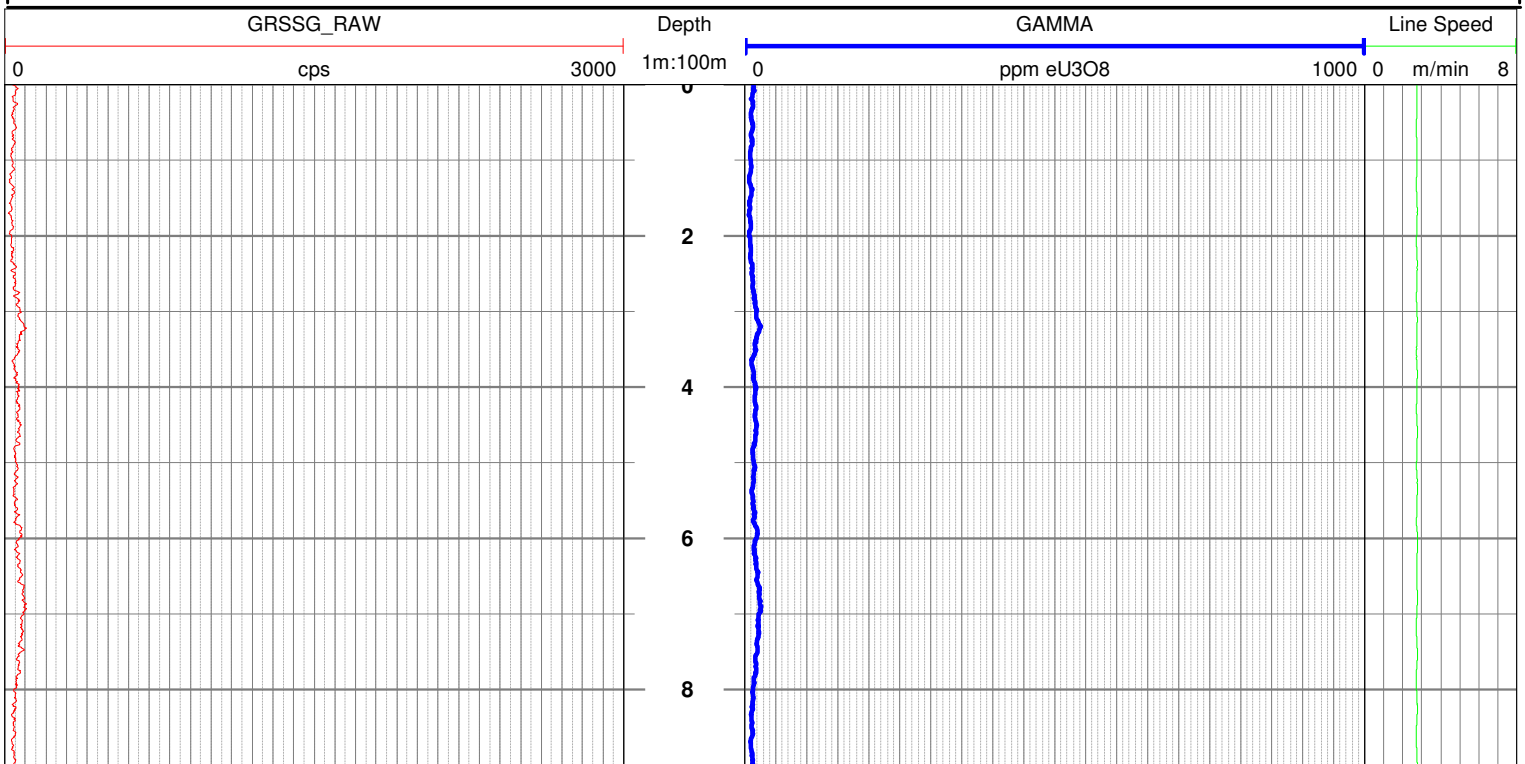
K Factor 0.0000105201662

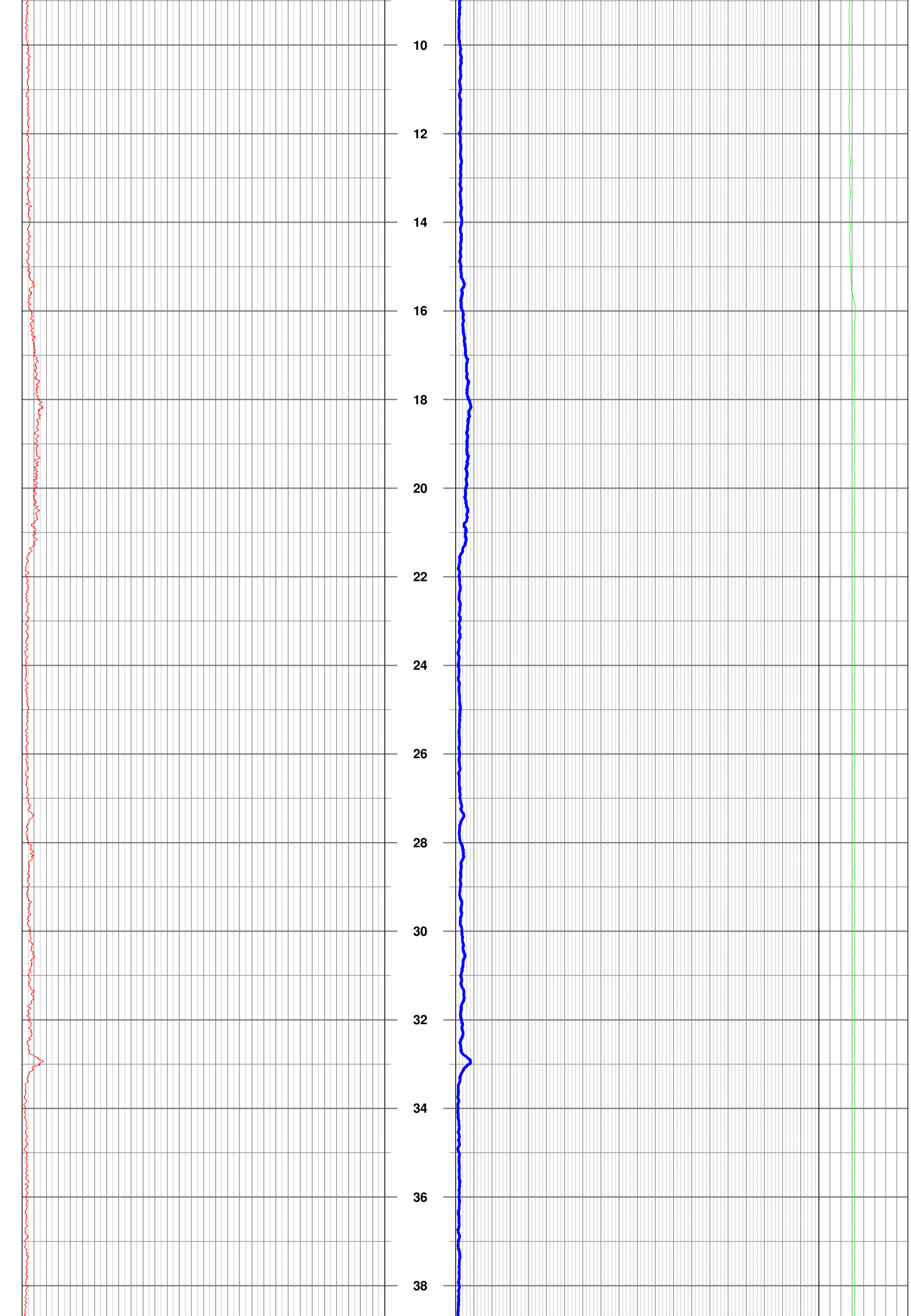
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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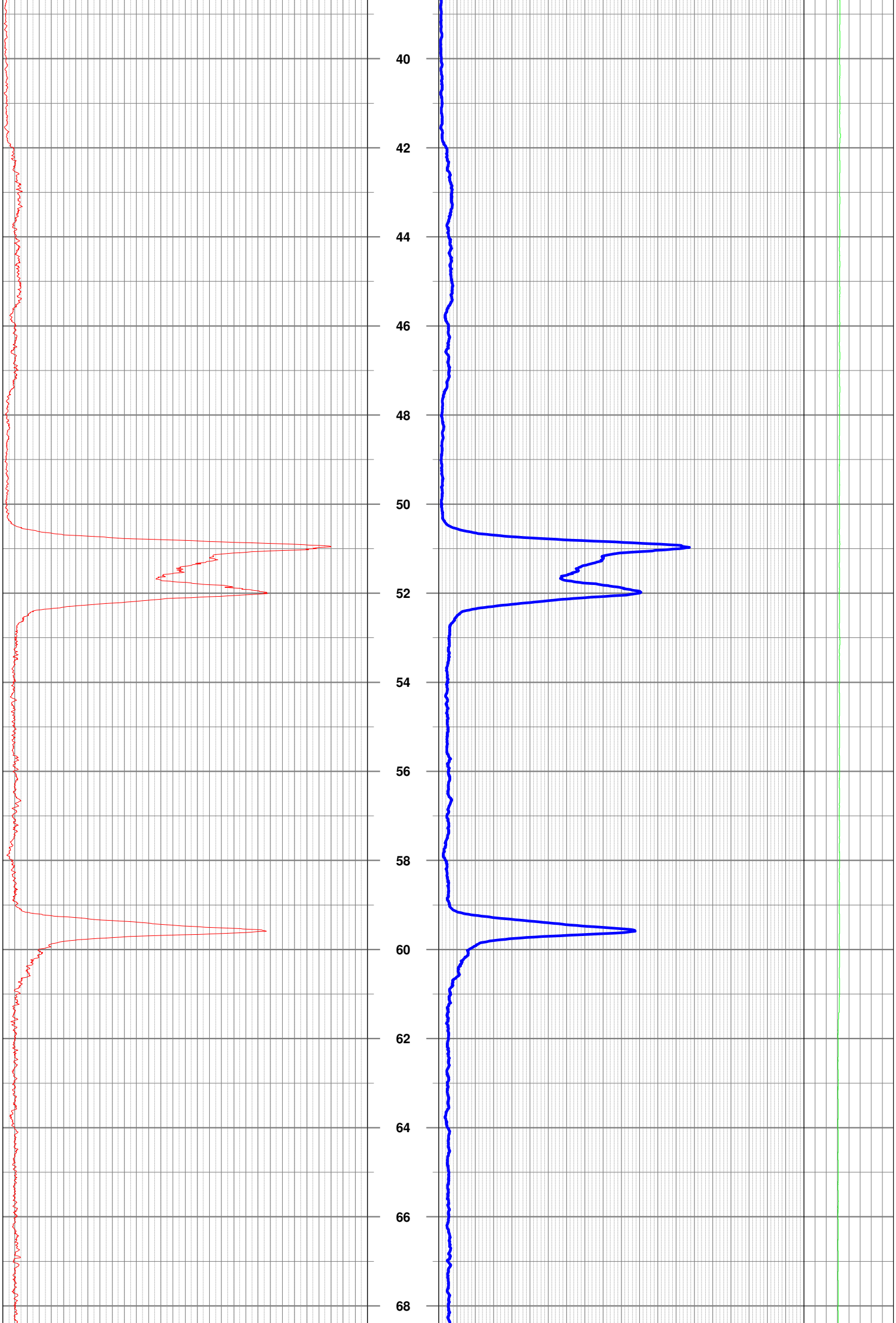
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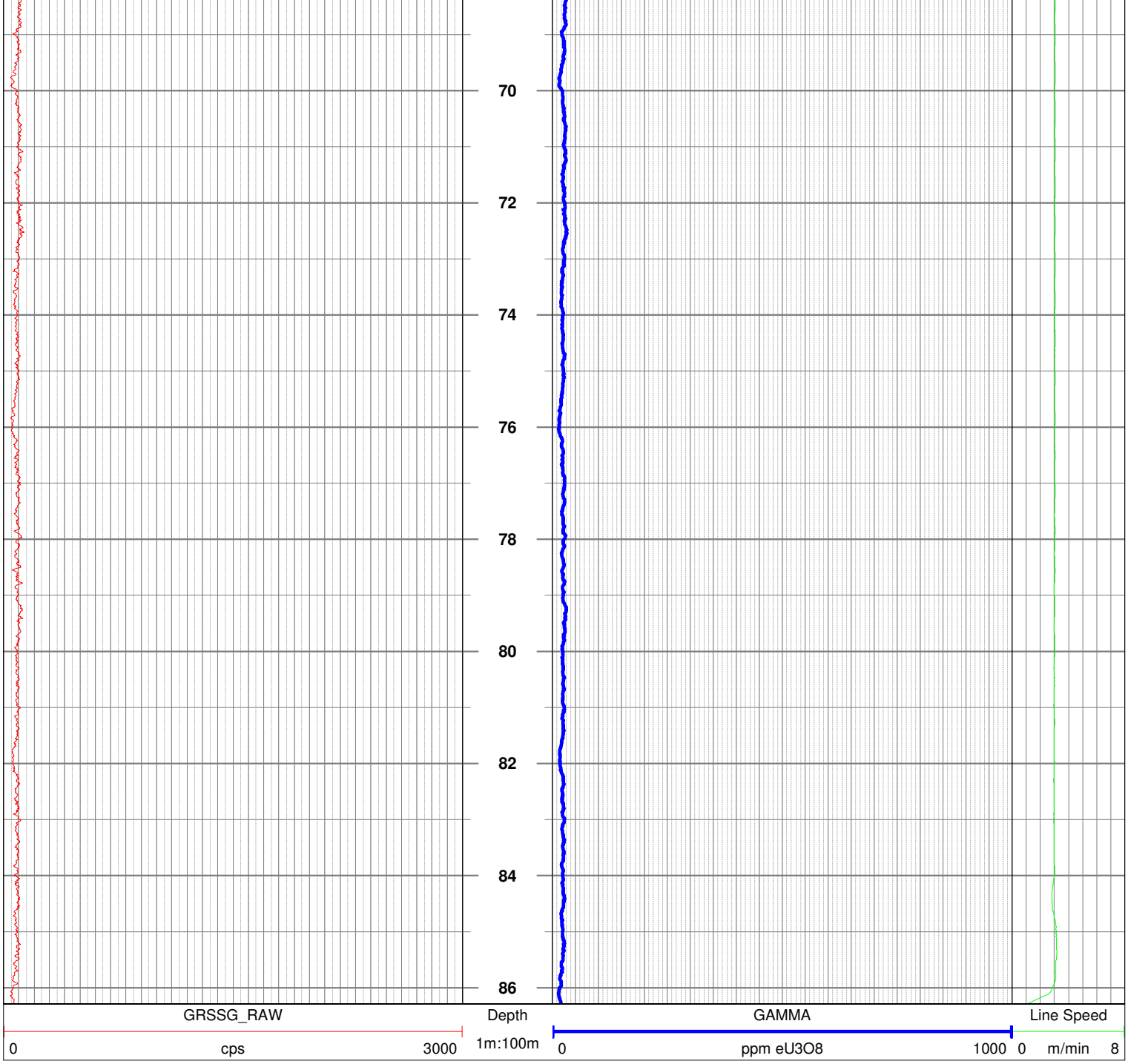
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Depth
GAMMA
Line Speed
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cps
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1m:100m
0
ppm eU3O8
1000
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC05		**GAMMA**

SCALE	1:100	STATE	**NT**	PROVINCE	NABARLEK
LAT.	LONG. ELEVATION m	UNIT	**AL23** DRILLED BY		RIG NO
FIELD	**NABARLEK NORTH**	EASTING	**327250** NORTHING **8645300** DATUM GDA94		COORD MGA53
RECORDED BY	**GERARD CONLON**	LOCATION	**EL 24868**		
WITNESSED BY		LOG DATE	**21/08/2011**		
FLUID TEMP	degrees celsius	DATUM	**GL**		
FLUID TYPE		DRILLED DEPTH	**60** m		
FLUID LEVEL	m	LOGGED DEPTH	**56.6** m		
		INT LOGGED	**0-56.6** m		

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged through the drillling rods. Rods Correction Factor 2.45, Hole Size Correction 1.00875

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

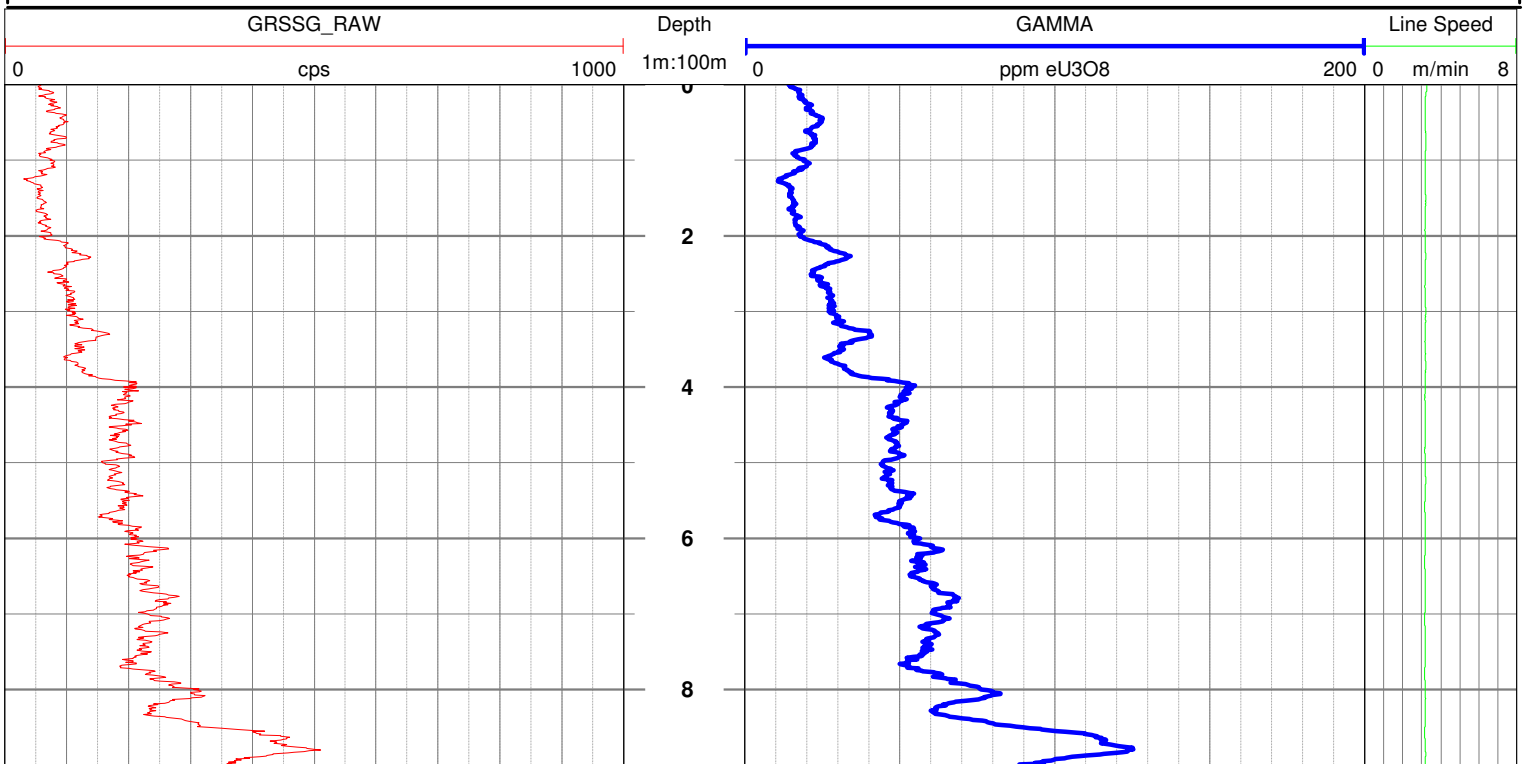
K Factor 0.0000105201662

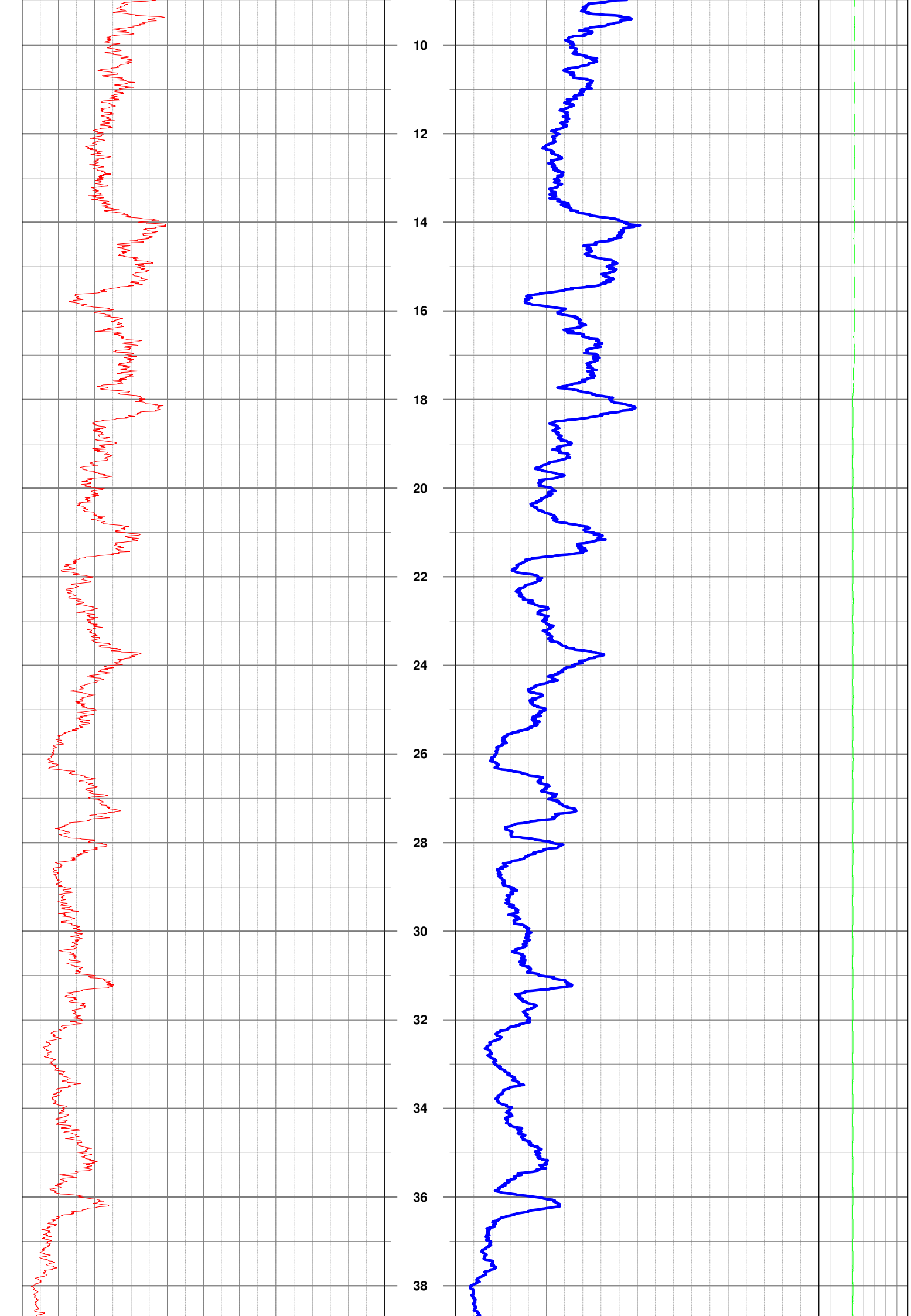
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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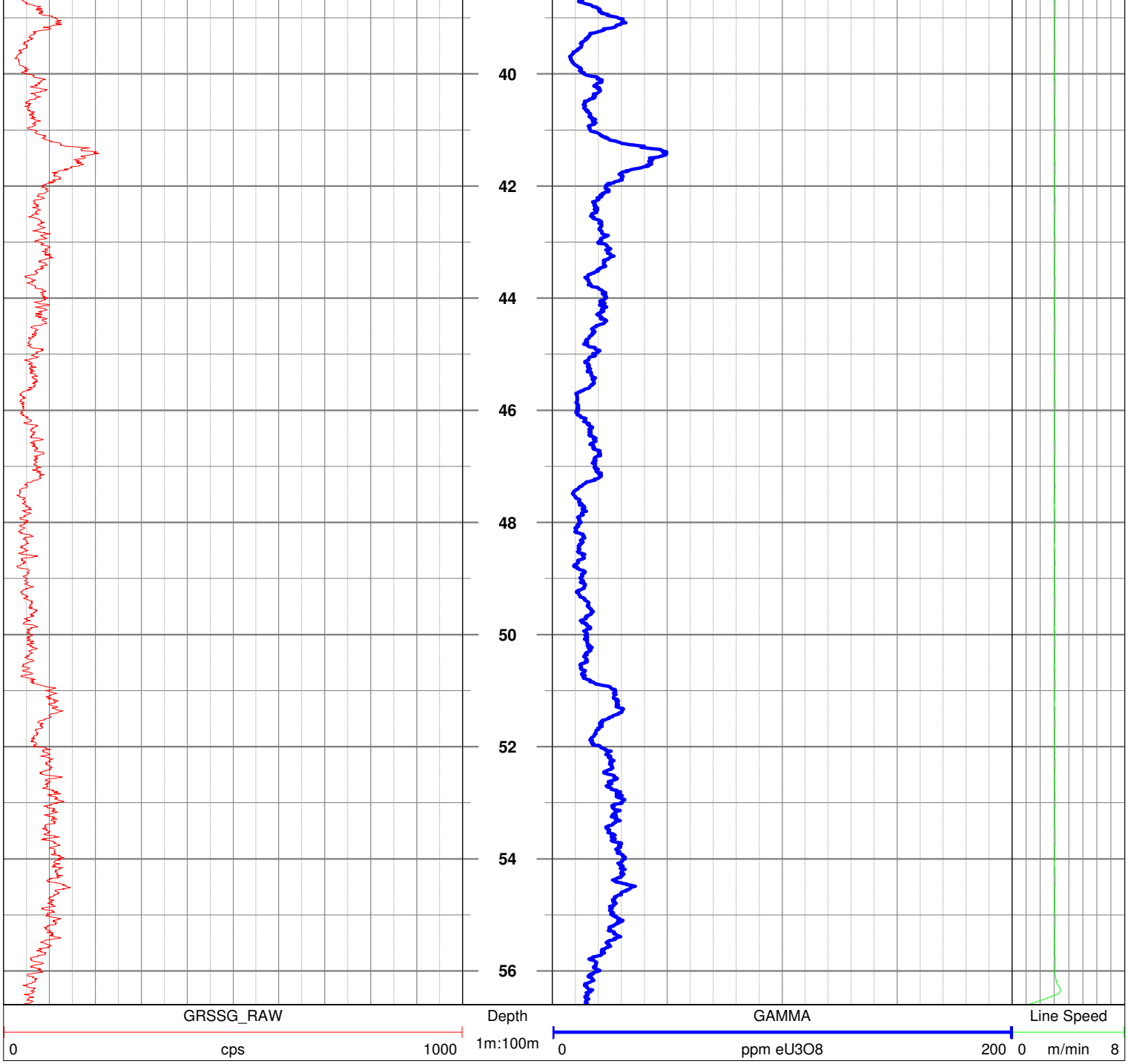
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GRSSG_RAW
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cps
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Depth
1m:100m
GAMMA
0
ppm eU3O8
200
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC05A		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**327200**	NORTHING	**86455300**	DATUM GDA94	COORD MGA53
SCALE	1:100				
LAT.	LONG.	ELEVATION	m		
FIELD	**NABARLEK NORTH**	LOCATION	**EL 24868**		
RECORDED BY	**GERARD CONLON**	LOG DATE	**22/08/2011**		
WITNESSED BY		DATUM	**GL**		
FLUID TEMP	degrees celsius	DRILLED DEPTH	**90**	m	
FLUID TYPE		LOGGED DEPTH	**87.1**	m	
FLUID LEVEL	m	INT LOGGED	**0-87.1**	m	

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Hole Size Correction 1.00875, Rods Correction Factor 2.45

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

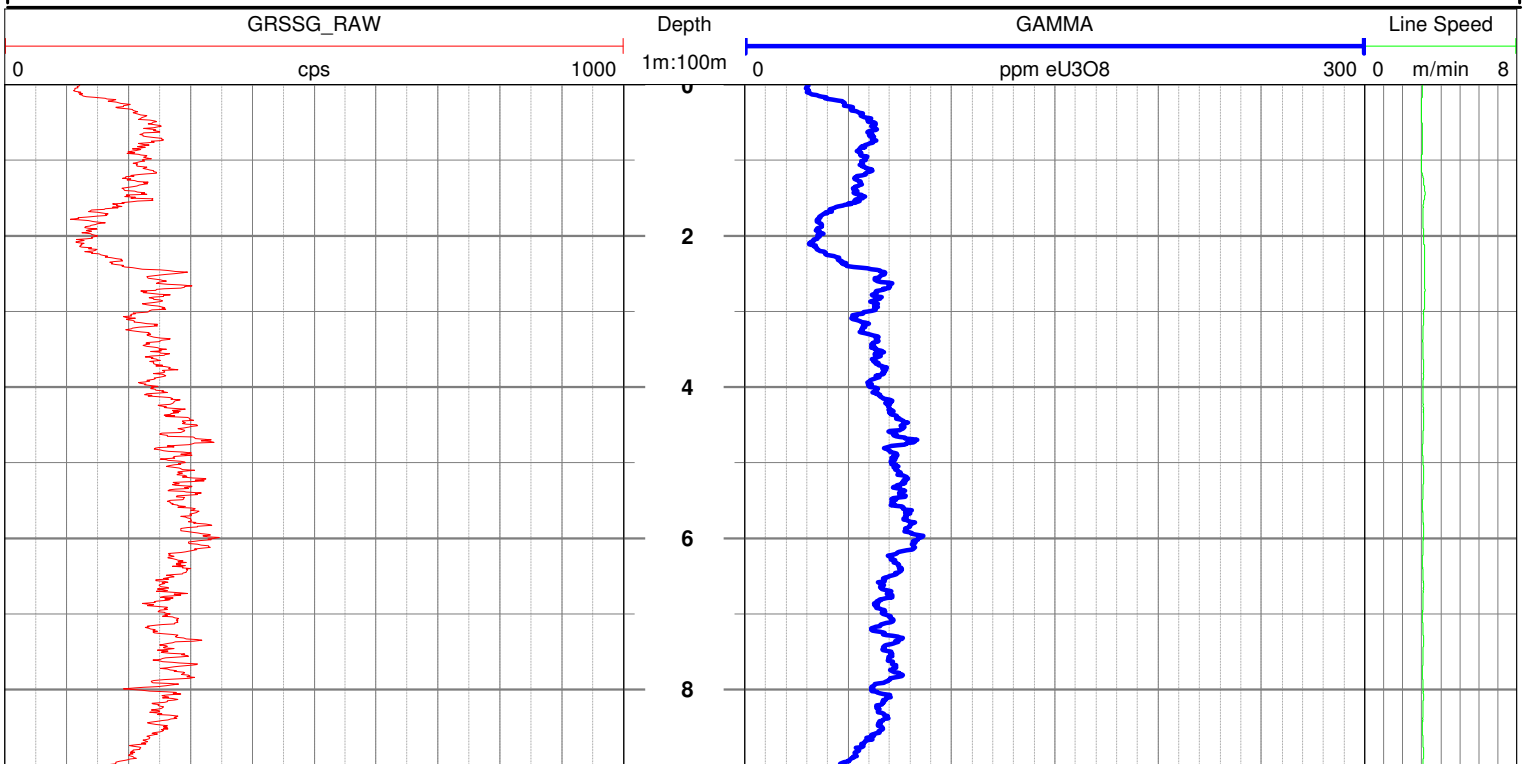
K Factor 0.0000105201662

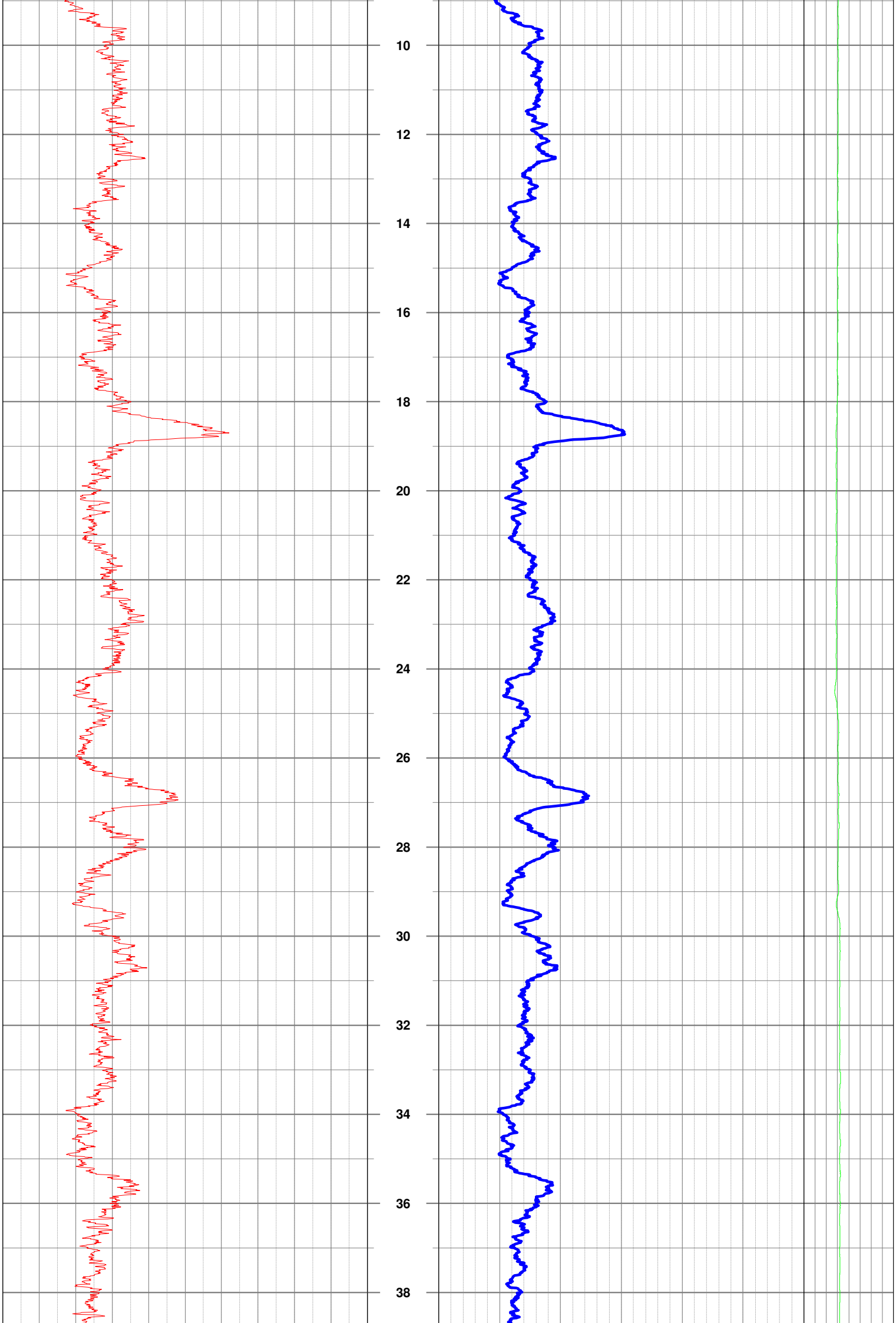
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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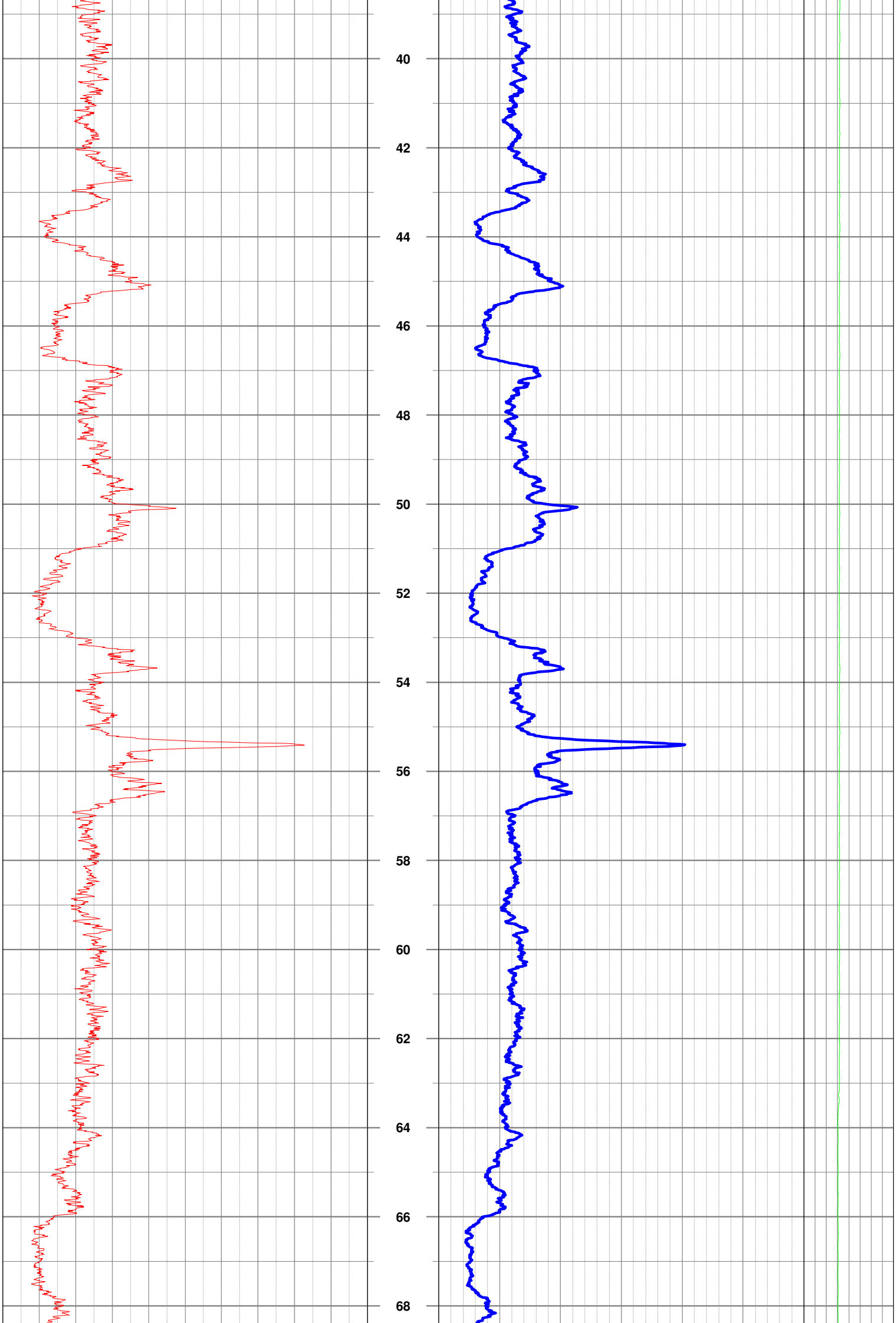
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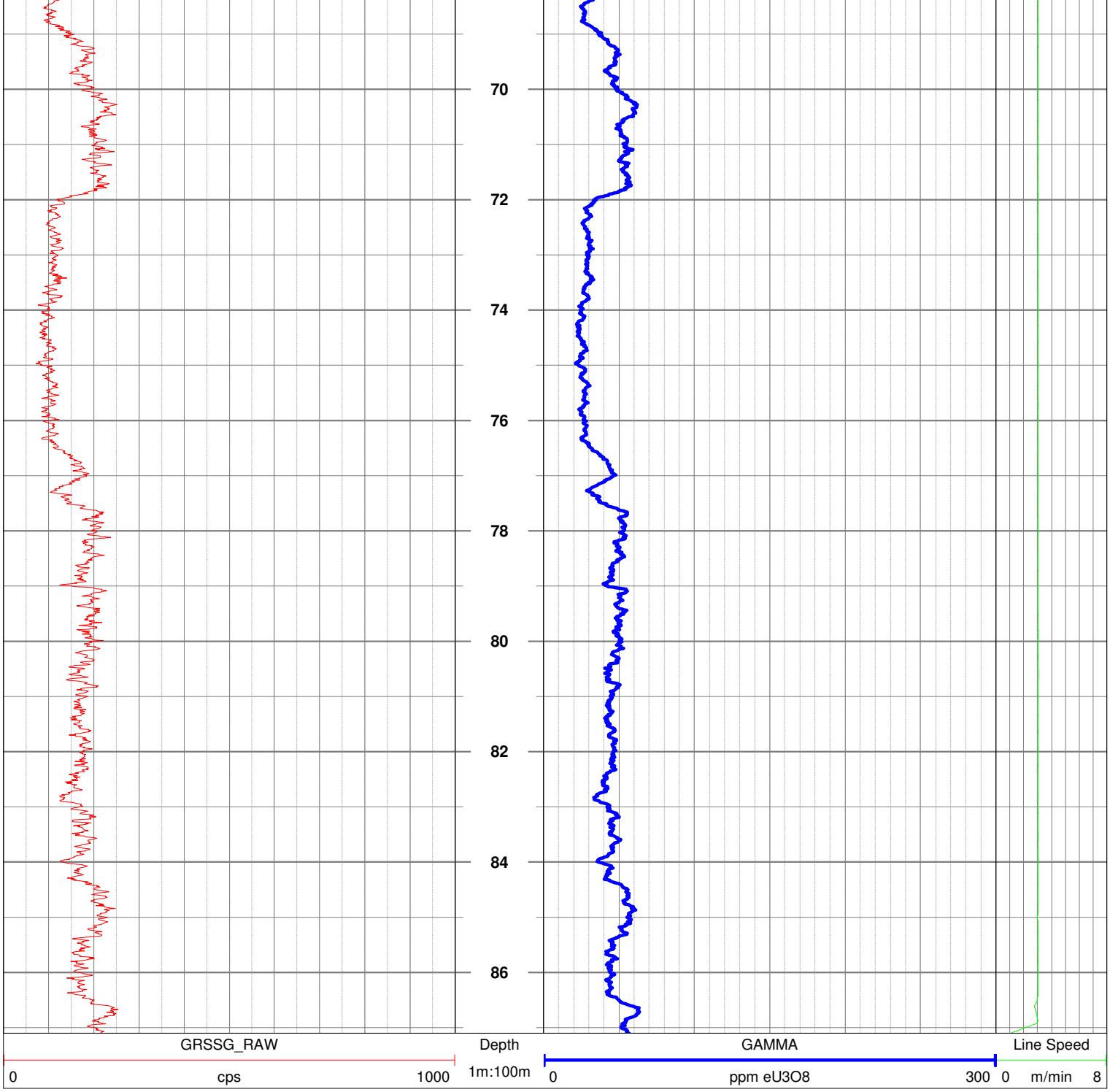
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78
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86
GRSSG_RAW
0
cps
1000
Depth
1m:100m
GAMMA
0
ppm eU3O8
300
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC06		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**327150**	NORTHING	**8645300**	DATUM GDA94	COORD MGA53

SCALE	1:100	LOCATION	**EL 24868**
LAT.	LONG. ELEVATION m	LOG DATE	**21/08/2011**
FIELD	**NABARLEK NORTH**	DATUM	**GL**
RECORDED BY	**GERARD CONLON**	DRILLED DEPTH	**90** m
WITNESSED BY		LOGGED DEPTH	**87.27** m
FLUID TEMP	degrees celsius	INT LOGGED	**0-87.27** m
FLUID TYPE			
FLUID LEVEL	m		

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged through drill rods.Rods Correction Factor 2.45, Hole Size Correction 1.00875

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

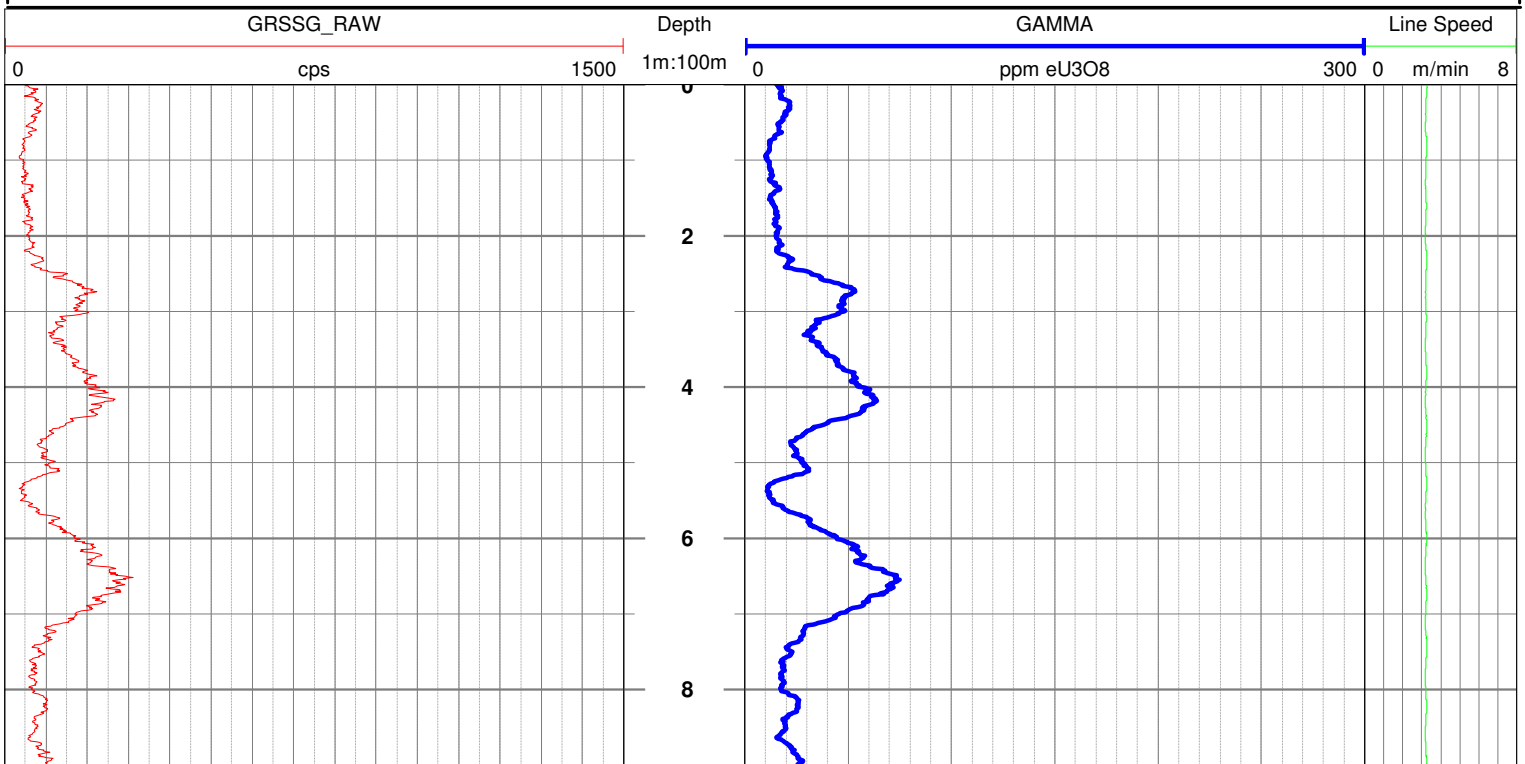
K Factor 0.0000105201662

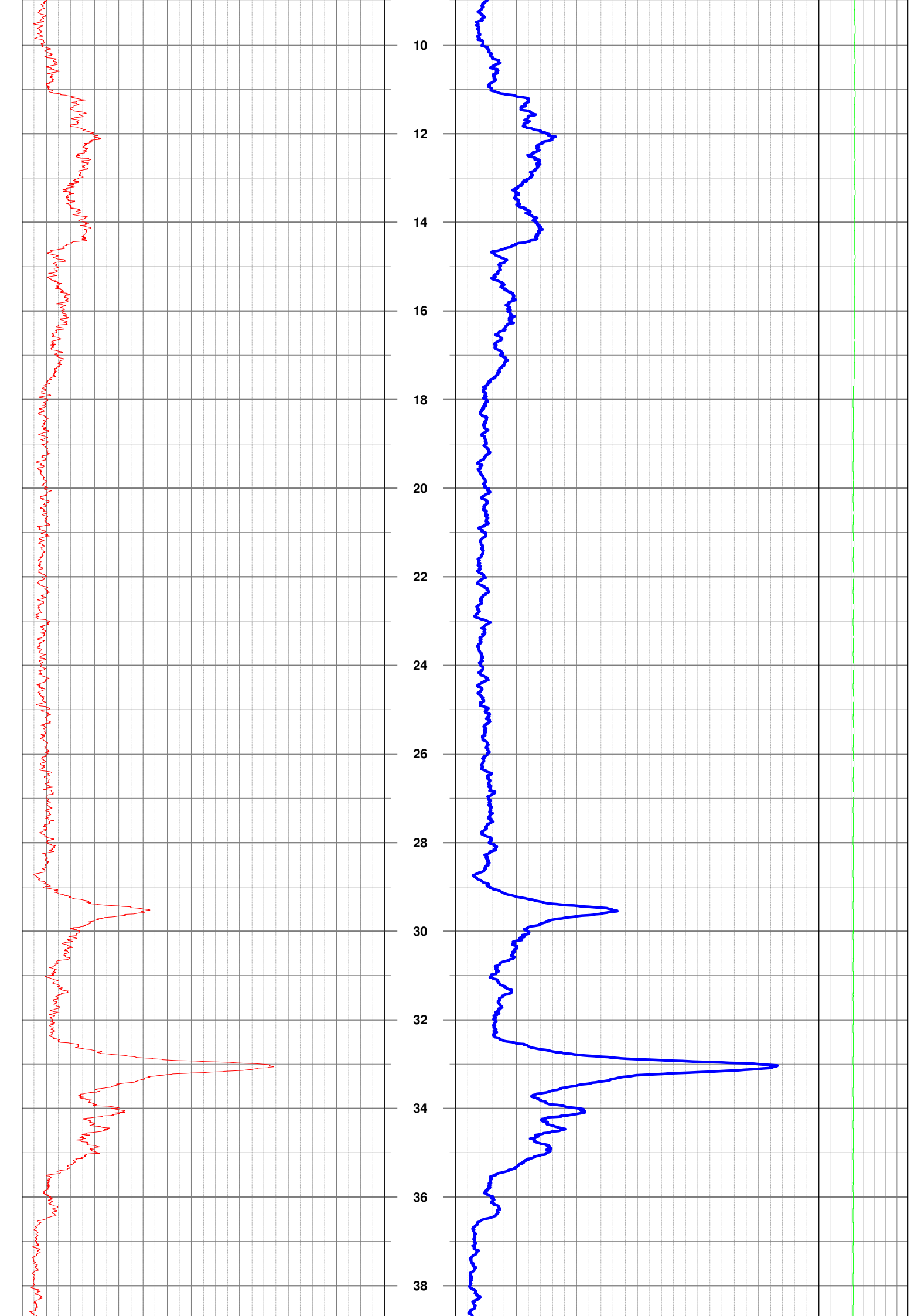
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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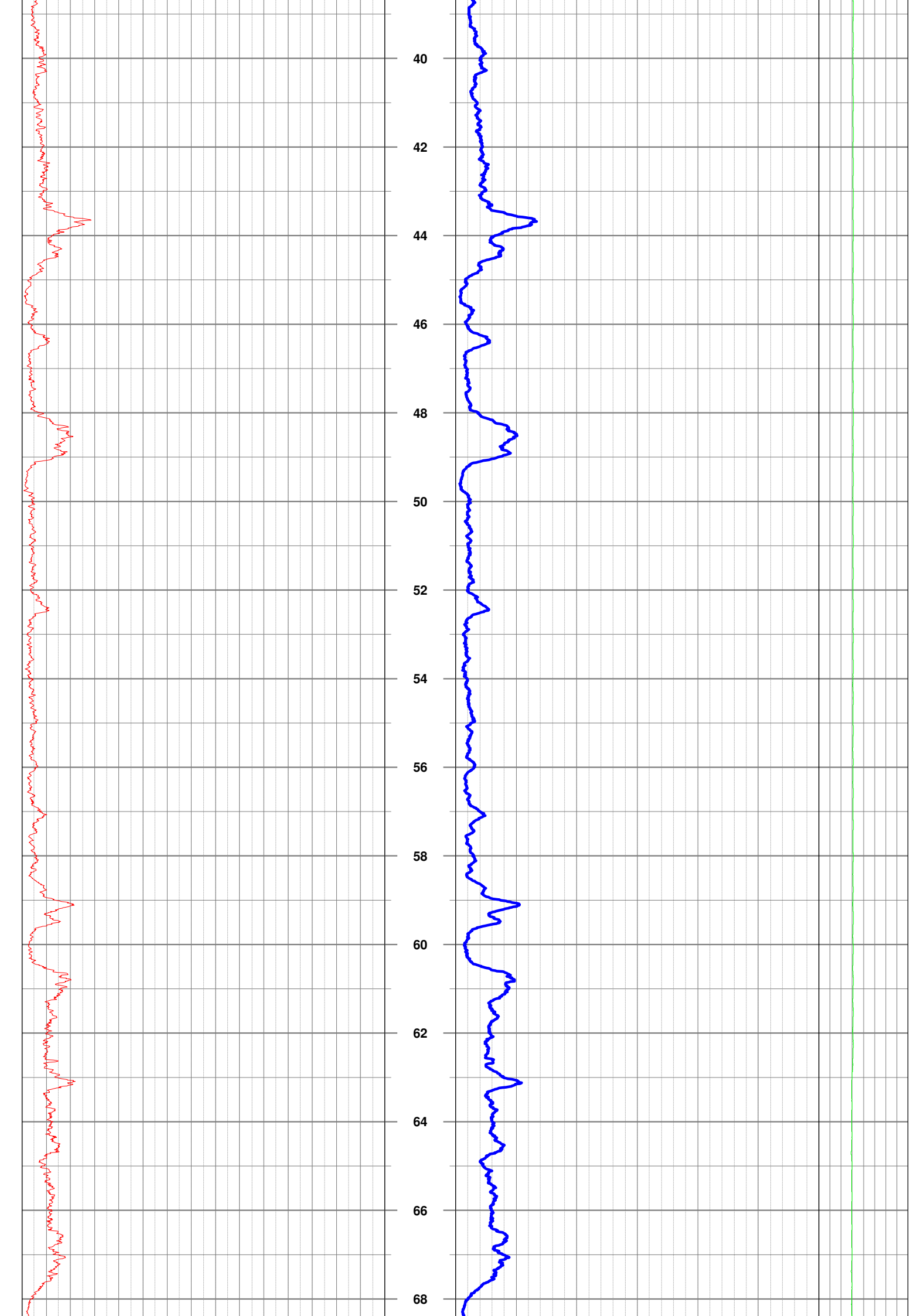
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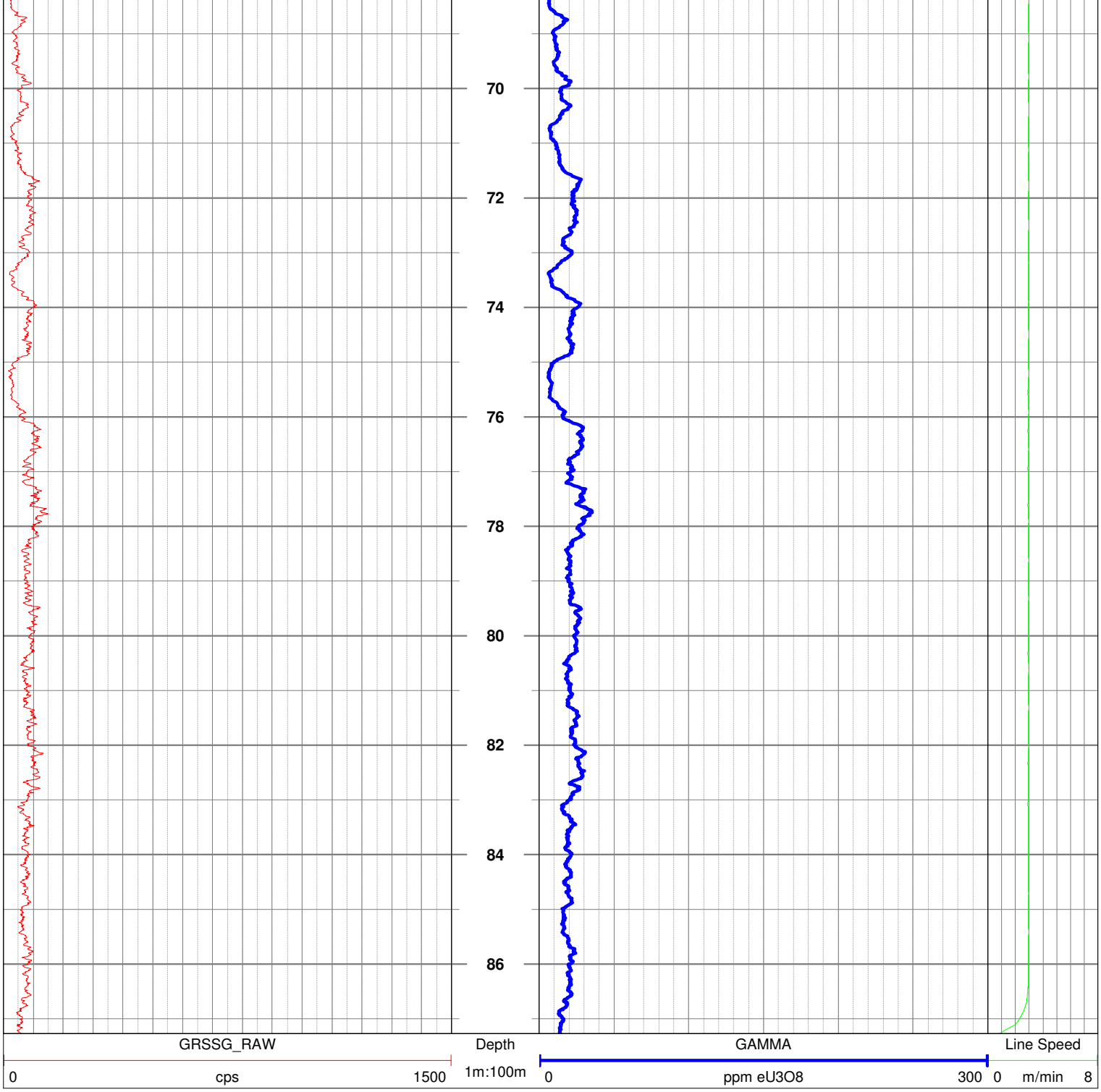
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GRSSG_RAW
Depth
GAMMA
Line Speed
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cps
1500
1m:100m
0
ppm eU3O8
300
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY	***UXA RESOURCES***
WELL	**NNRC07**
UWI	
LOG TYPE	**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**326972**	NORTHING	**86452135**	DATUM	GDA94
COORD	MGA53				

SCALE	1:100				
LAT.	LONG.	ELEVATION	m		
FIELD	**NABARLEK NORTH**				
RECORDED BY	**GERARD CONLON**				
WITNESSED BY					
FLUID TEMP	degrees celsius				
FLUID TYPE					
FLUID LEVEL	m				

LOCATION	**EL 24868**				
LOG DATE	**21/08/2011**				
DATUM	**GL**				
DRILLED DEPTH	**90**	m			
LOGGED DEPTH	**85.12**	m			
INT LOGGED	**0-85.12**	m			

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged Through Drill Rods.Rods Correction Factor 2.45, Hole Size Correction 1.00875

GAA Wireline (08) 8393 0900

GAA GAMMA

Tool ID SSG02

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

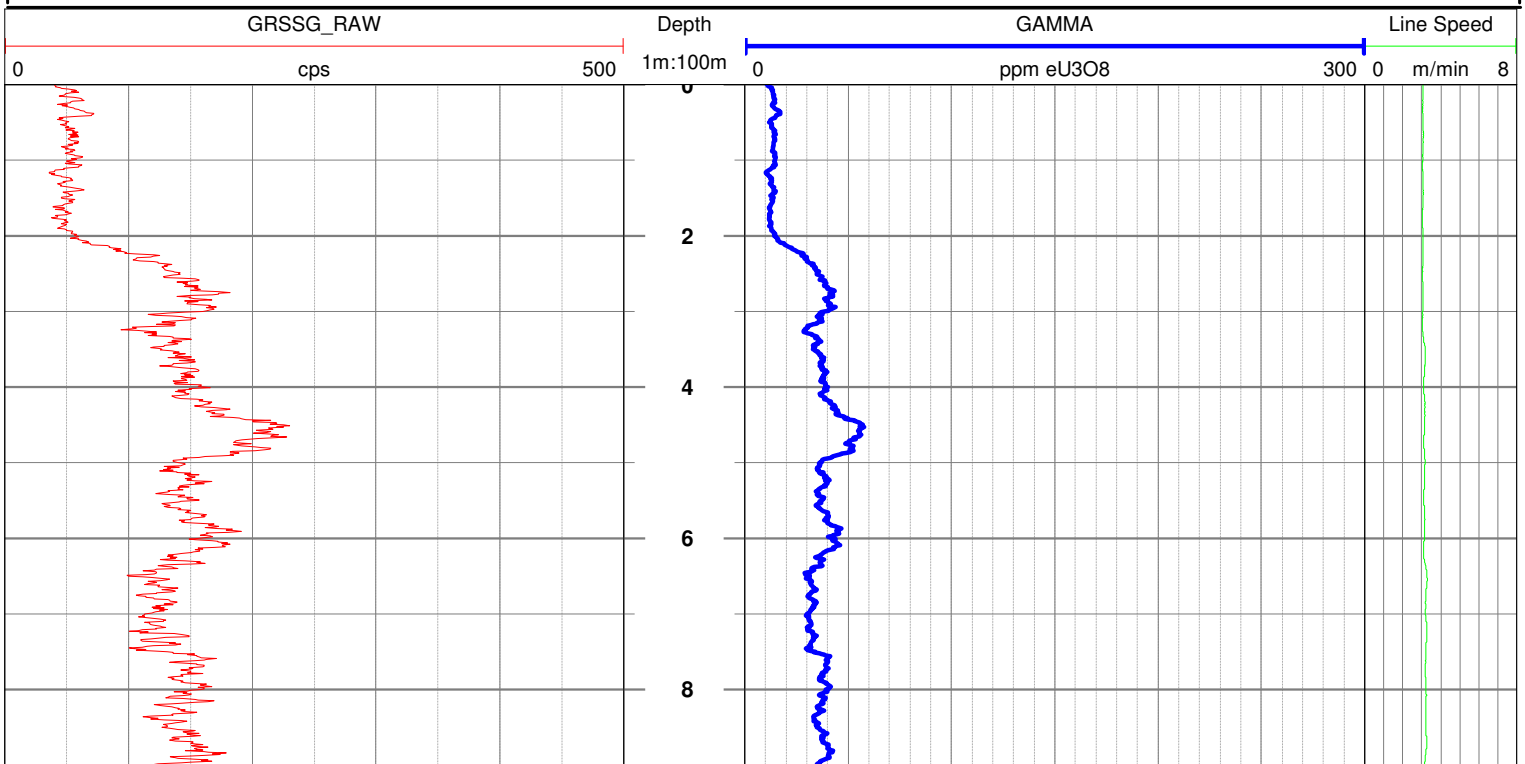
K Factor 0.0000105201662

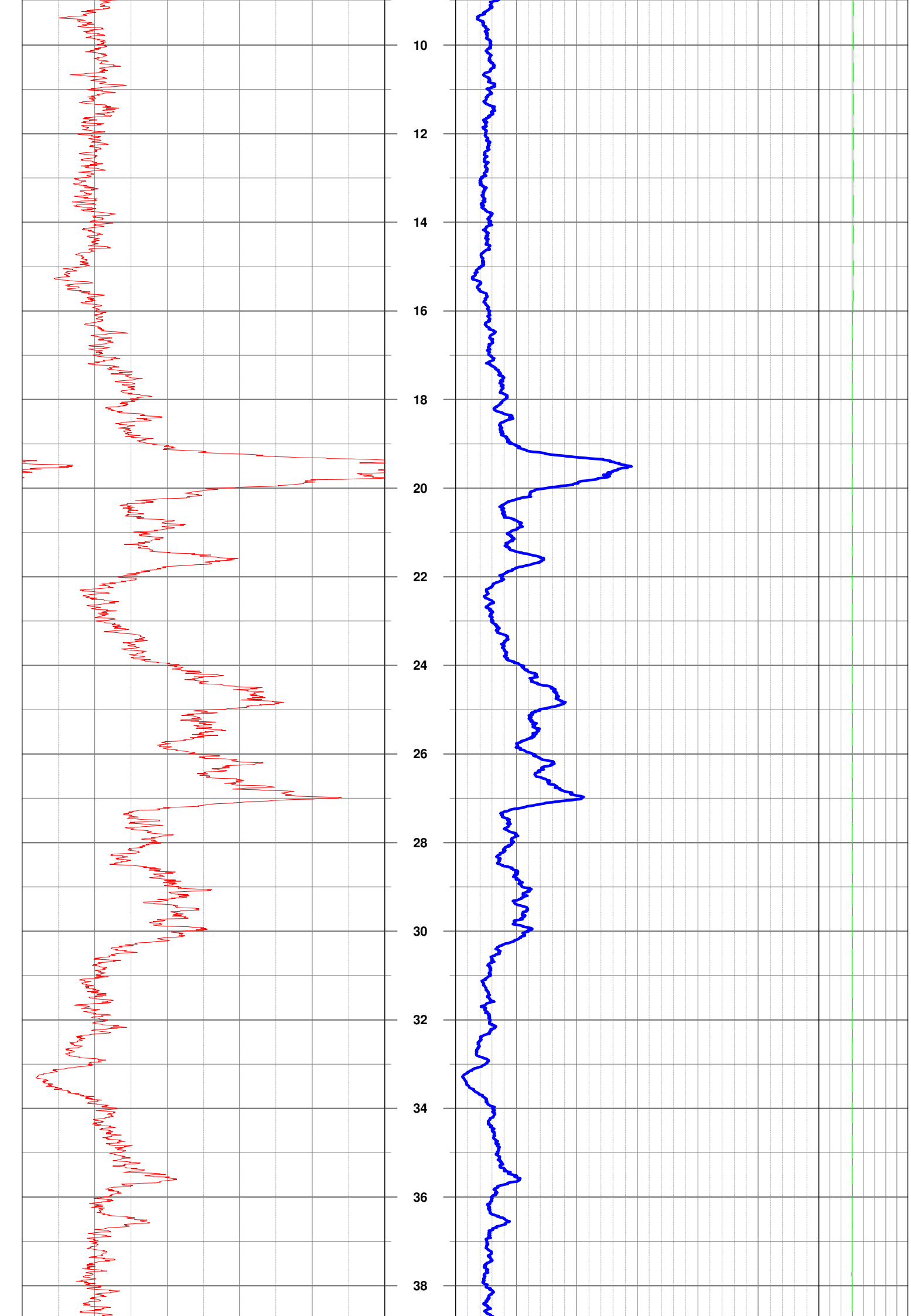
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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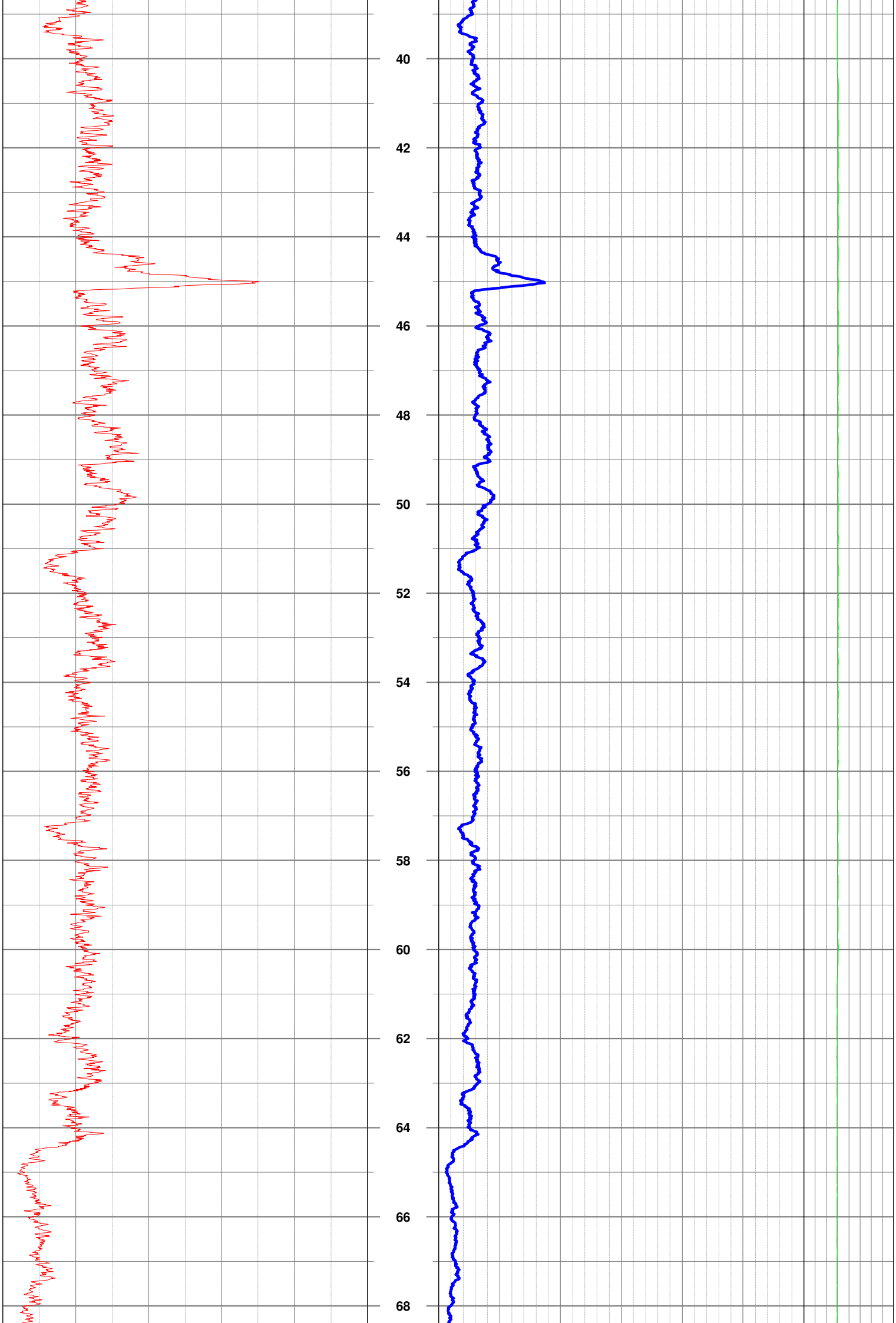
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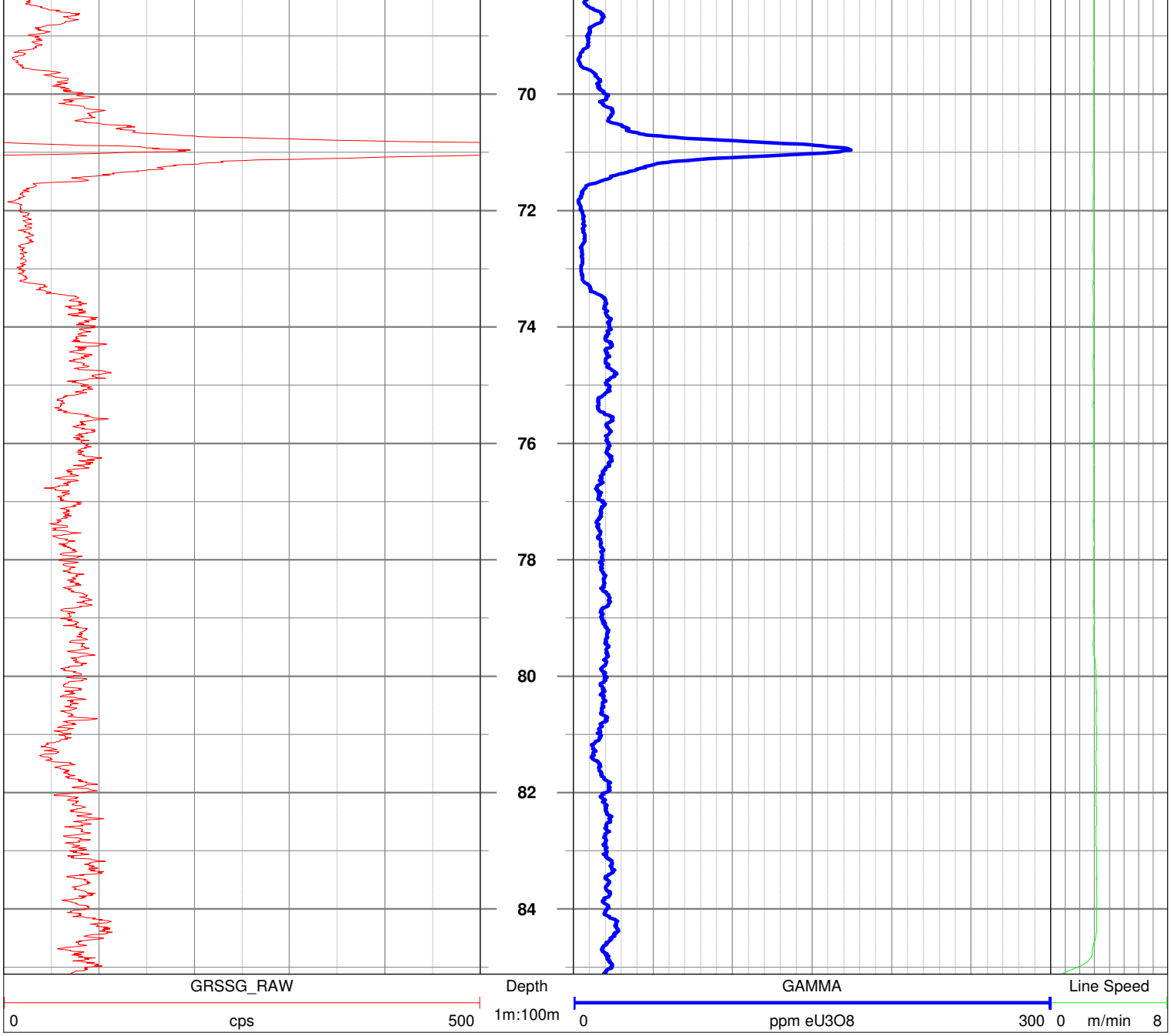
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GRSSG_RAW
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cps
500
Depth
1m:100m
GAMMA
0
ppm eU3O8
300
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY	***UXA RESOURCES***
WELL	**NNRC08**
UWI	
LOG TYPE	**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**327050**	NORTHING	**8645300**	DATUM	GDA94 COORD MGA53
SCALE	1:100				
LAT.	LONG.	ELEVATION	m		
FIELD	**NABARLEK NORTH**	LOCATION	**EL 24868**		
RECORDED BY	**GERARD CONLON**	LOG DATE	**20/08/2011**		
WITNESSED BY		DATUM	**GL**		
FLUID TEMP	degrees celsius	DRILLED DEPTH	**90** m		
FLUID TYPE		LOGGED DEPTH	**82.01** m		
FLUID LEVEL	m	INT LOGGED	**0-82.01** m		

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)

REMARKS Collar - 60 degrees towards 270. Hole Size Correction 1.03677

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

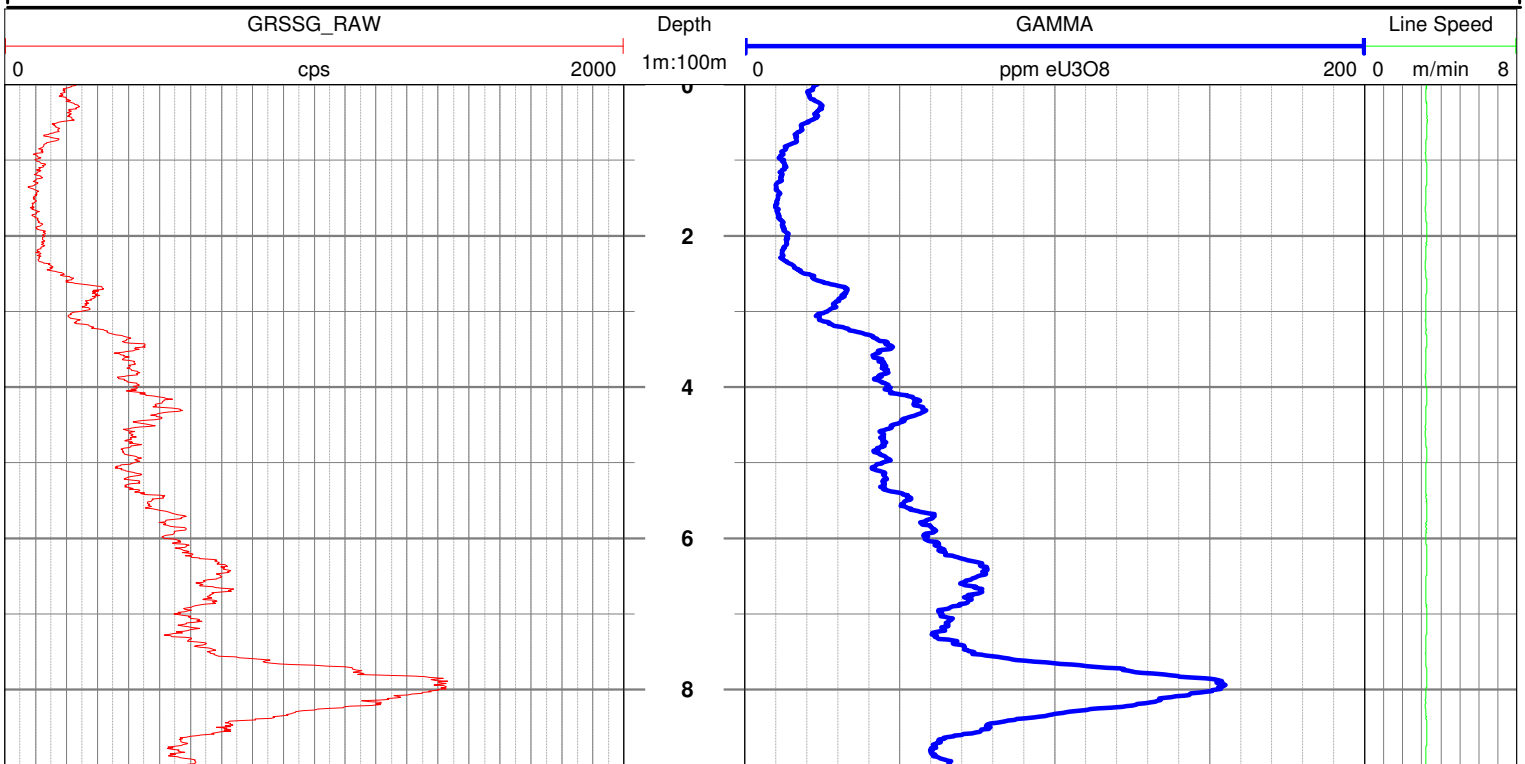
K Factor 0.0000105201662

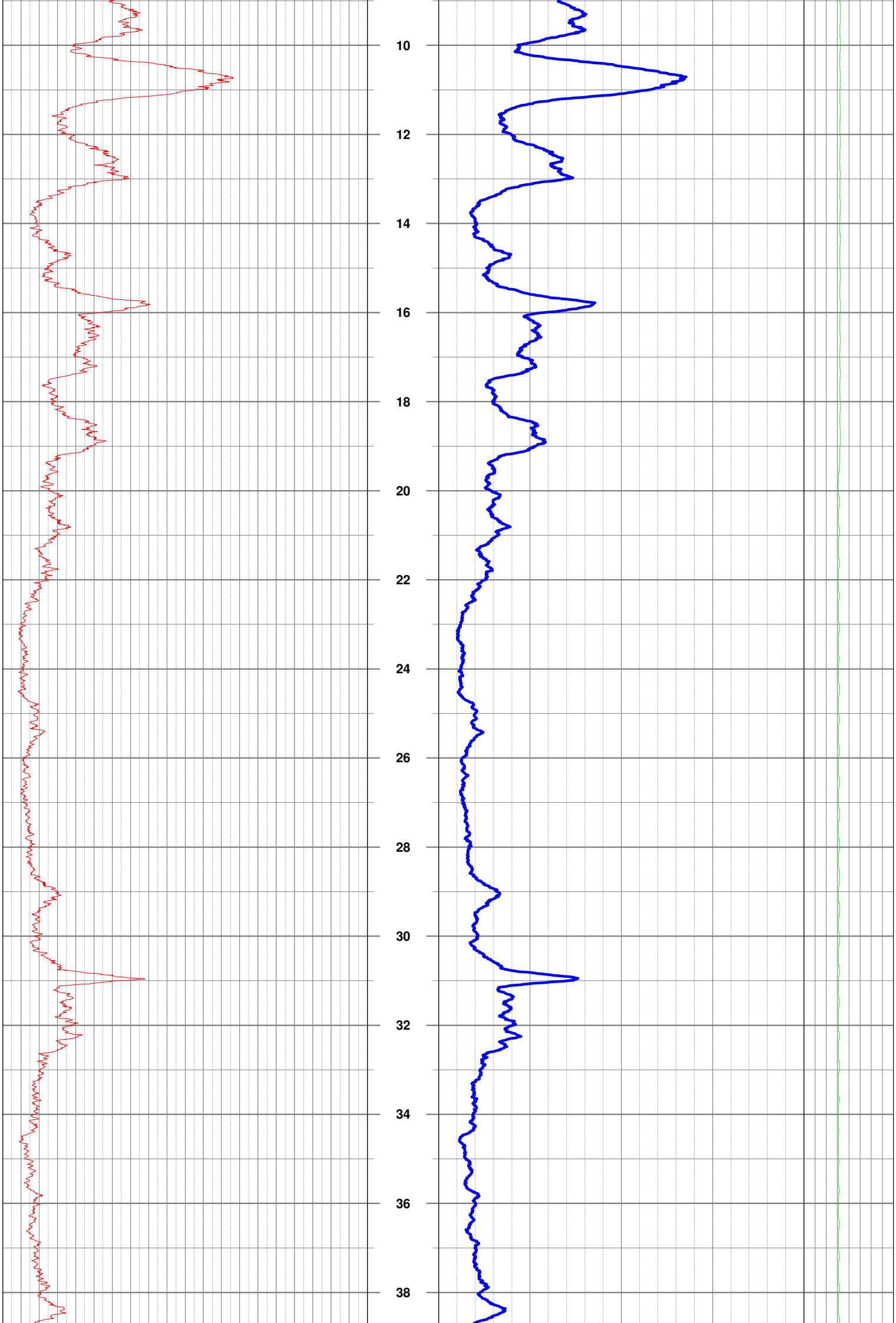
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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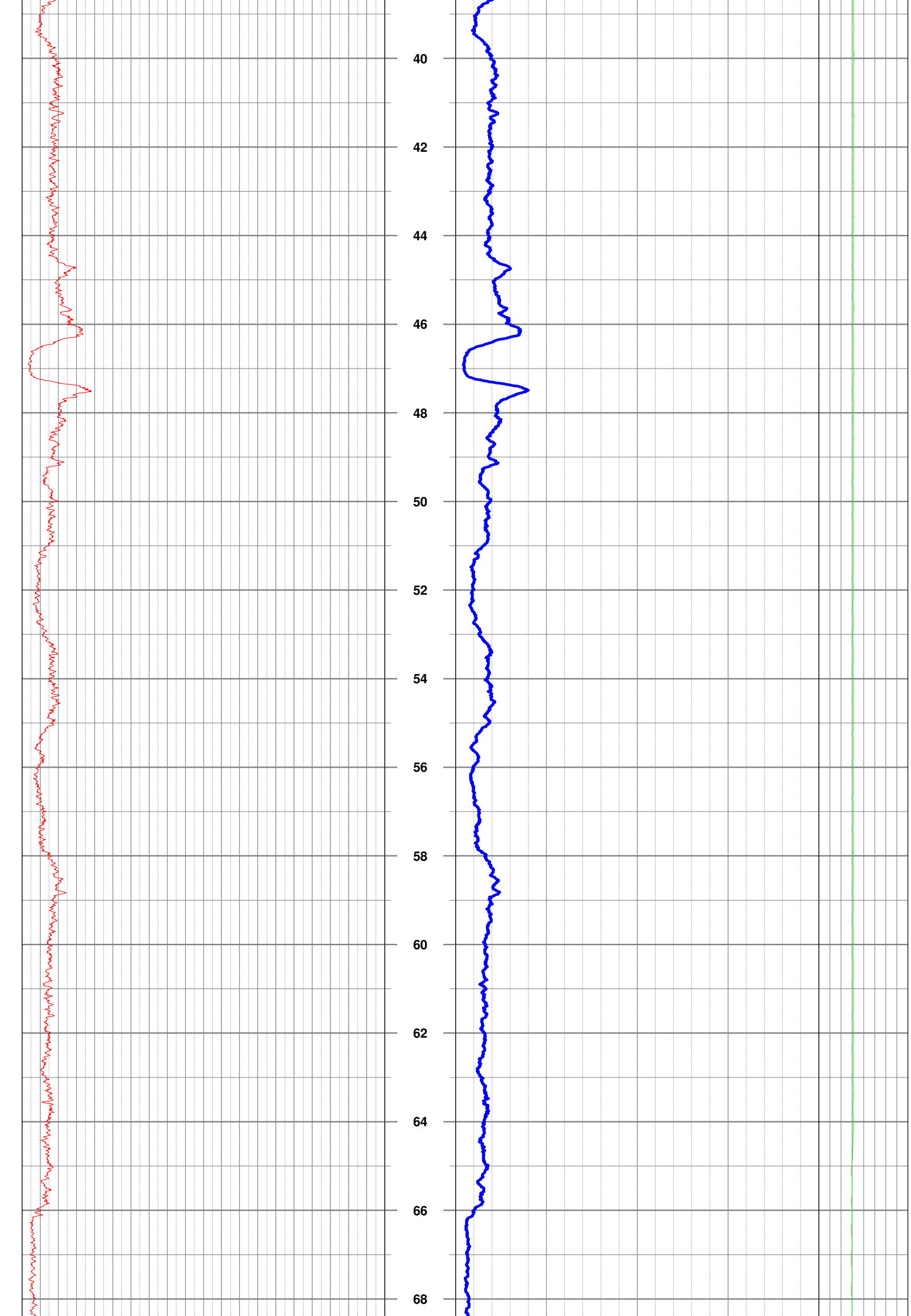
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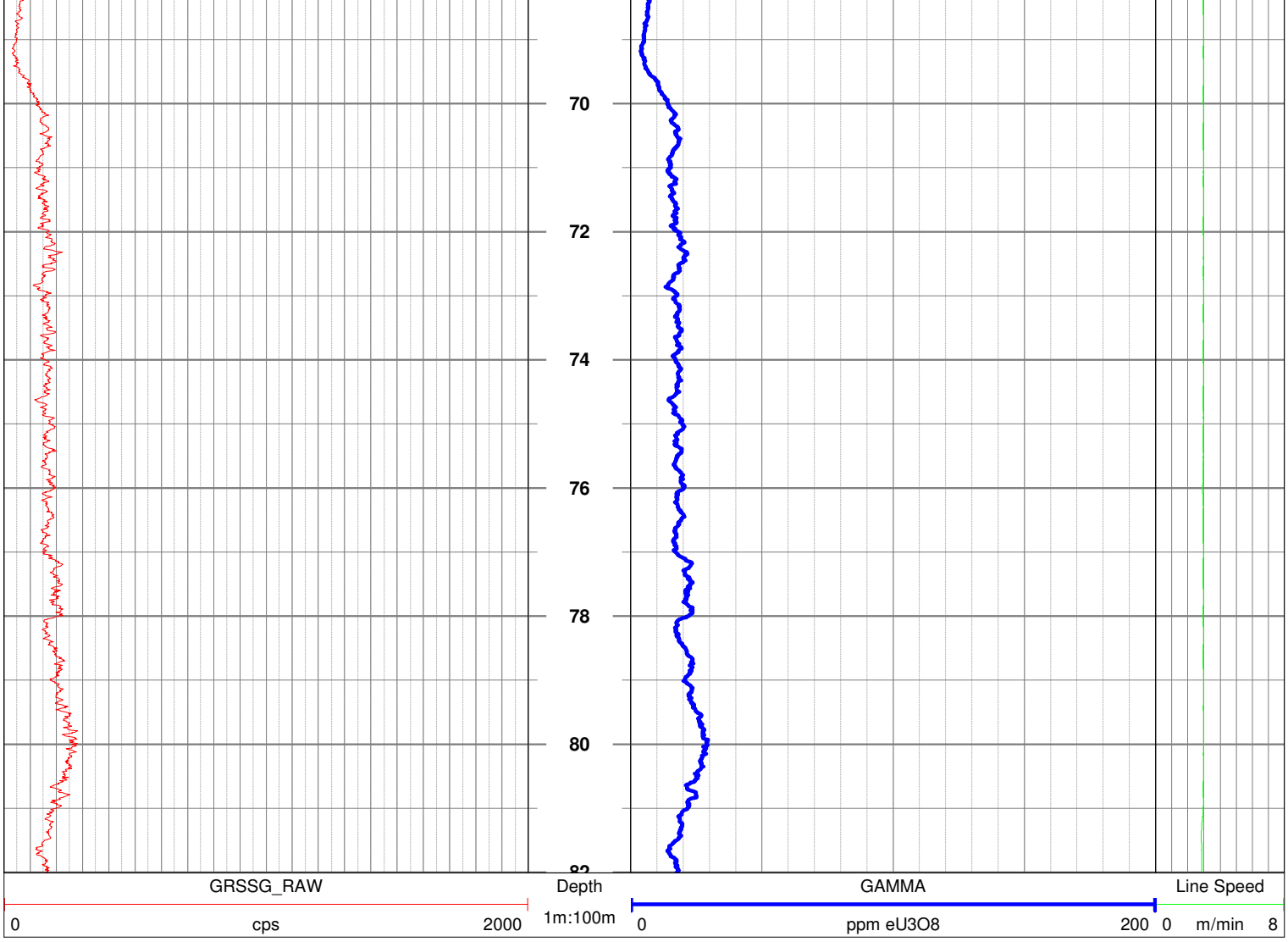
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GRSSG_RAW
Depth
GAMMA
Line Speed
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cps
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1m:100m
0
ppm eU3O8
200
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY **UXA RESOURCES**

WELL	UWI	LOG TYPE
NNRC09		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK		
UNIT	**AL23**	DRILLED BY			RIG NO	
EASTING	**327000**	NORTHING	**8645300**	DATUM	GDA94	COORD MGA53

SCALE	1:100	LOCATION	**EL 24868**
LAT.	LONG. ELEVATION m	LOG DATE	**21/08/2011**
FIELD	**NABARLEK NORTH**	DATUM	**GL**
RECORDED BY	**GERARD CONLON**	DRILLED DEPTH	**90** m
WITNESSED BY		LOGGED DEPTH	**86.45** m
FLUID TEMP	degrees celsius	INT LOGGED	**0-86.45** m
FLUID TYPE			
FLUID LEVEL	m		

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
4.5"	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged through Drill Rods.Rods Correction Factor 2.45, Hole Size Correction 1.00875

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

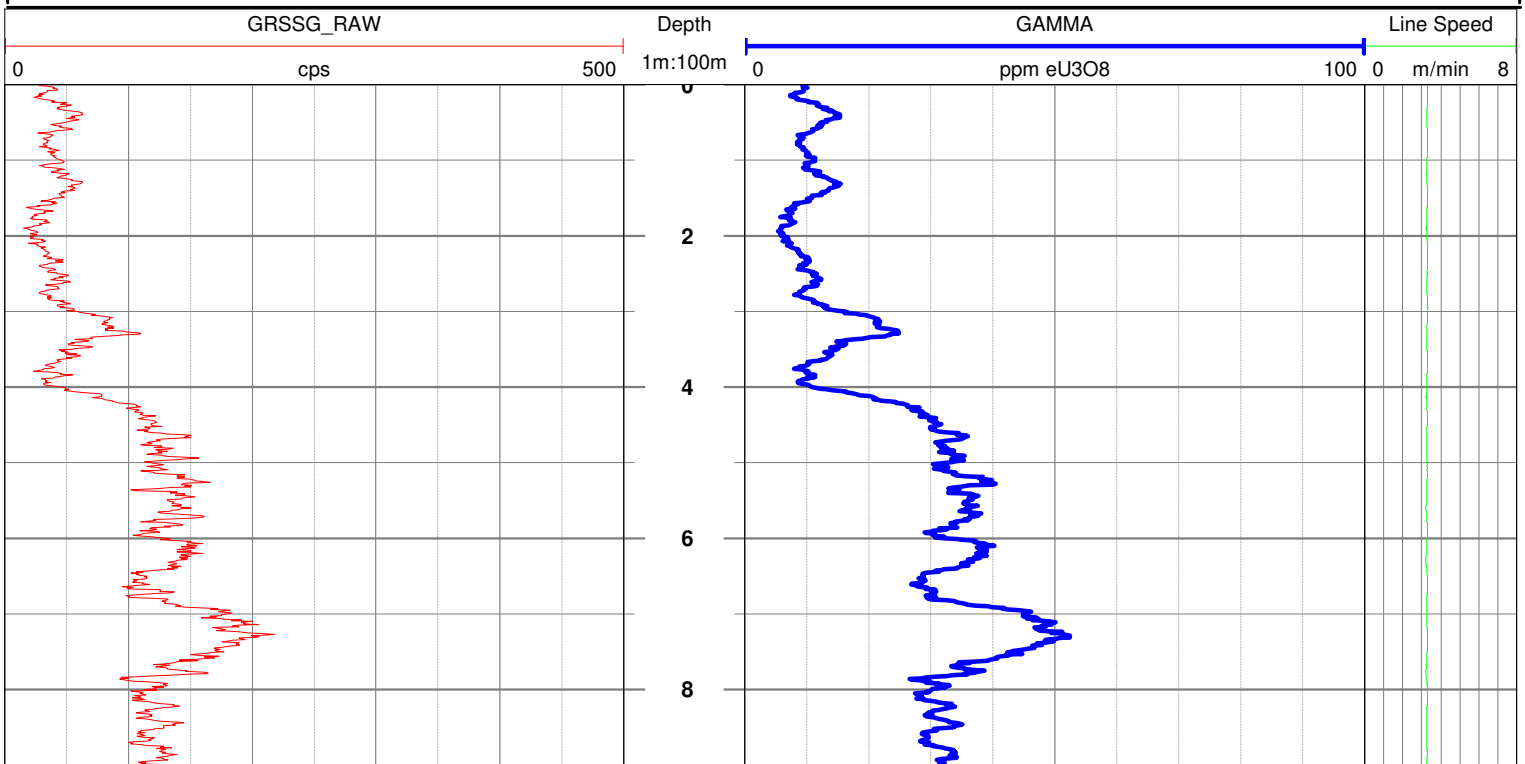
K Factor 0.0000105201662

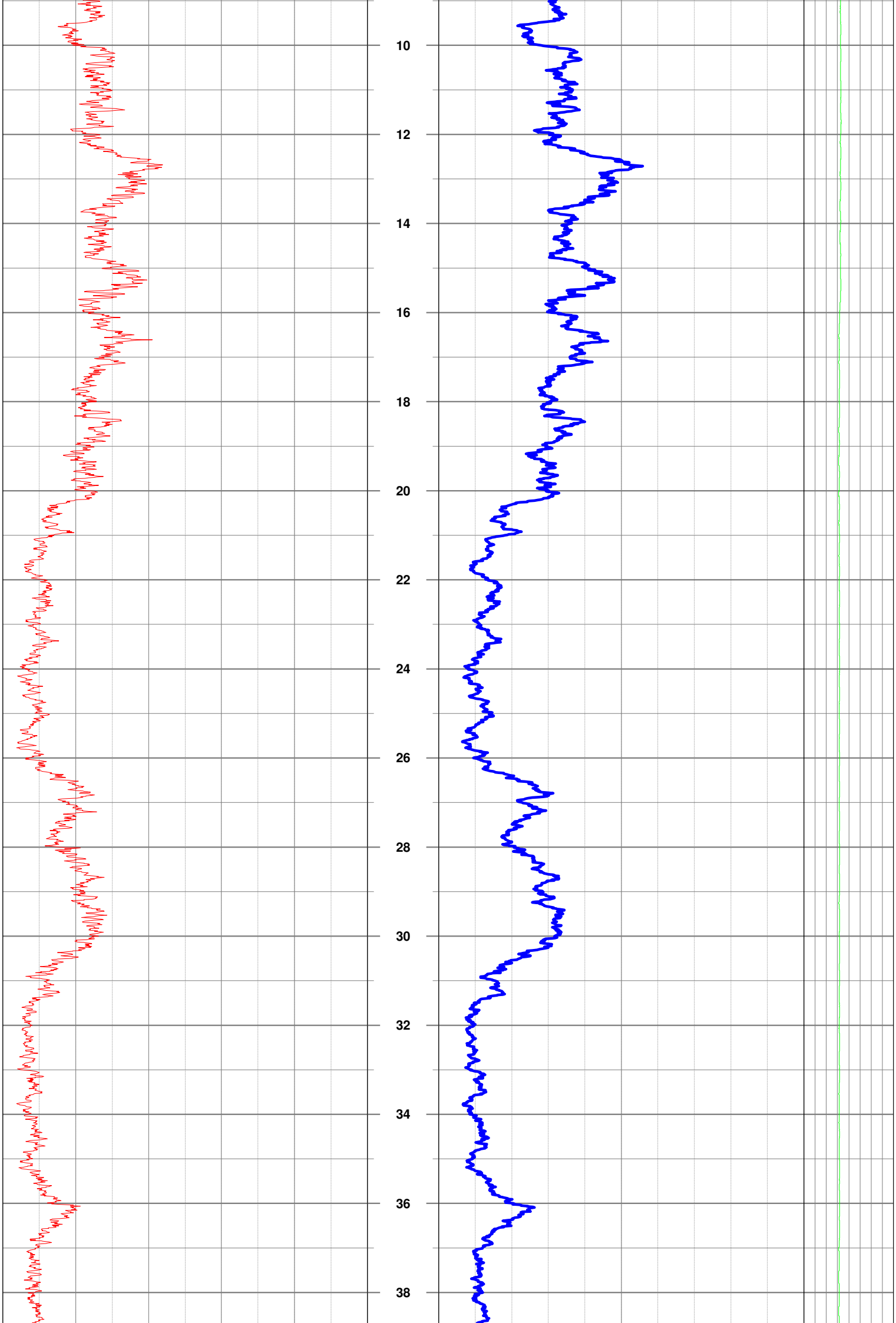
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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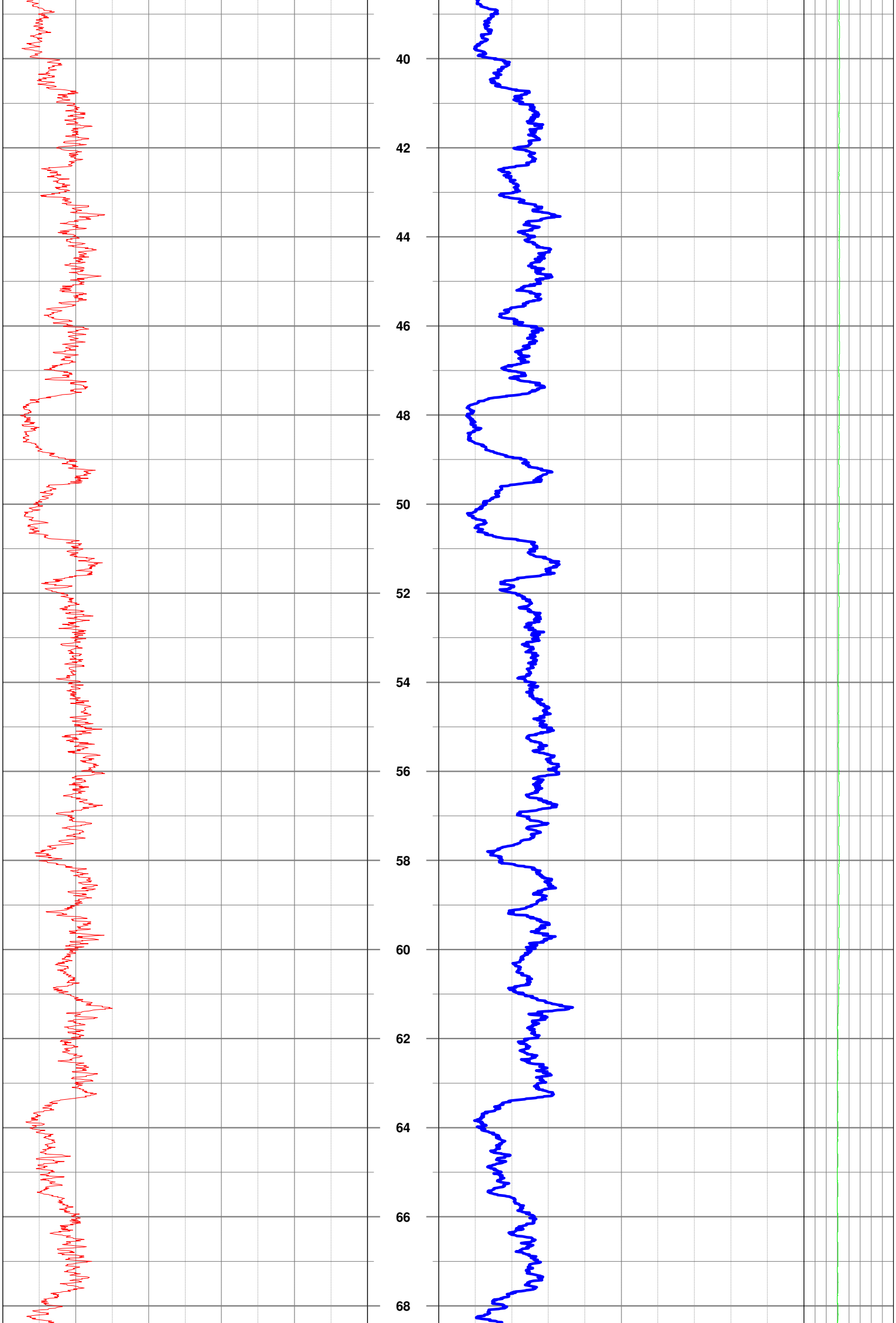
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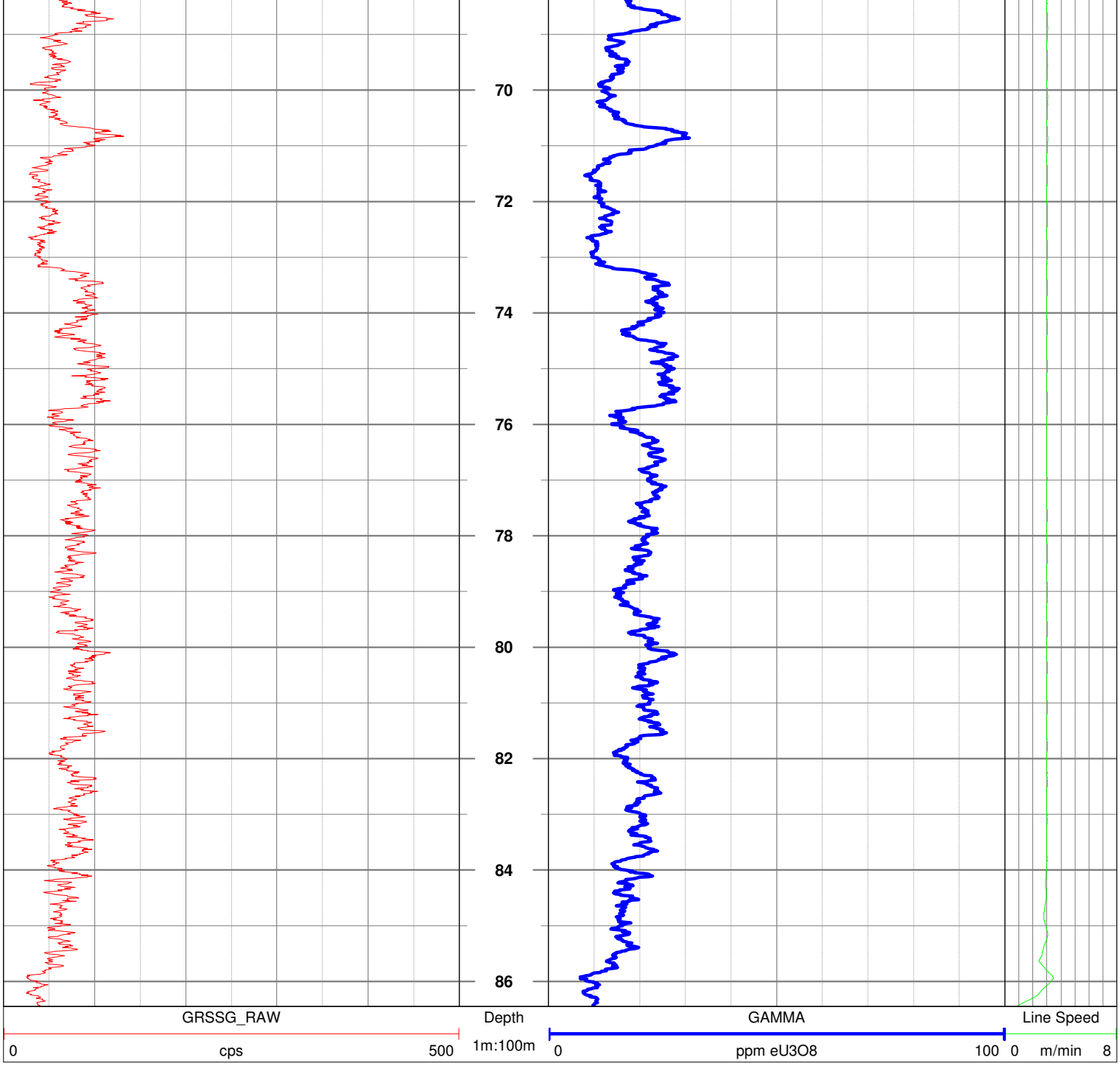
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0
cps
500
Depth
1m:100m
GAMMA
0
ppm eU3O8
100
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC12		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**3266800**	NORTHING	**8645300**	DATUM GDA94	COORD MGA53

SCALE	1:100		LOCATION	**EL 24868**	
LAT.	LONG.	ELEVATION m	LOG DATE	**20/08/2011**	
FIELD	**NABARLEK NORTH**		DATUM	**GL**	
RECORDED BY	**GERARD CONLON**		DRILLED DEPTH	**90** m	
WITNESSED BY			LOGGED DEPTH	**90.55** m	
FLUID TEMP	degrees celsius		INT LOGGED	**0-90.55** m	
FLUID TYPE					
FLUID LEVEL	m				

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)

REMARKS Collar - 60 degrees towards 270. Hole Size Correction 1.00875, Rods Correction Factor 2.45

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

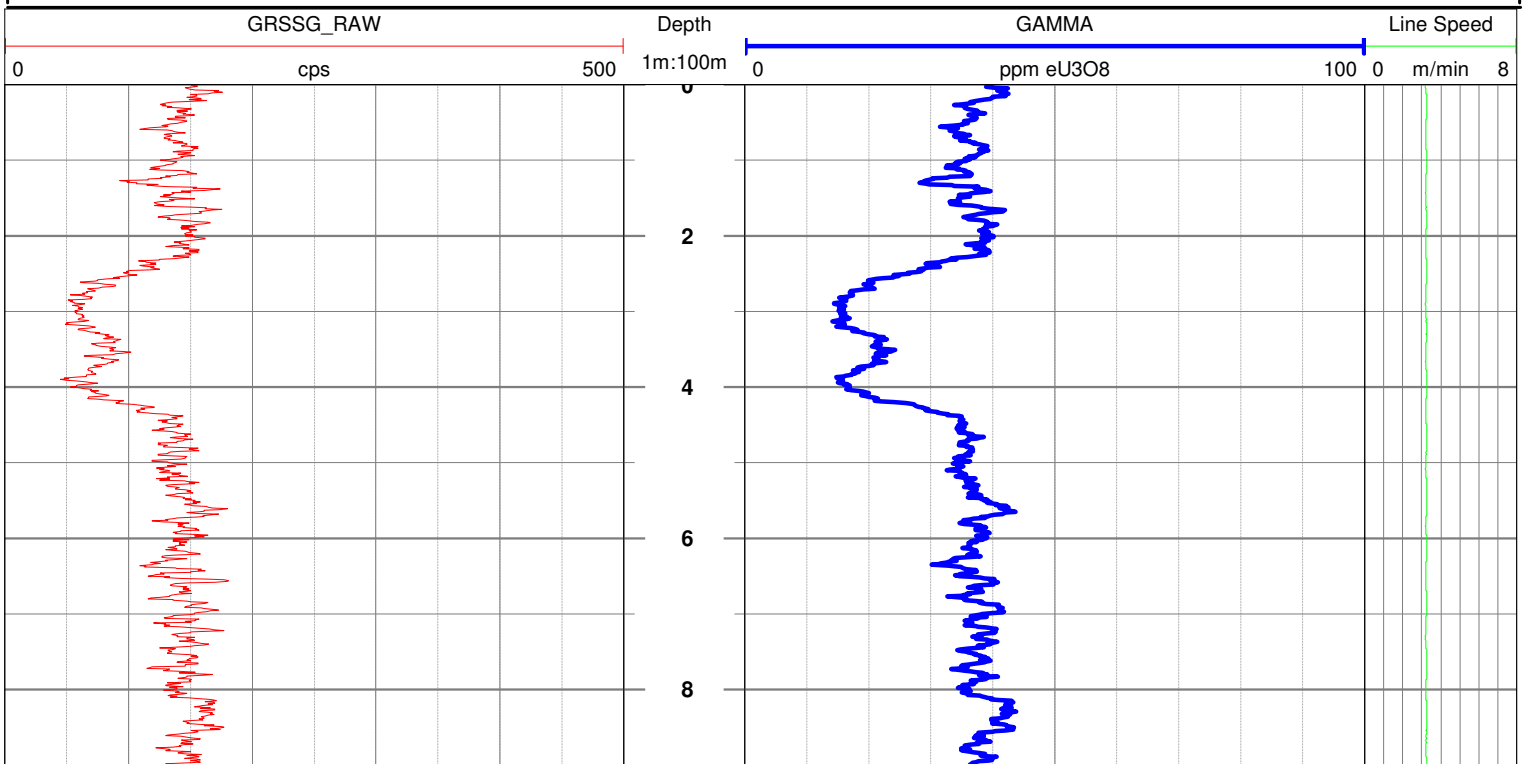
K Factor 0.0000105201662

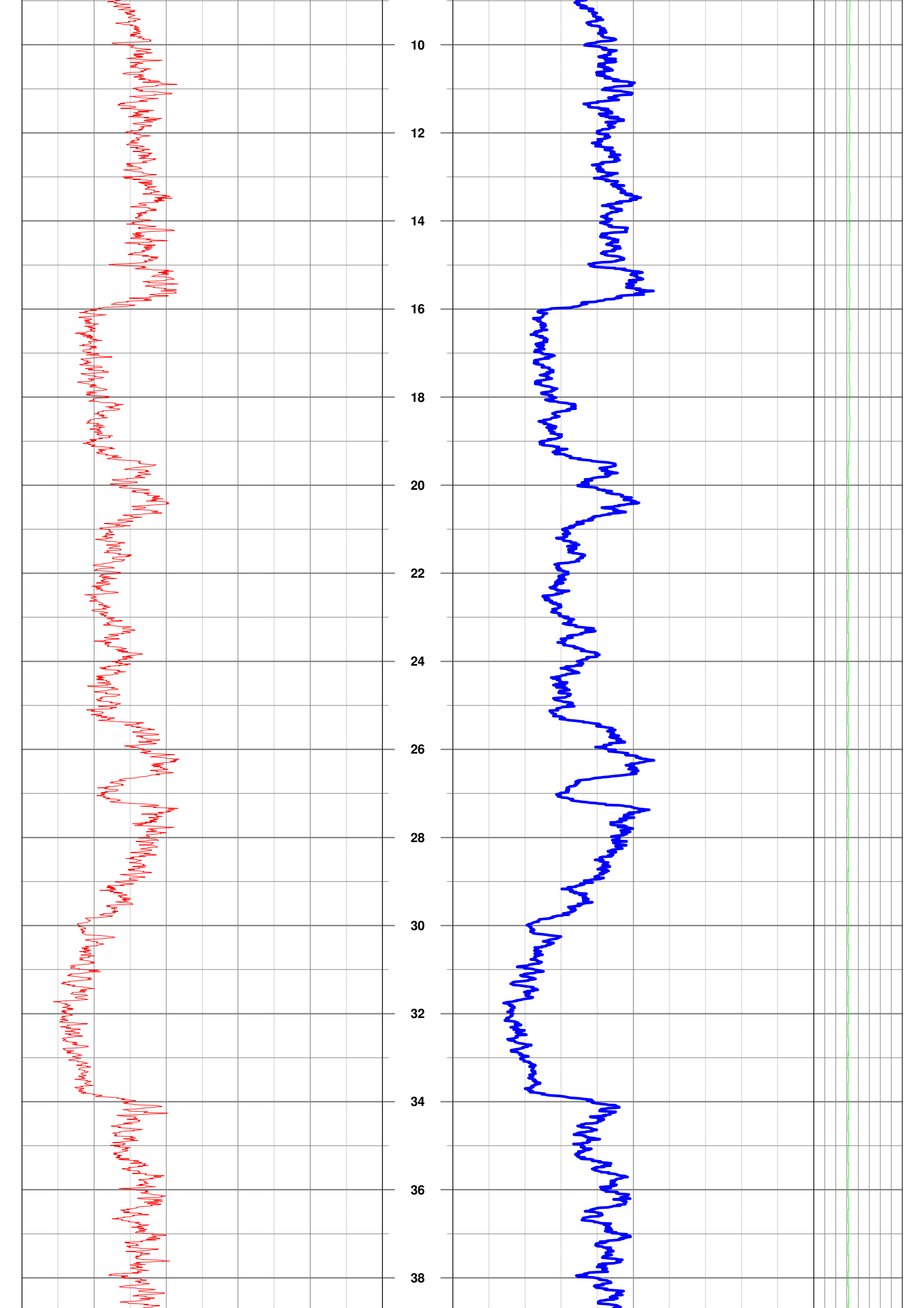
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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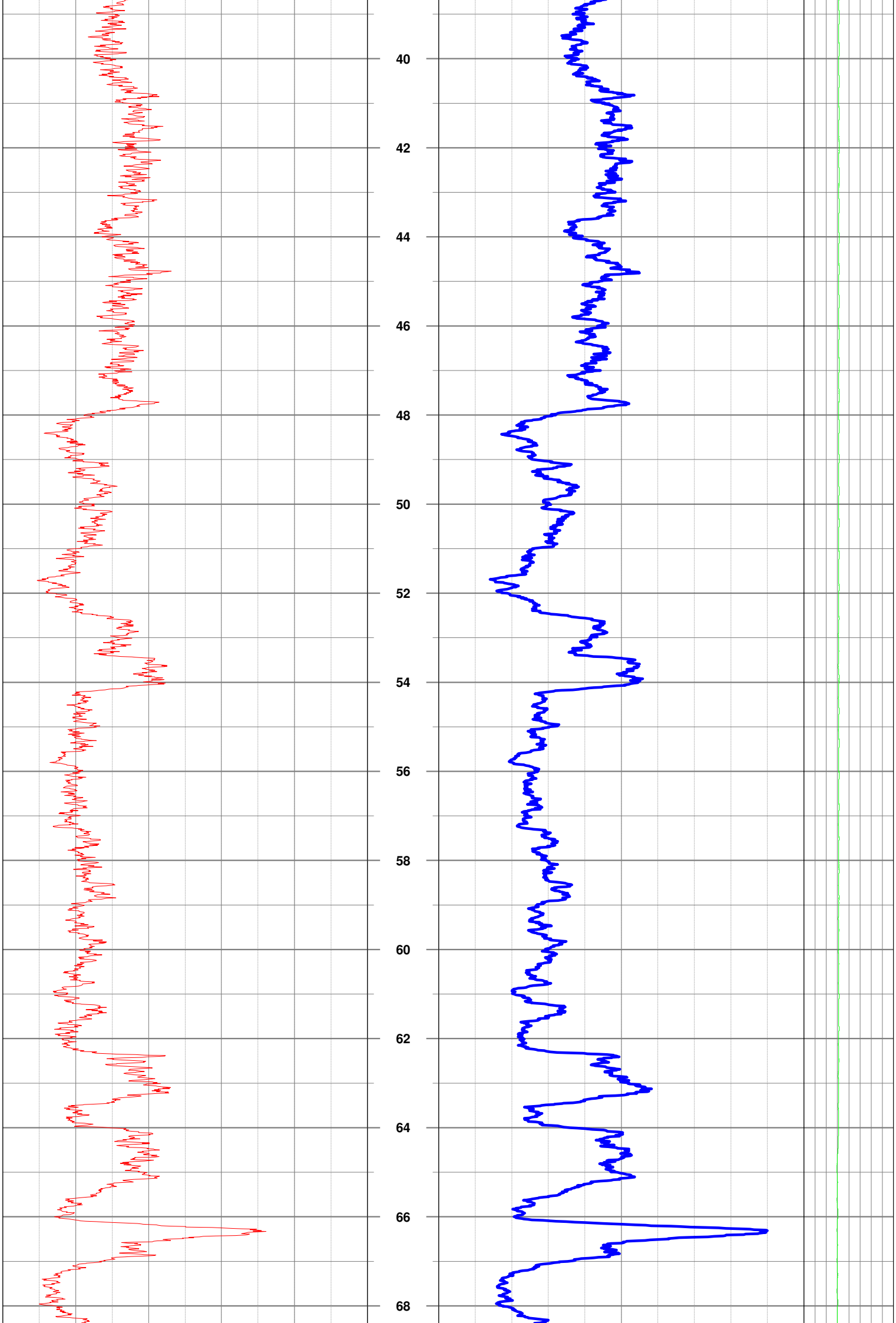
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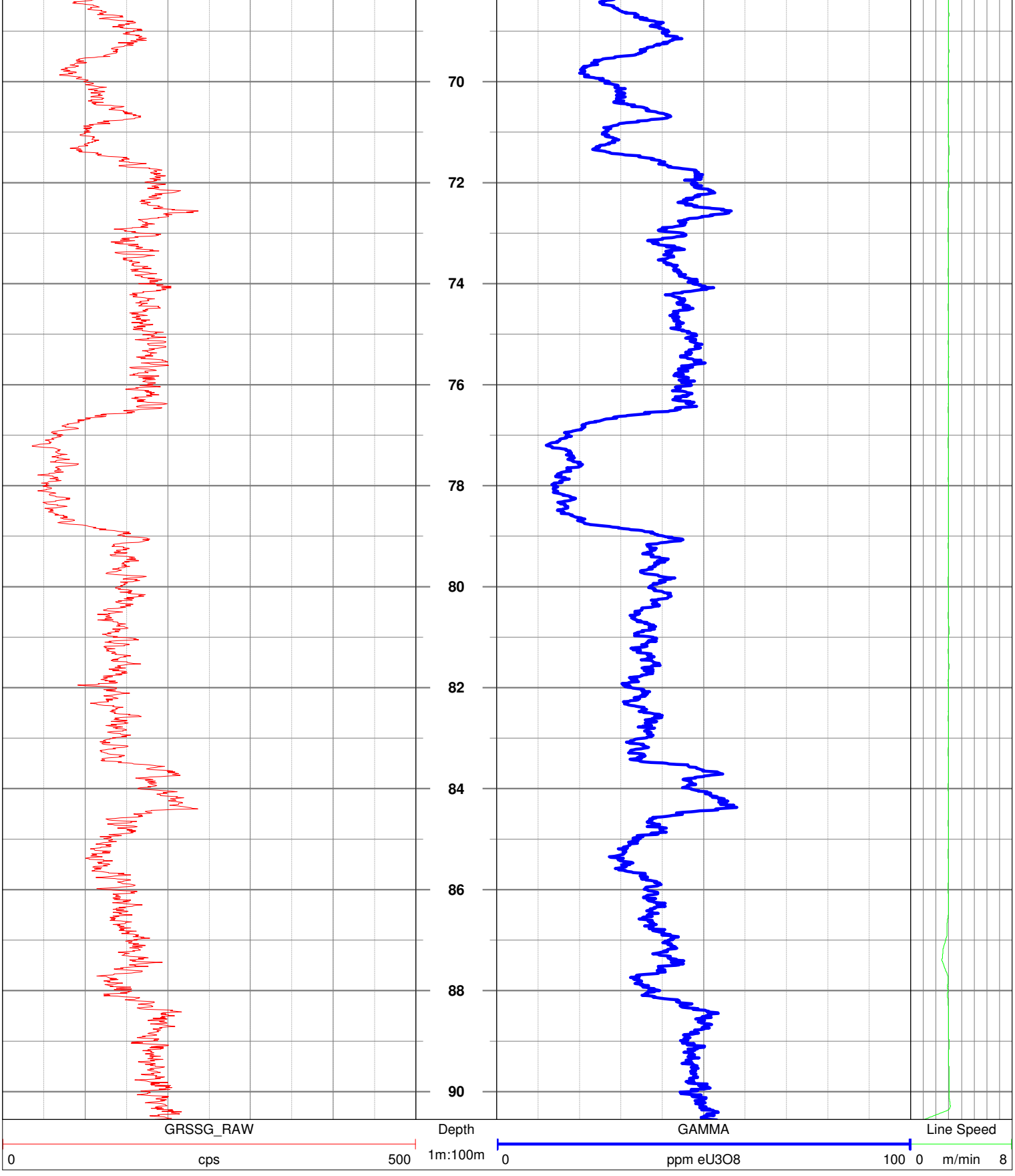
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1m:100m
GAMMA
0
ppm eU3O8
100
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC13		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK		
UNIT	**AL23**	DRILLED BY			RIG NO	
EASTING	**326750**	NORTHING	**8645300**	DATUM	GDA94	COORD MGA53

SCALE	1:100	LOCATION	**EL 24868**
LAT.	LONG. ELEVATION m	LOG DATE	**20/08/2011**
FIELD	**NABARLEK NORTH**	DATUM	**GL**
RECORDED BY	**GERARD CONLON**	DRILLED DEPTH	**90** m
WITNESSED BY		LOGGED DEPTH	**89.16** m
FLUID TEMP	degrees celsius	INT LOGGED	**0-89.16** m
FLUID TYPE			
FLUID LEVEL	m		

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Hole Size Correction 1.00875, Rods Correction Factor 2.45

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

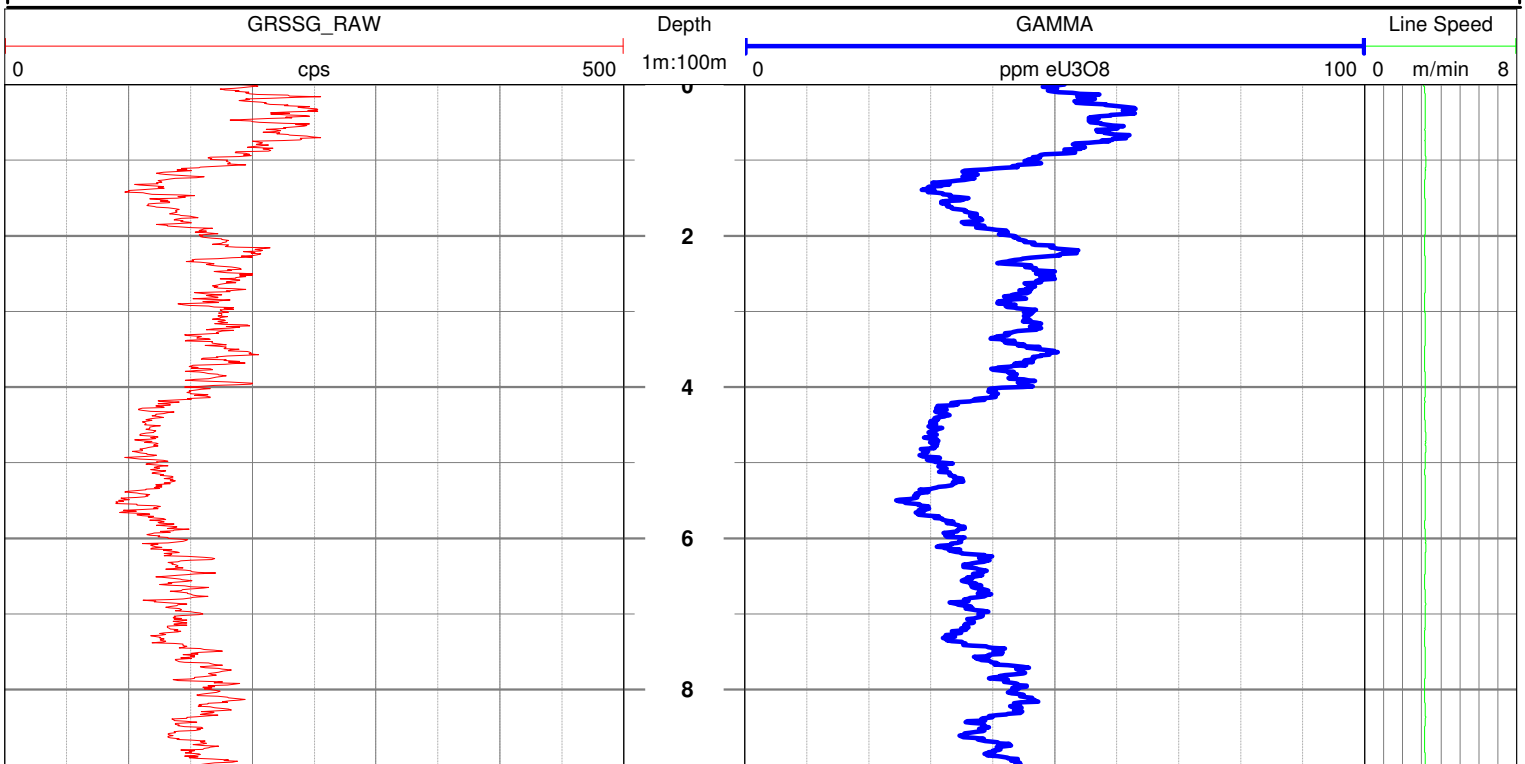
K Factor 0.0000105201662

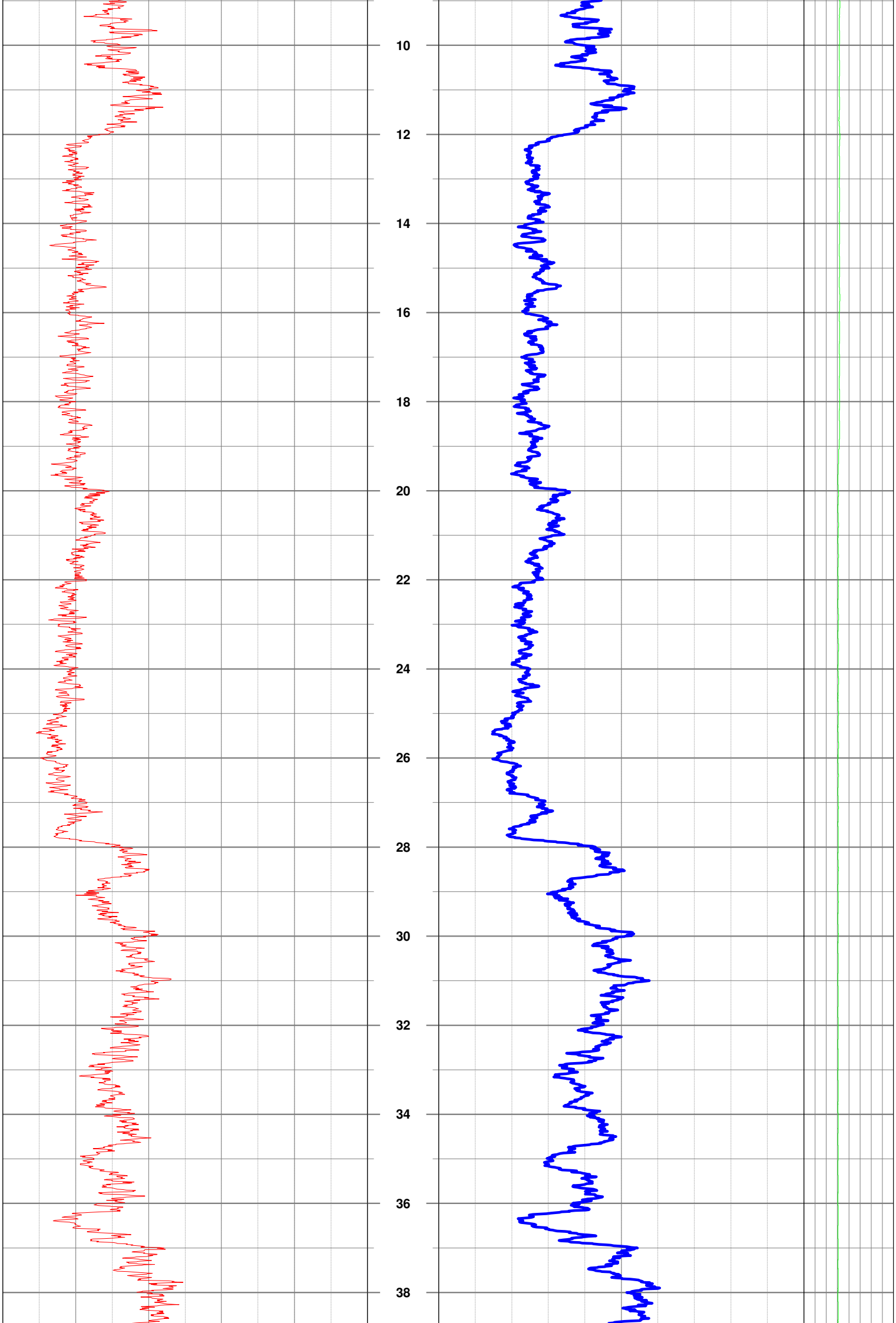
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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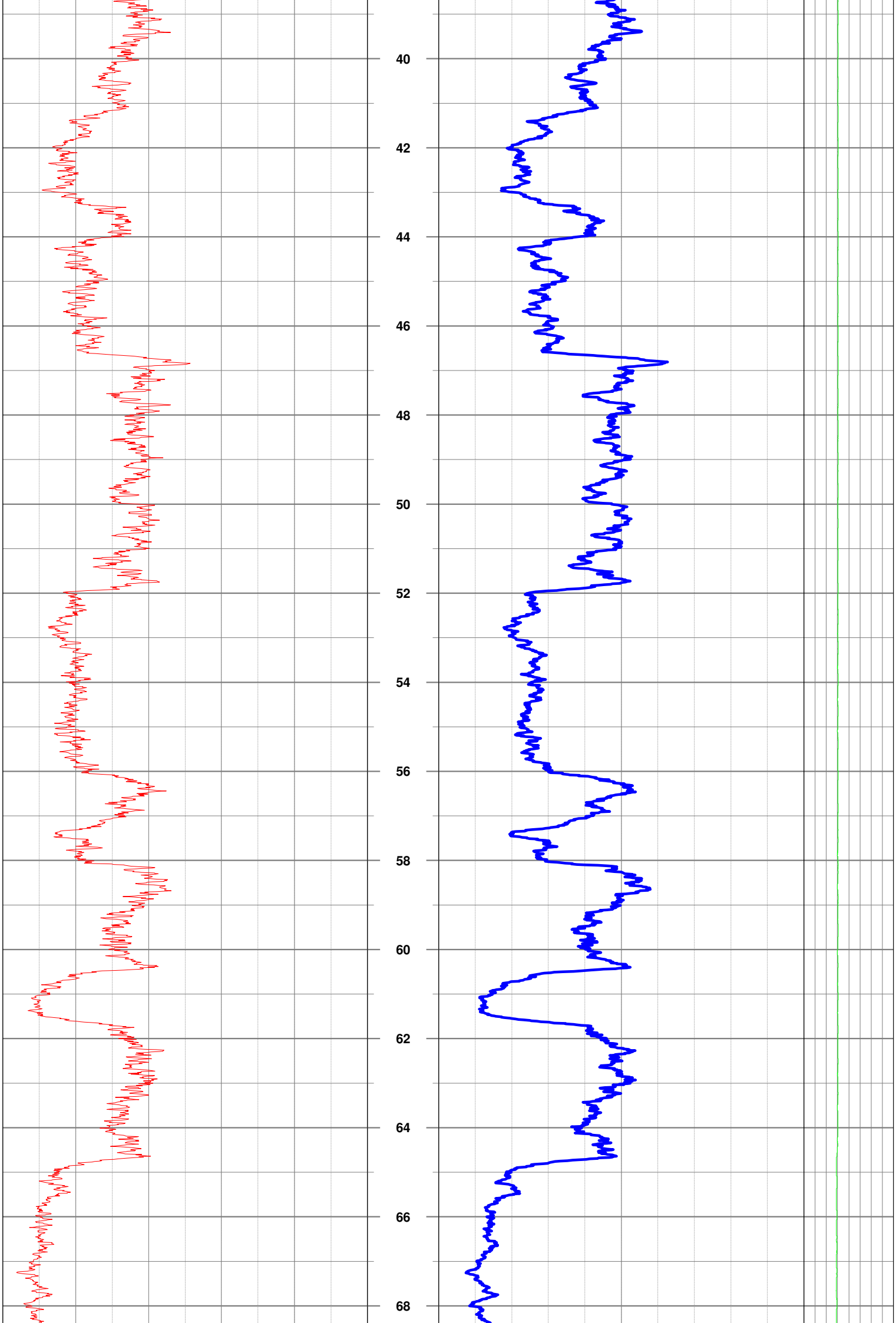
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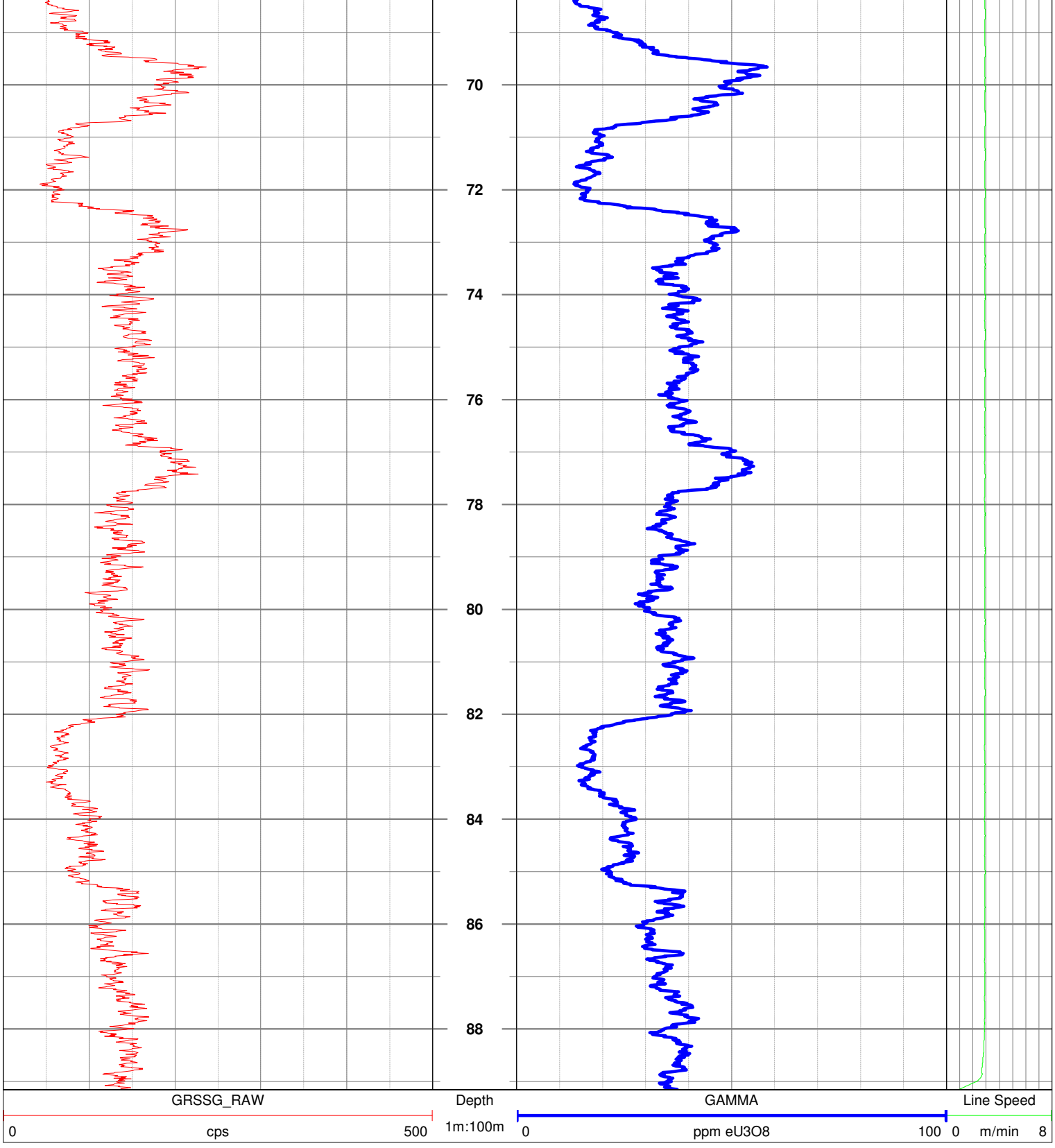
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Depth
1m:100m
GAMMA
0
ppm eU3O8
100
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC14		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**326700**	NORTHING	**8645300**	DATUM GDA94	COORD MGA53

SCALE	1:100	LOCATION	**EL 24868**		
LAT.	LONG. ELEVATION m	LOG DATE	**20/08/2011**		
FIELD	**NABARLEK NORTH**	DATUM	**GL**		
RECORDED BY	**GERARD CONLON**	DRILLED DEPTH	**90** m		
WITNESSED BY		LOGGED DEPTH	**13.95** m		
FLUID TEMP	degrees celsius	INT LOGGED	**0-13.95** m		
FLUID TYPE					
FLUID LEVEL	m				

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)

REMARKS Hole Blocked at 13.95. Collar - 60 degrees towards 270. Hole Size Correction 1.03677

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

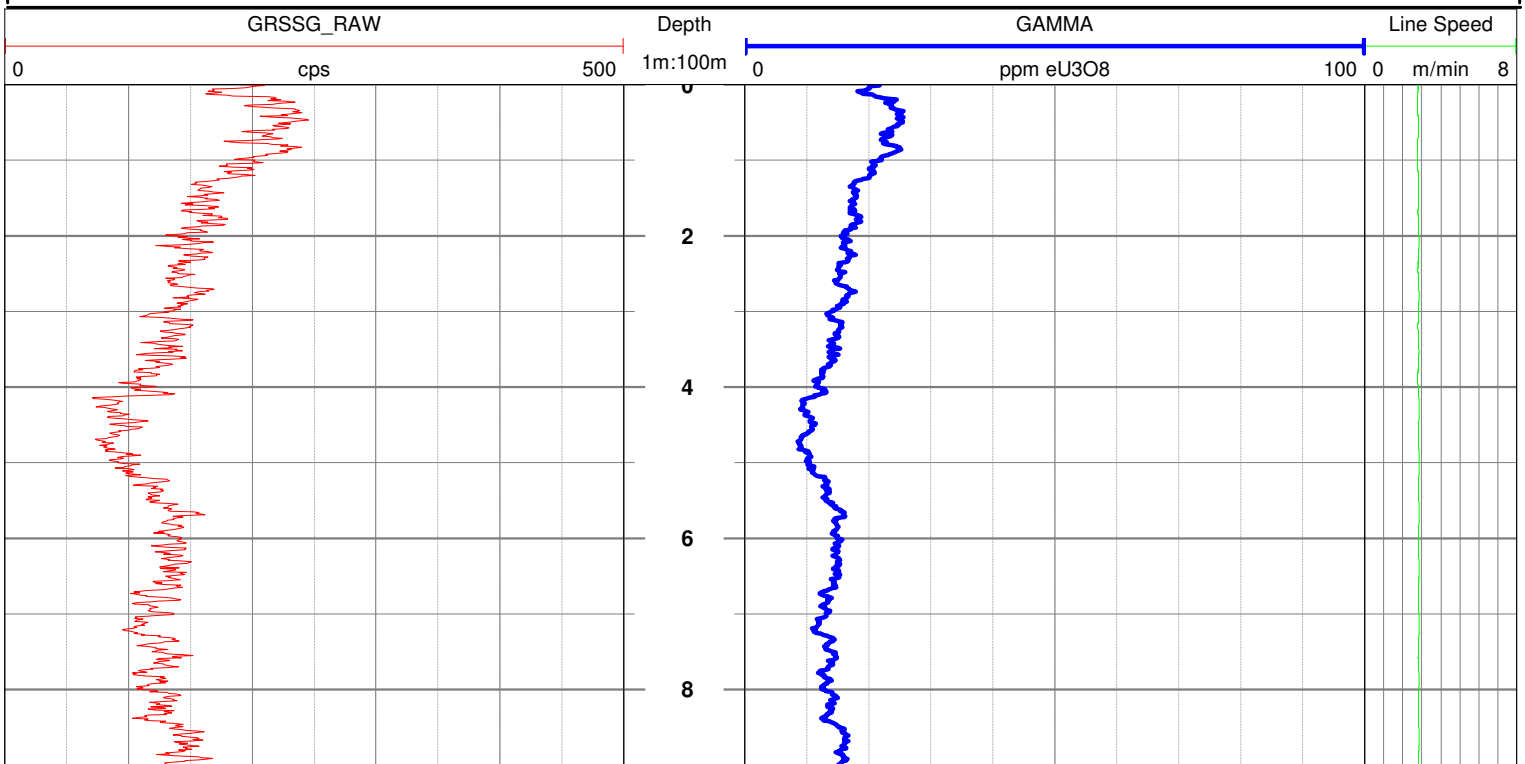
K Factor 0.0000105201662

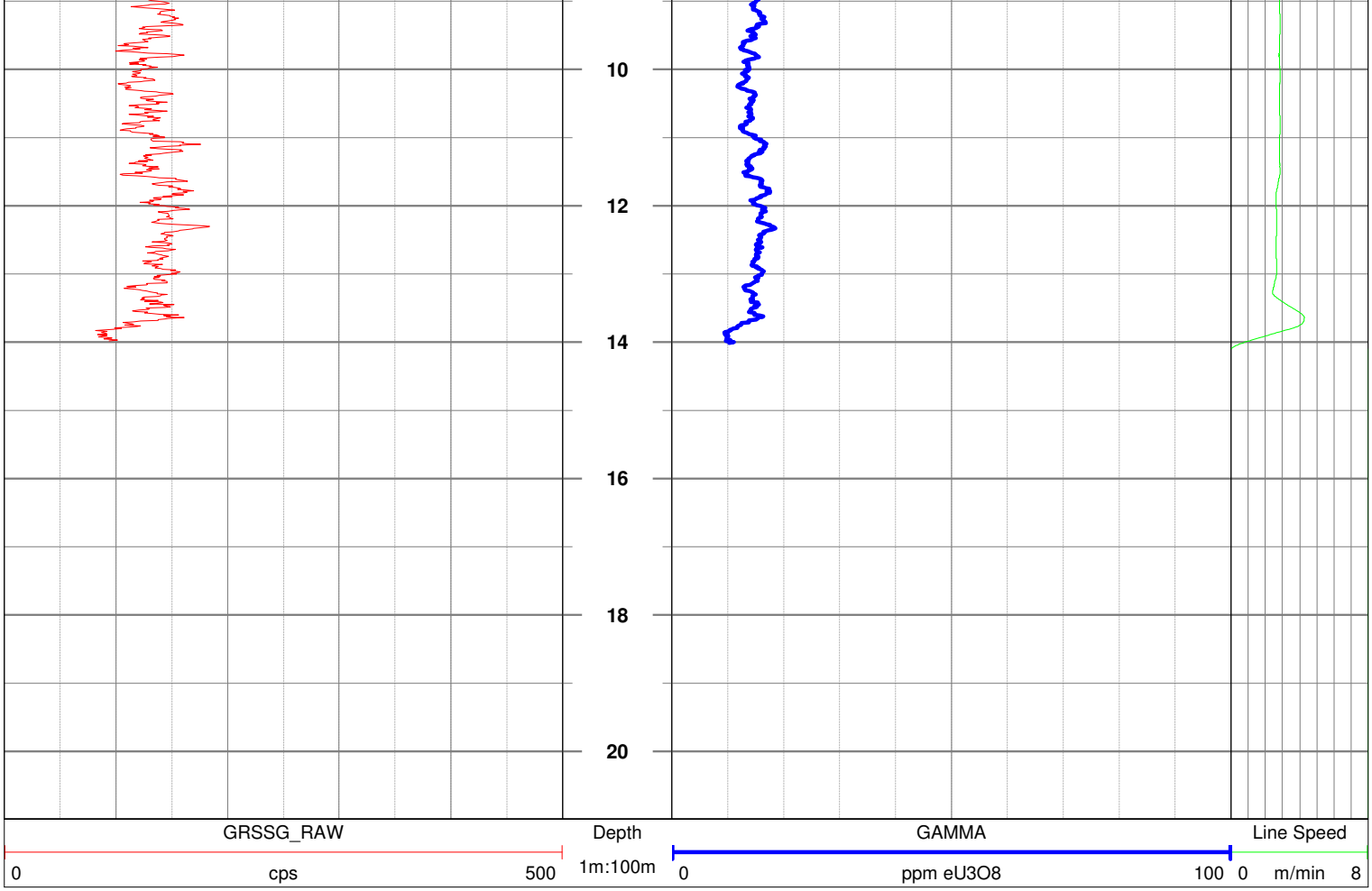
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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Depth
GAMMA
Line Speed
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cps
500
1m:100m
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ppm eU3O8
100
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY	***UXA RESOURCES***
WELL	**NNRC22**
UWI	
LOG TYPE	**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK		
UNIT	**AL23**	DRILLED BY			RIG NO	
EASTING	**327188**	NORTHING	**8645410**	DATUM	GDA94	COORD MGA53
SCALE	1:100					
LAT.	LONG.	ELEVATION	m			
FIELD	**NABARLEK NORTH**					
RECORDED BY	**GERARD CONLON**					
WITNESSED BY						
FLUID TEMP	degrees celsius					
FLUID TYPE						
FLUID LEVEL	m					

LOCATION	**EL 24868**				
LOG DATE	**19/08/2011**				
DATUM	**GL**				
DRILLED DEPTH	**90**	m			
LOGGED DEPTH	**86.35**	m			
INT LOGGED	**0-86.35**	m			

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	Gamma			*SSG02*	
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270.Rods Correction Factor 2.45, Hole Size Correction 1.00875

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

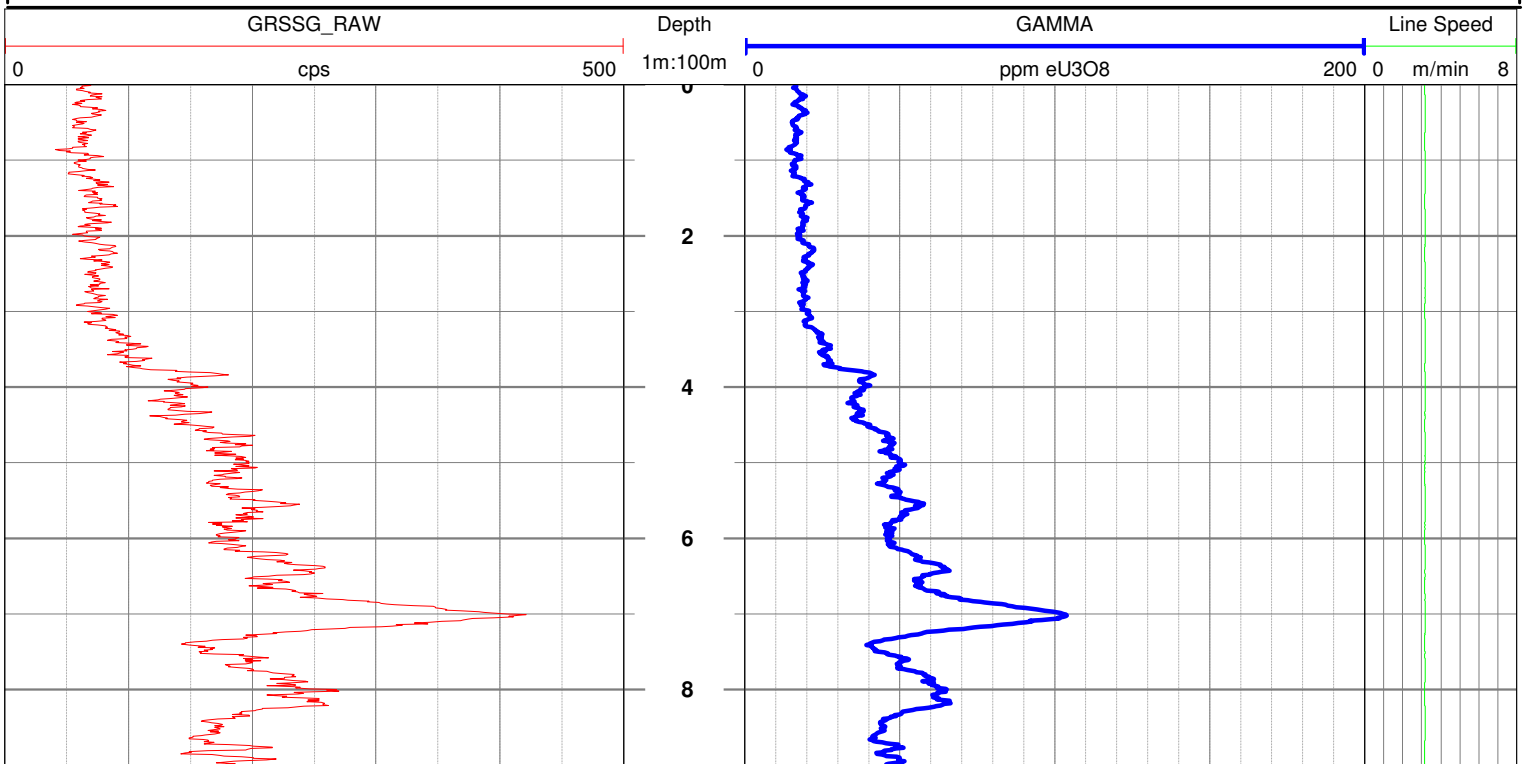
K Factor 0.0000105201662

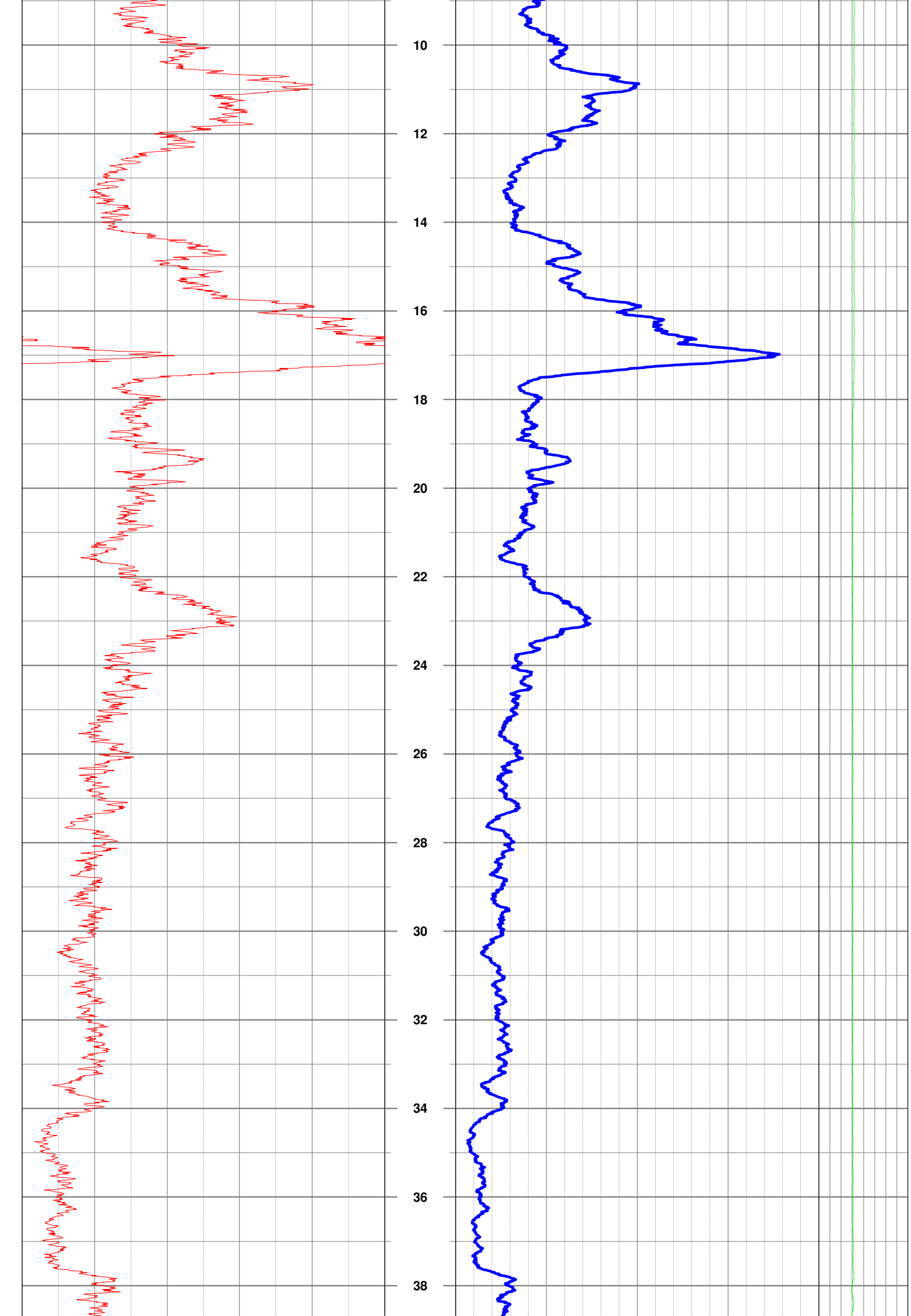
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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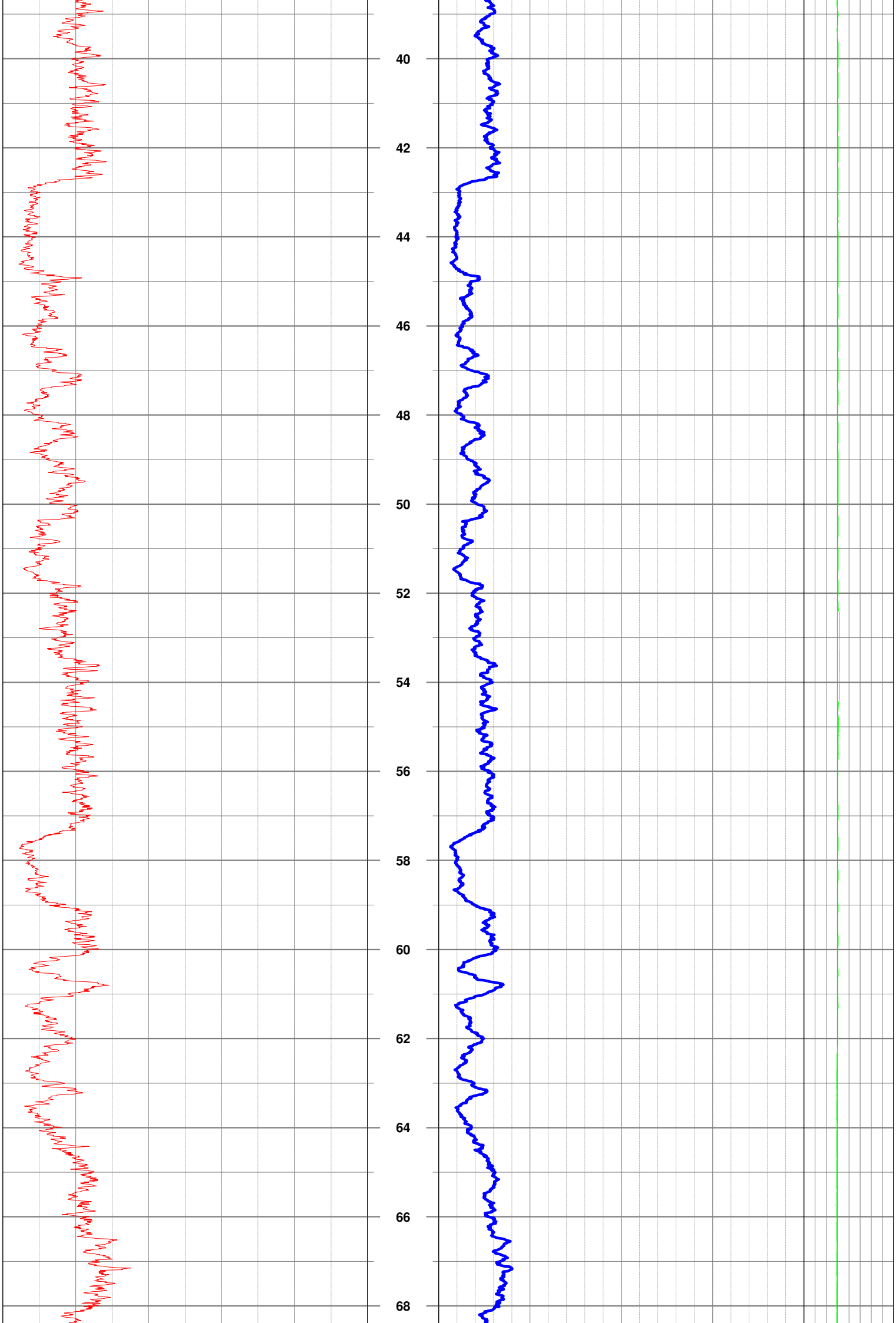
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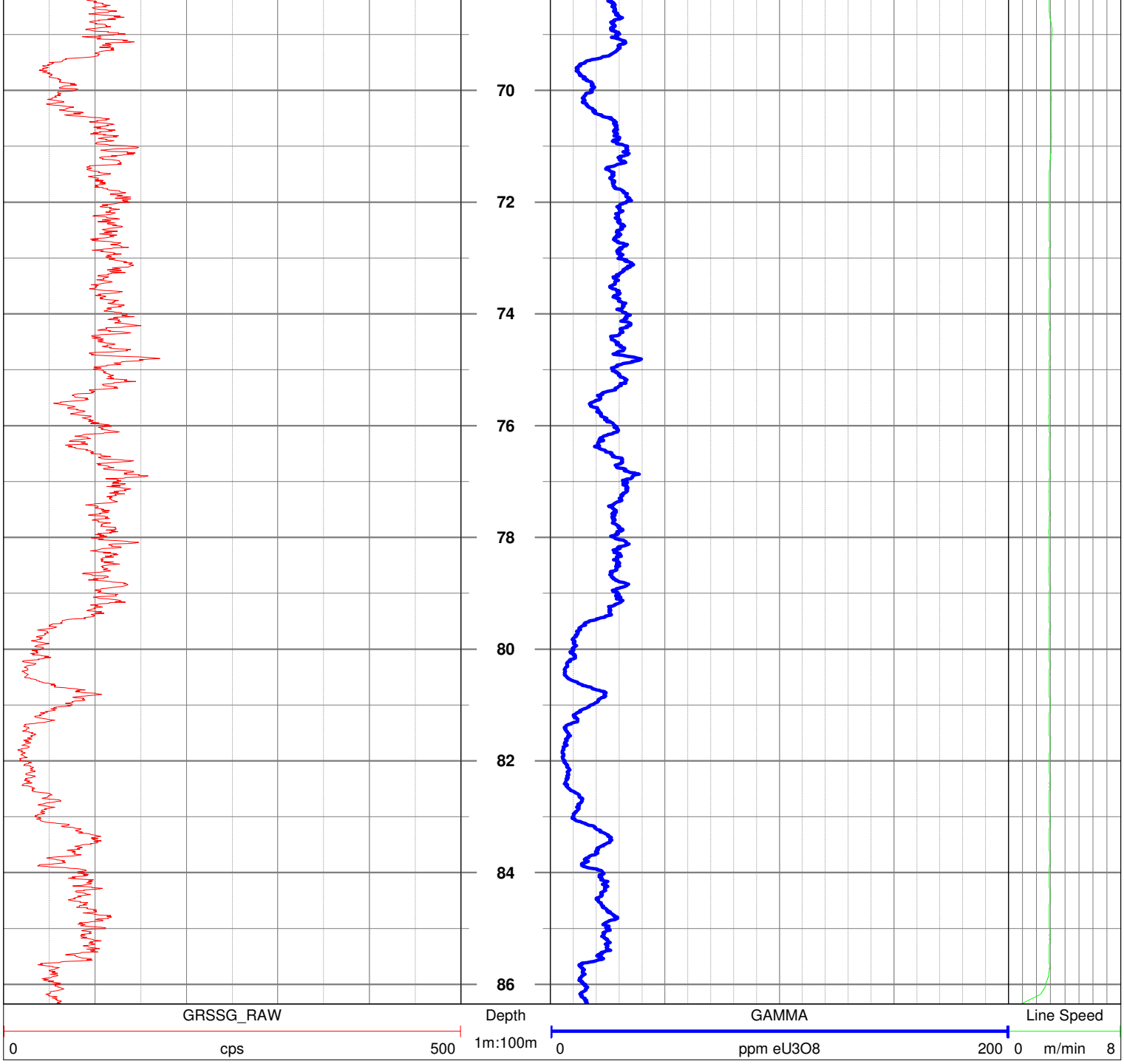
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GAMMA
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ppm eU3O8
200
Line Speed
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m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC23		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK		
UNIT	**AL23**	DRILLED BY			RIG NO	
EASTING	**326698**	NORTHING	**8645410**	DATUM	GDA94	COORD MGA53

SCALE	1:100	LOCATION	**EL 24868**
LAT.	LONG. ELEVATION m	LOG DATE	**19/08/2011**
FIELD	**NABARLEK NORTH**	DATUM	**GL**
RECORDED BY	**GERARD CONLON**	DRILLED DEPTH	**90** m
WITNESSED BY		LOGGED DEPTH	**86.86** m
FLUID TEMP	degrees celsius	INT LOGGED	**0-86.86** m
FLUID TYPE			
FLUID LEVEL	m		

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Rods Correction Factor 2.45, Hole Size Correction 1.00875

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

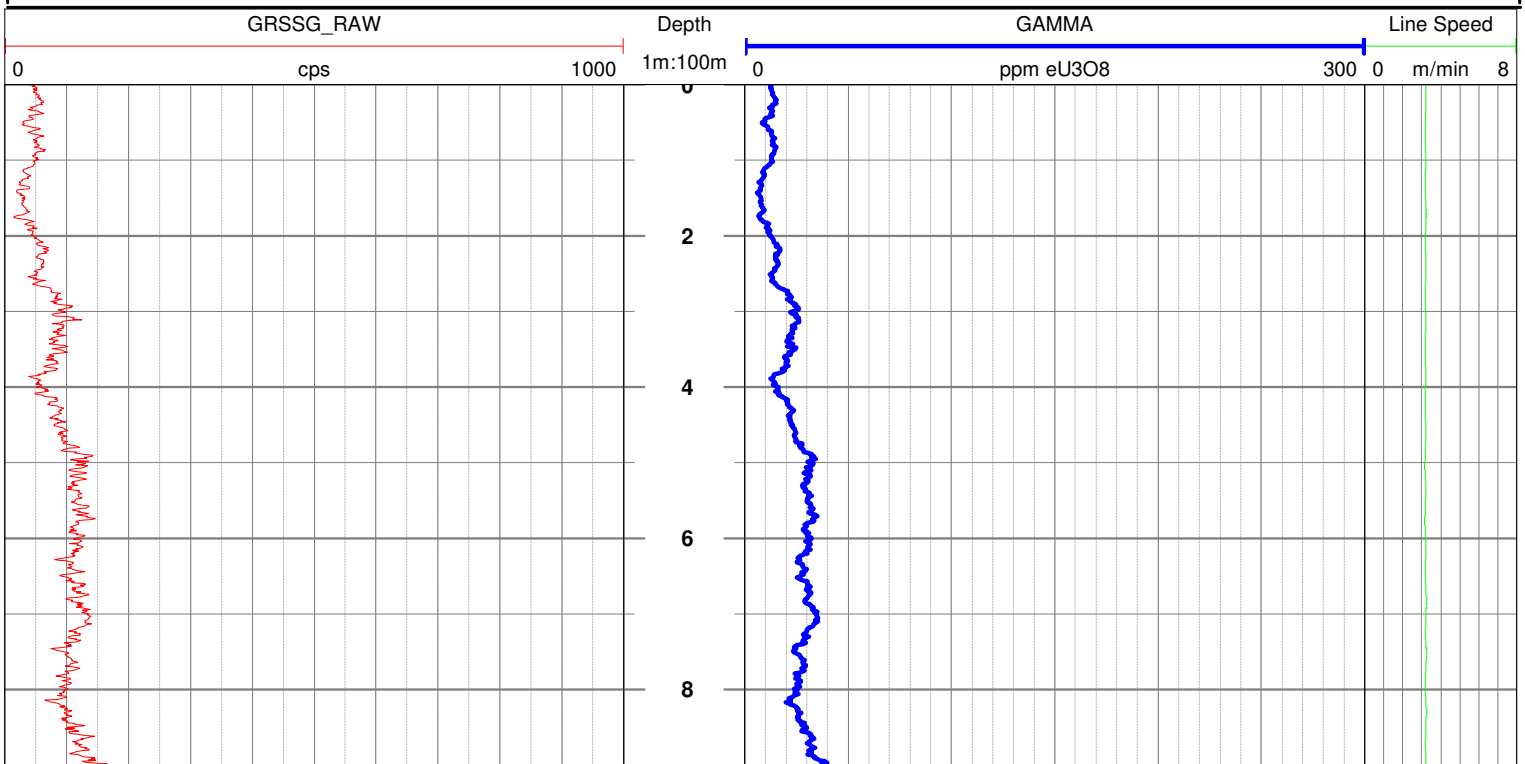
K Factor 0.0000105201662

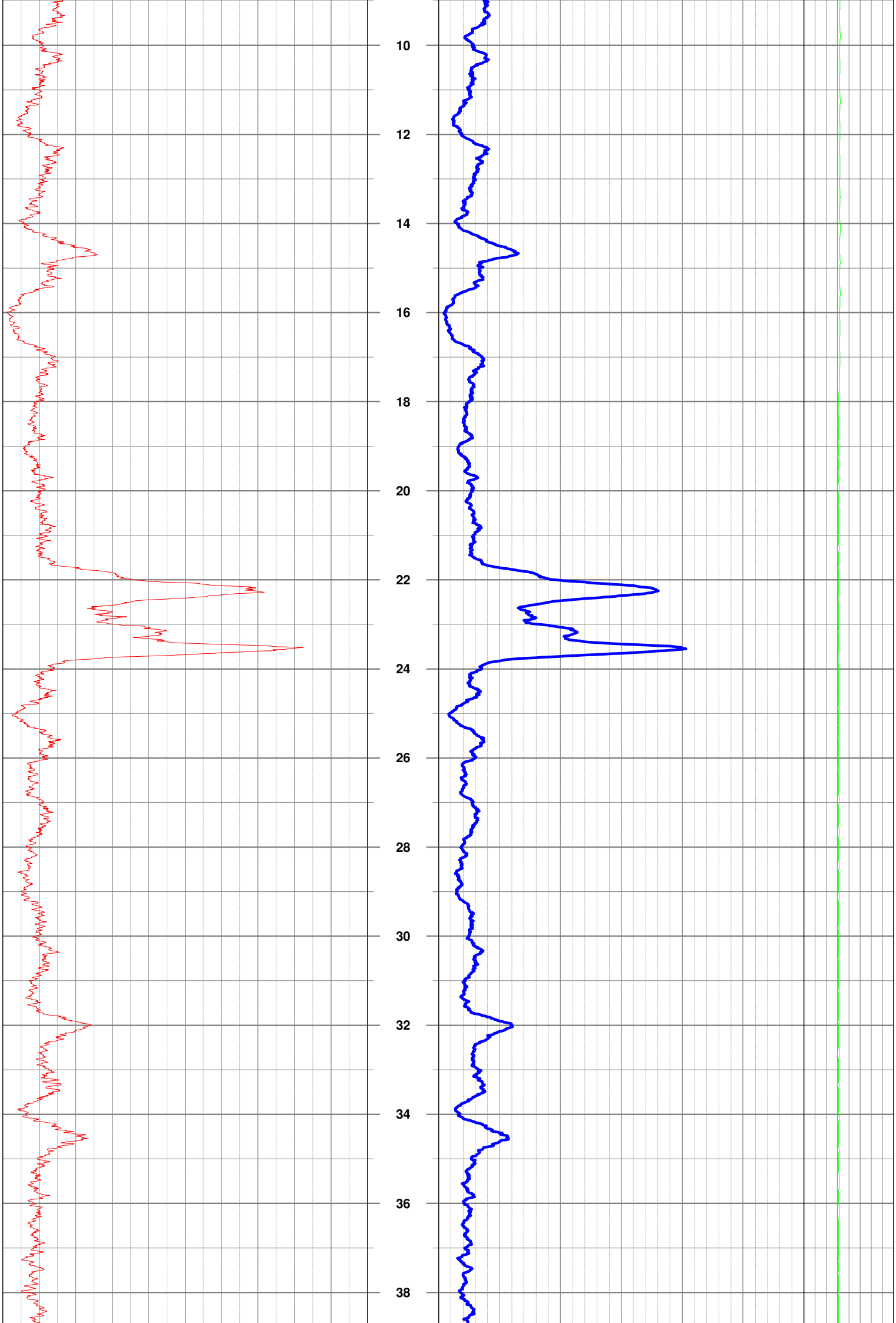
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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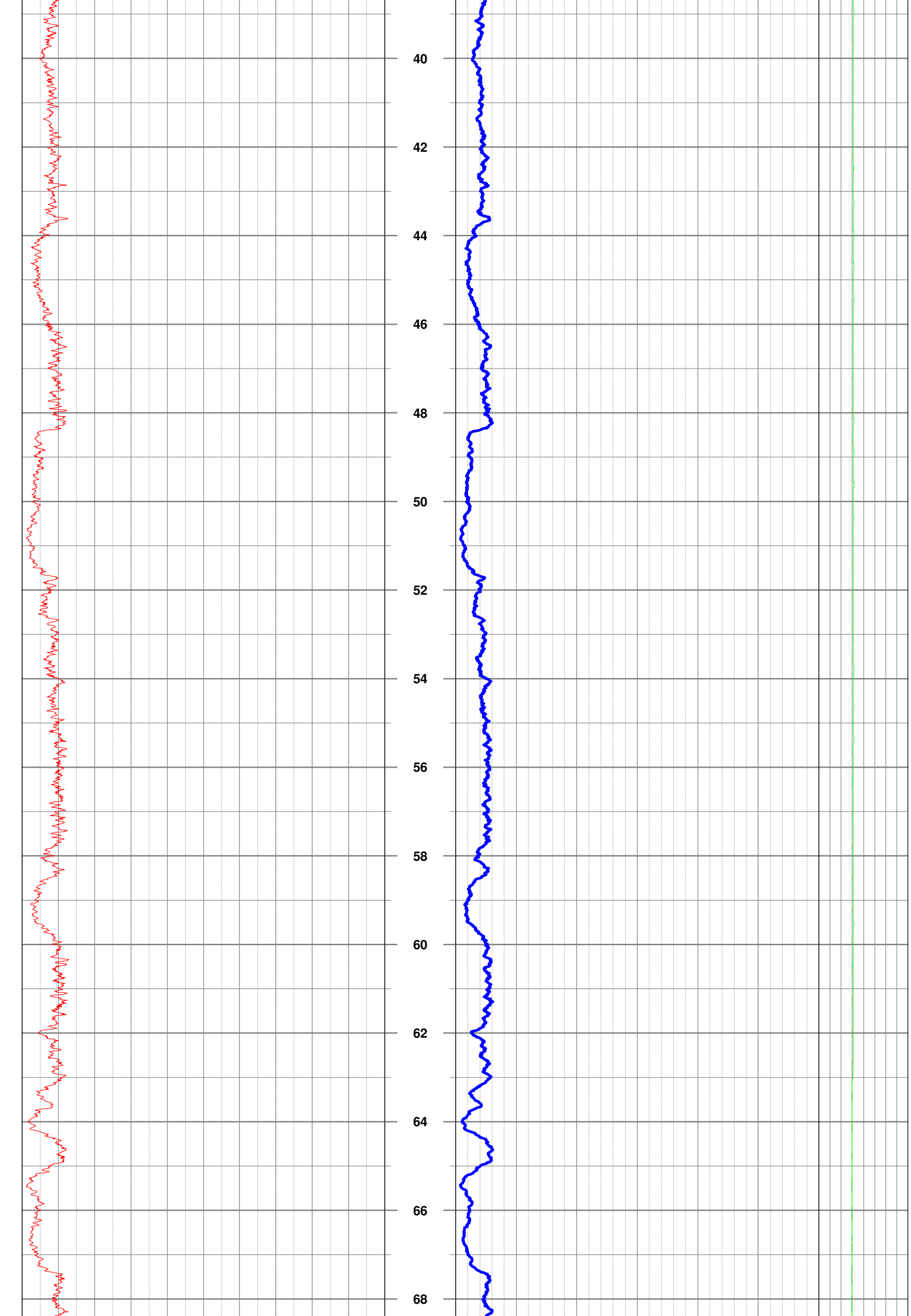
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Depth
1m:100m
GAMMA
0
ppm eU3O8
300
Line Speed
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m/min
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GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC24		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**327088**	NORTHING	**8645410**	DATUM	GDA94 COORD MGA53

SCALE	1:100	LOCATION	**EL 24868**
LAT. LONG. ELEVATION m		LOG DATE	**20/08/2011**
FIELD	**NABARLEK NORTH**	DATUM	**GL**
RECORDED BY	**GERARD CONLON**	DRILLED DEPTH	**90** m
WITNESSED BY		LOGGED DEPTH	**86.89** m
FLUID TEMP	degrees celsius	INT LOGGED	**0.4-86.89** m
FLUID TYPE			
FLUID LEVEL	m		

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged through Drill Rods. Hole Size Correction 1.00875, Rods Correction 2.45

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

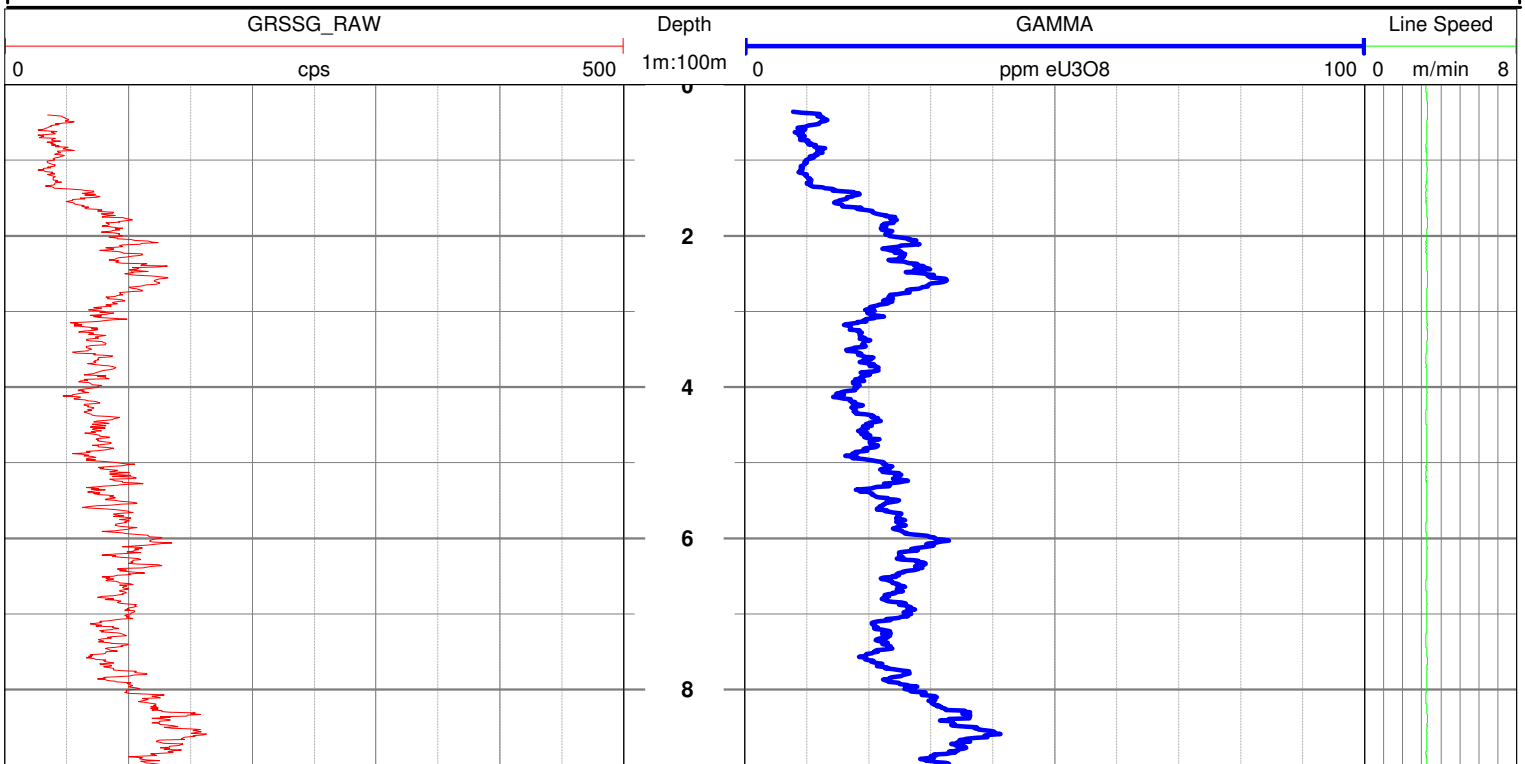
K Factor 0.0000105201662

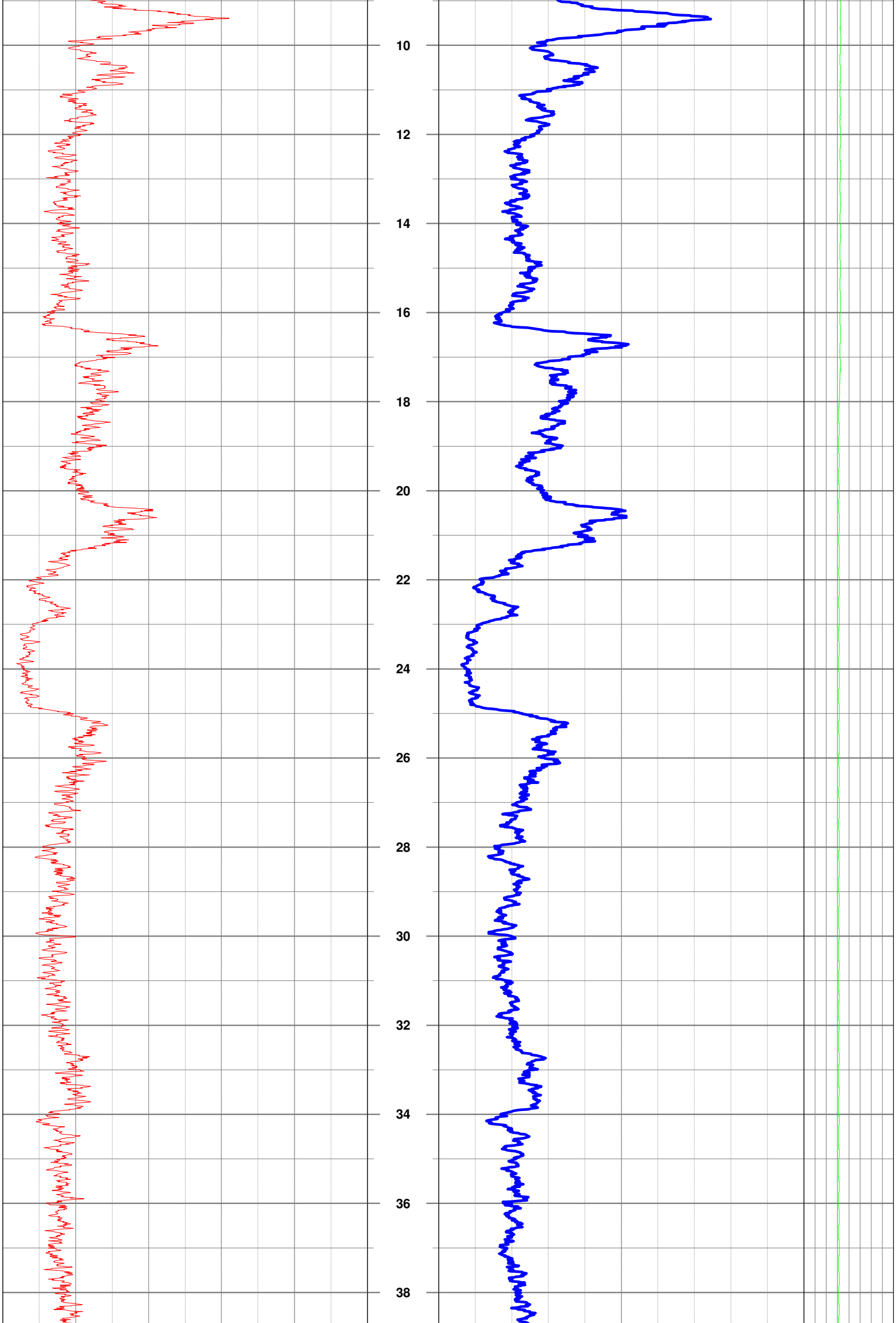
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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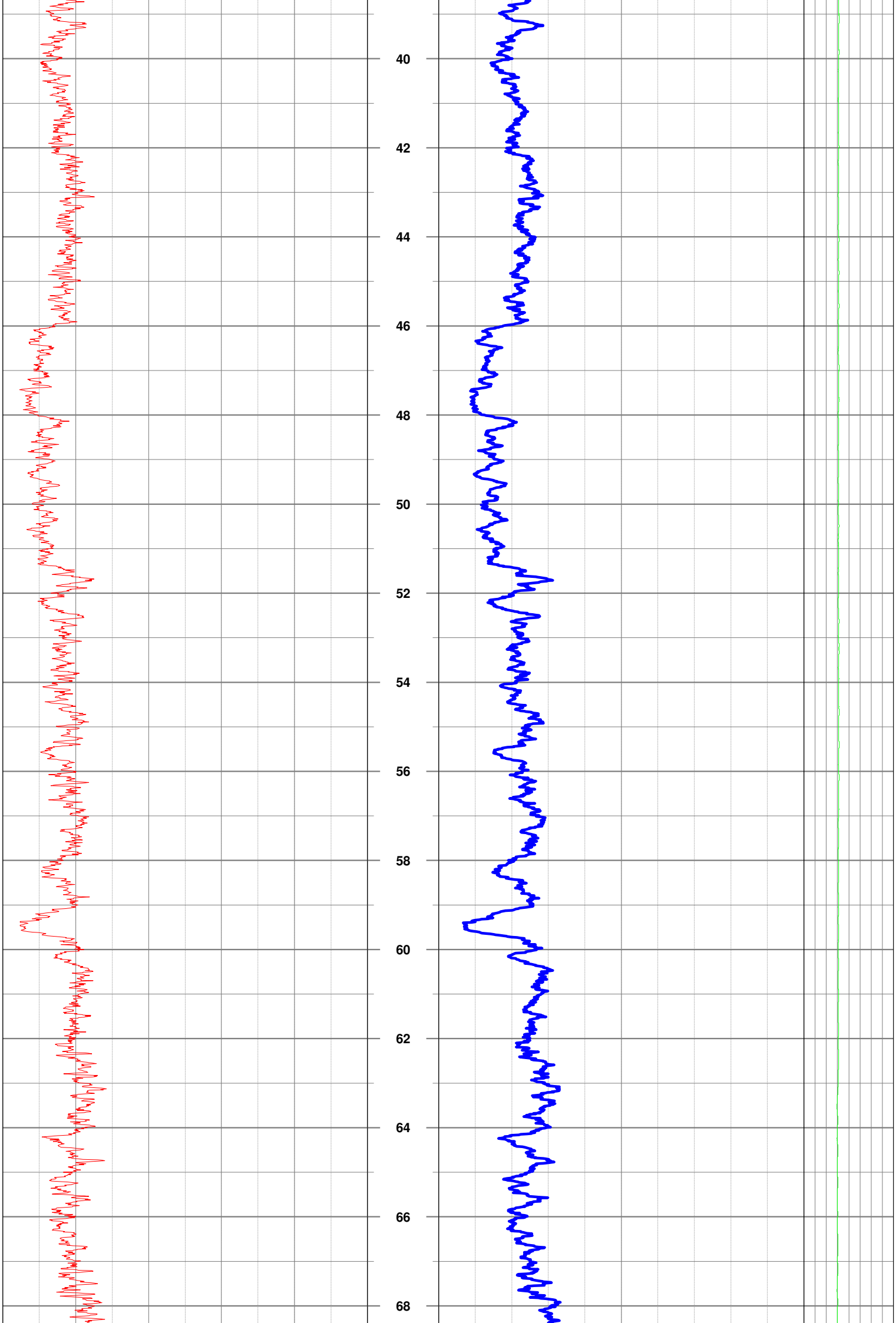
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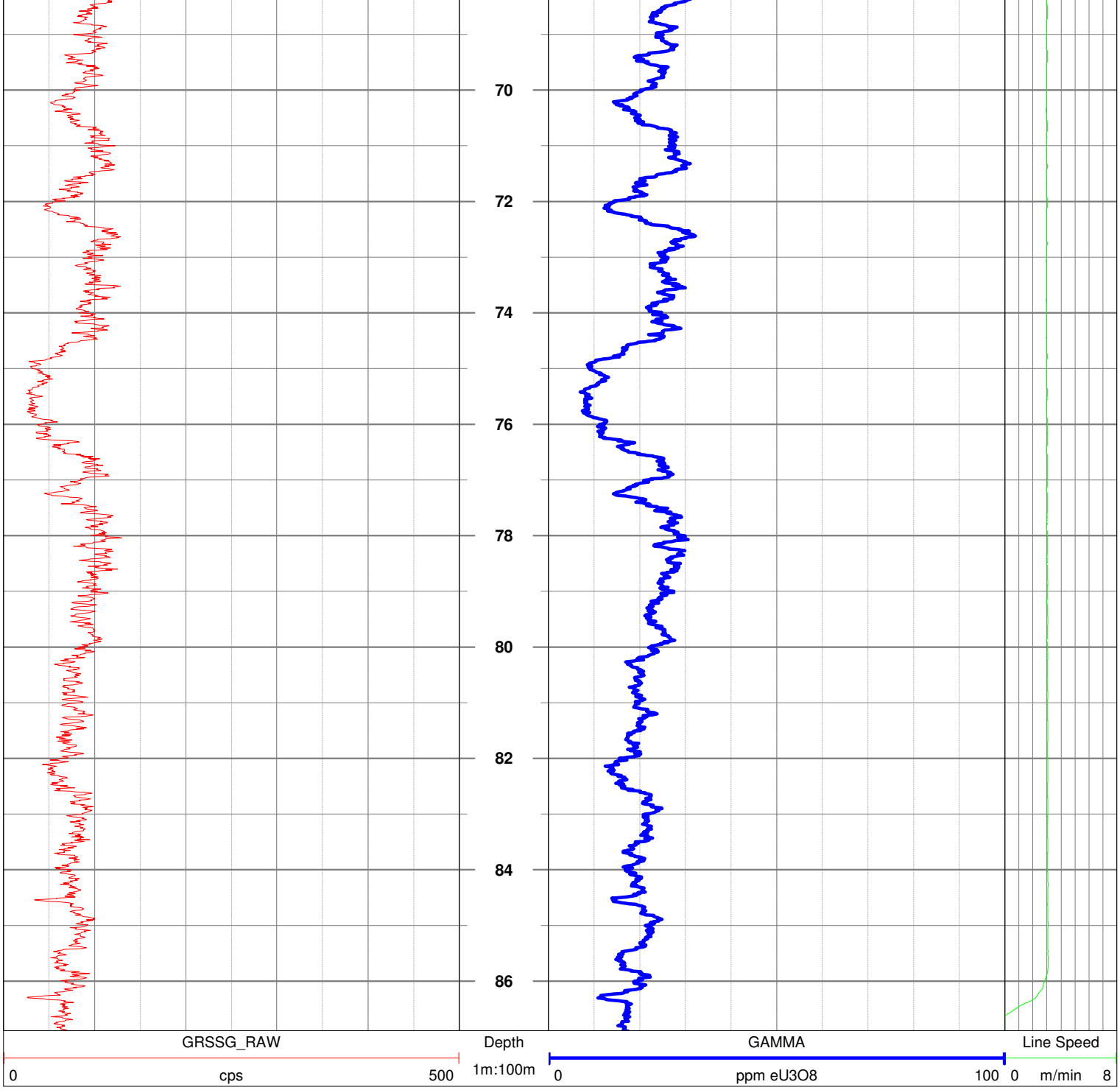
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cps
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1m:100m
GAMMA
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ppm eU3O8
100
Line Speed
0
m/min
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GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC25		**GAMMA**

SCALE	1:100		
LAT.	LONG.	ELEVATION	m
FIELD	**NABARLEK NORTH**		
RECORDED BY	**GERARD CONLON**		
WITNESSED BY			
FLUID TEMP	degrees celsius		
FLUID TYPE			
FLUID LEVEL	m		

STATE	**NT**	PROVINCE	NABARLEK
UNIT	**AL23**	DRILLED BY	RIG NO
EASTING	**327028**	NORTHING **8645410** DATUM GDA94	COORD MGA53
LOCATION	**EL 24868**		
LOG DATE	**20/08/2011**		
DATUM	**GL**		
DRILLED DEPTH	**90** m		
LOGGED DEPTH	**87.7** m		
INT LOGGED	**0-87.7** m		

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged through drill rods. Hole Size Correction 1.00875, Rods Correction Factor 2.45

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

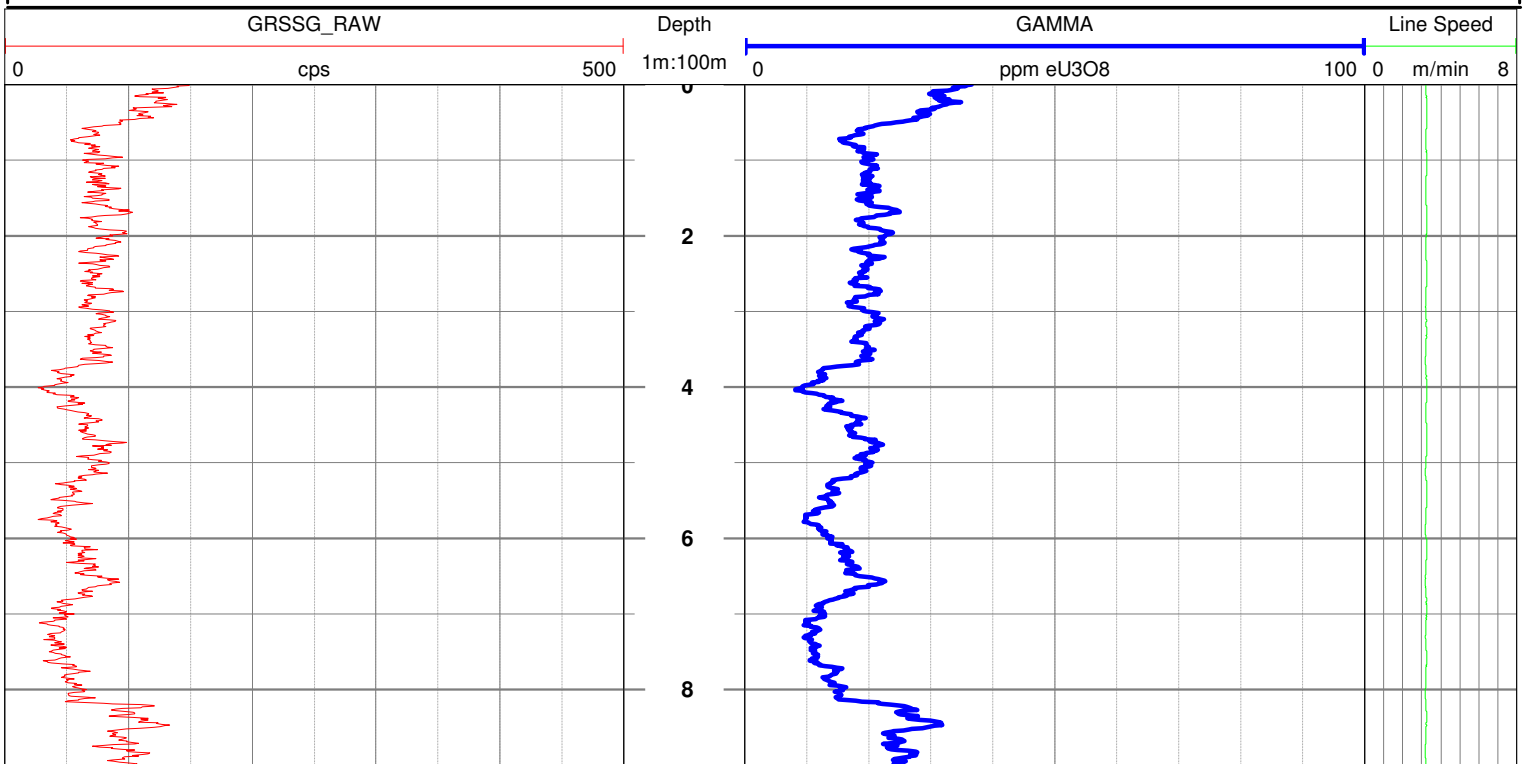
K Factor 0.0000105201662

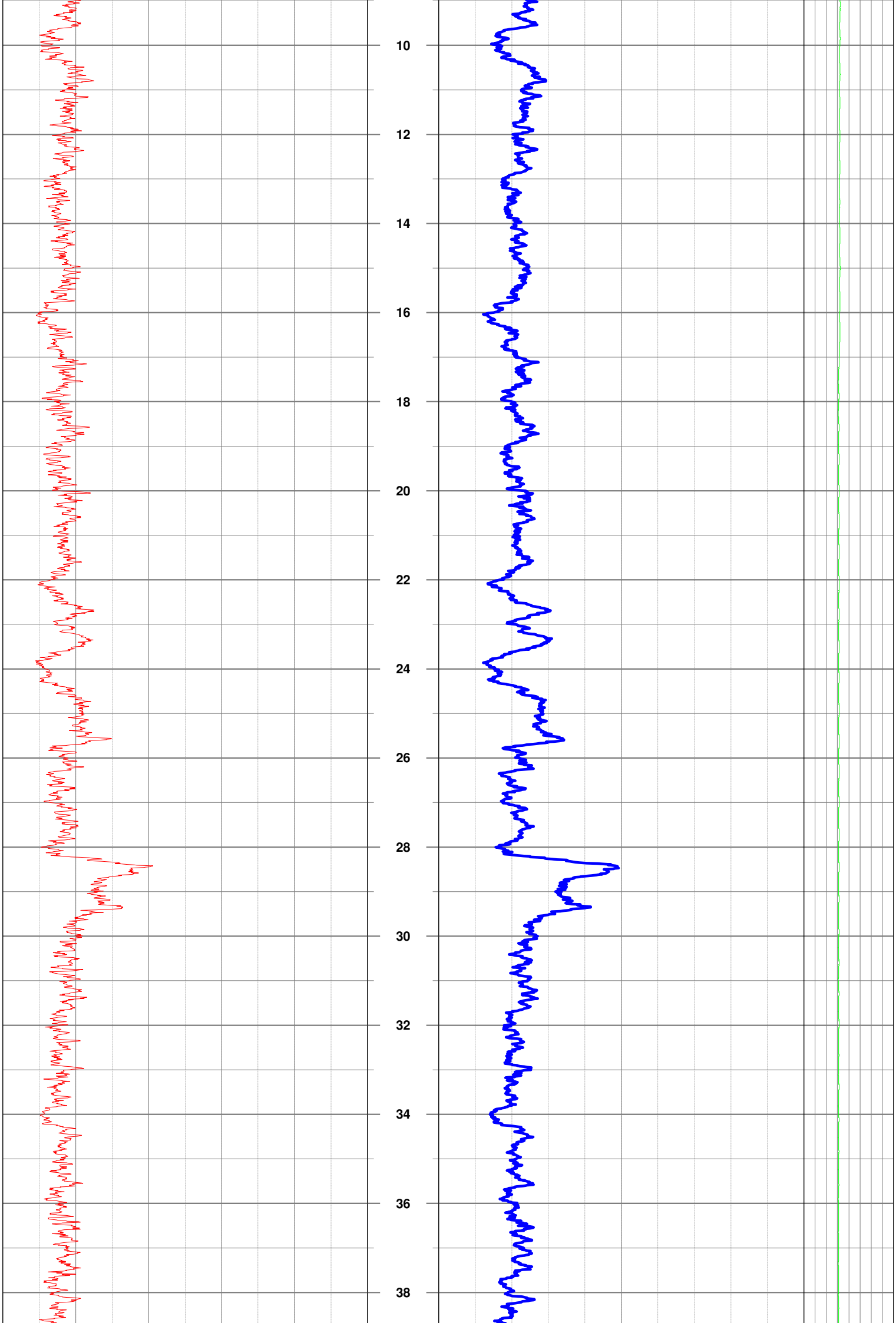
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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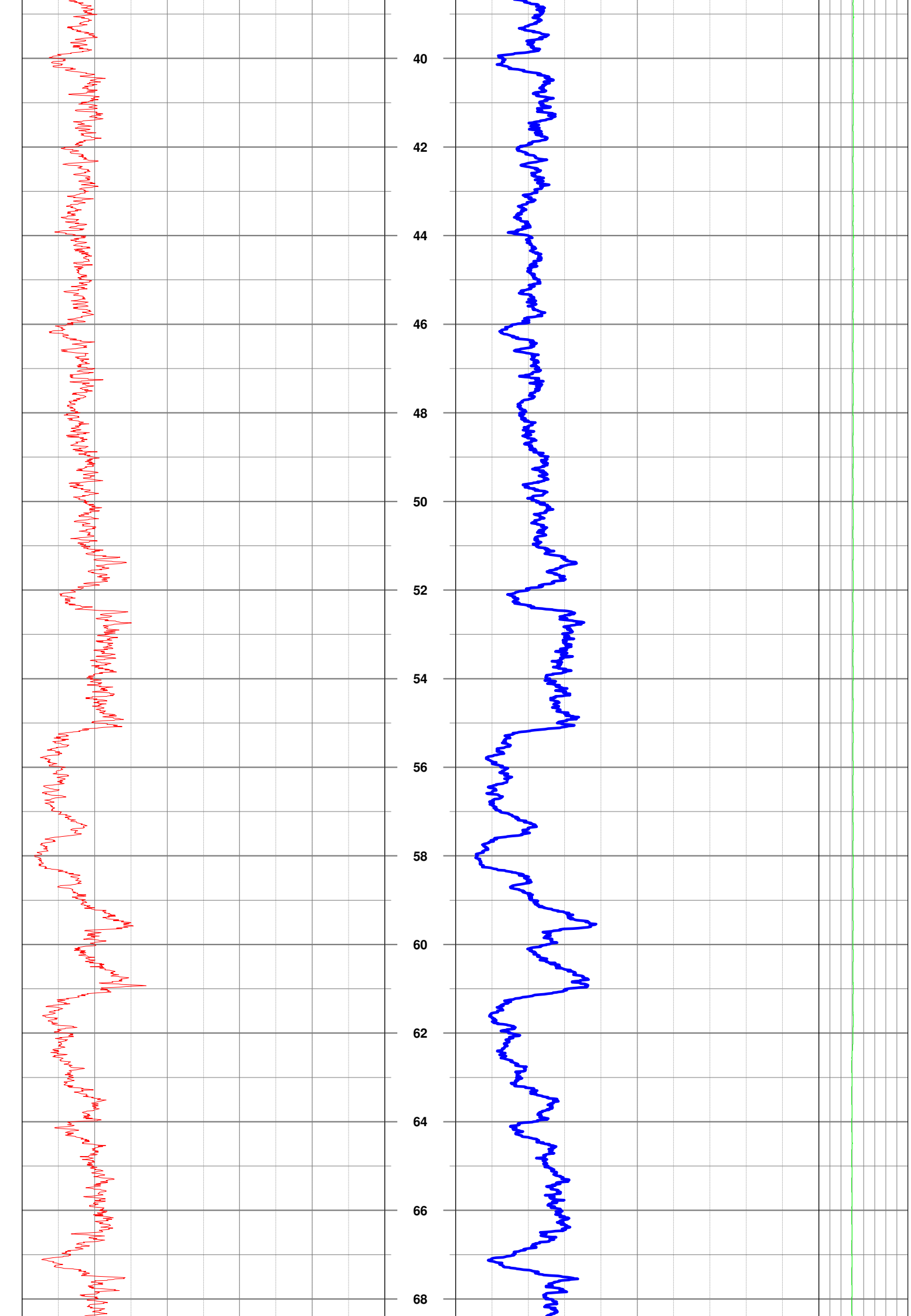
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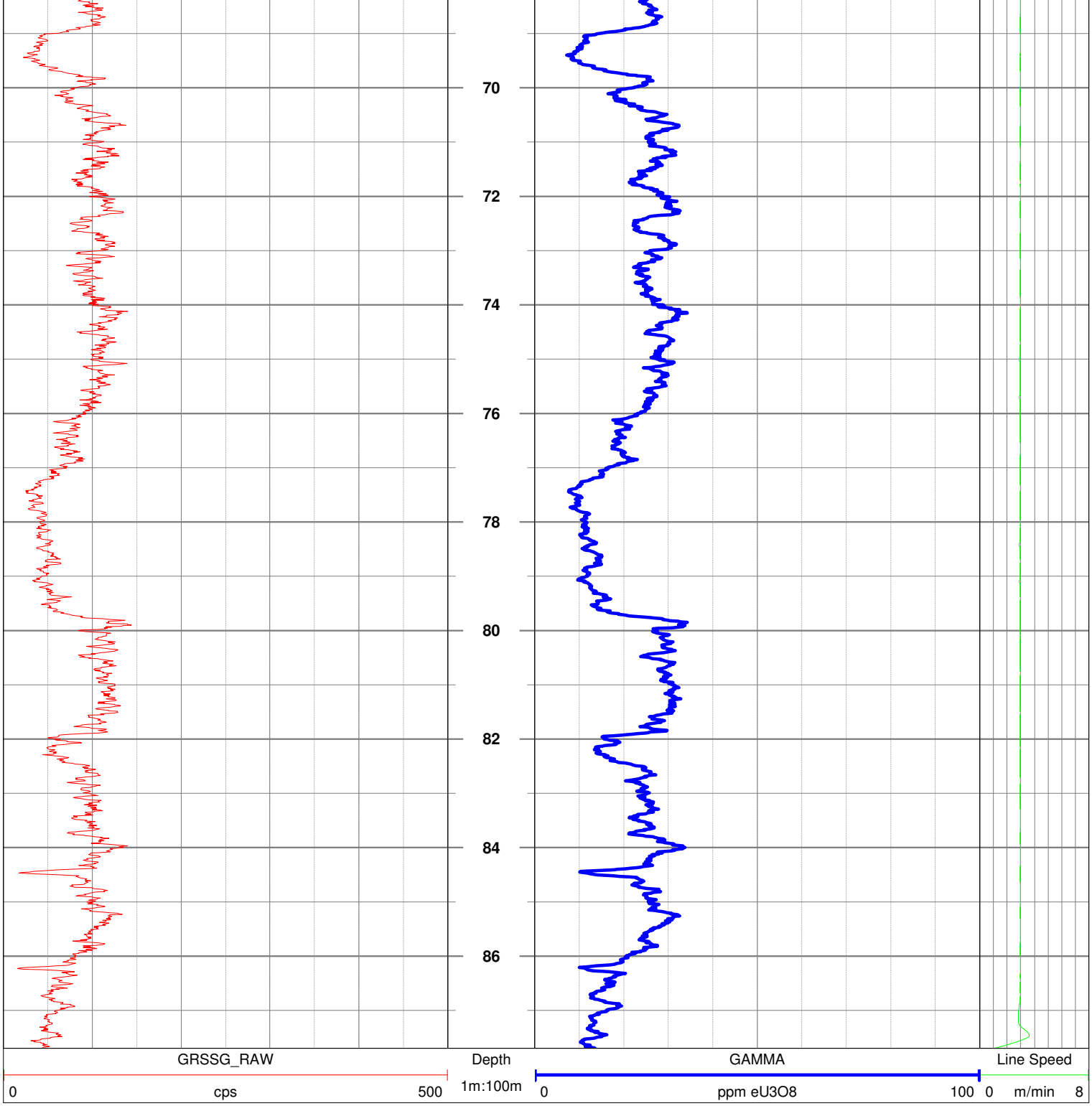
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GRSSG_RAW
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cps
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Depth
1m:100m
GAMMA
0
ppm eU3O8
100
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC26		**GAMMA**

STATE	**NT**		PROVINCE	NABARLEK	
UNIT	**AL23**	DRILLED BY		RIG NO	
EASTING	**326978**	NORTHING	**8645410**	DATUM	GDA94 COORD MGA53

SCALE	1:100	LOCATION	**EL 24868**
LAT. LONG. ELEVATION m		LOG DATE	**20/08/2011**
FIELD	**NABARLEK NORTH**	DATUM	**GL**
RECORDED BY	**GERARD CONLON**	DRILLED DEPTH	**90** m
WITNESSED BY		LOGGED DEPTH	**86.7** m
FLUID TEMP	degrees celsius	INT LOGGED	**0-86.7** m
FLUID TYPE			
FLUID LEVEL	m		

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged through drill rods.Hole Size Correction 1.00875, Rods Correction 2.45

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

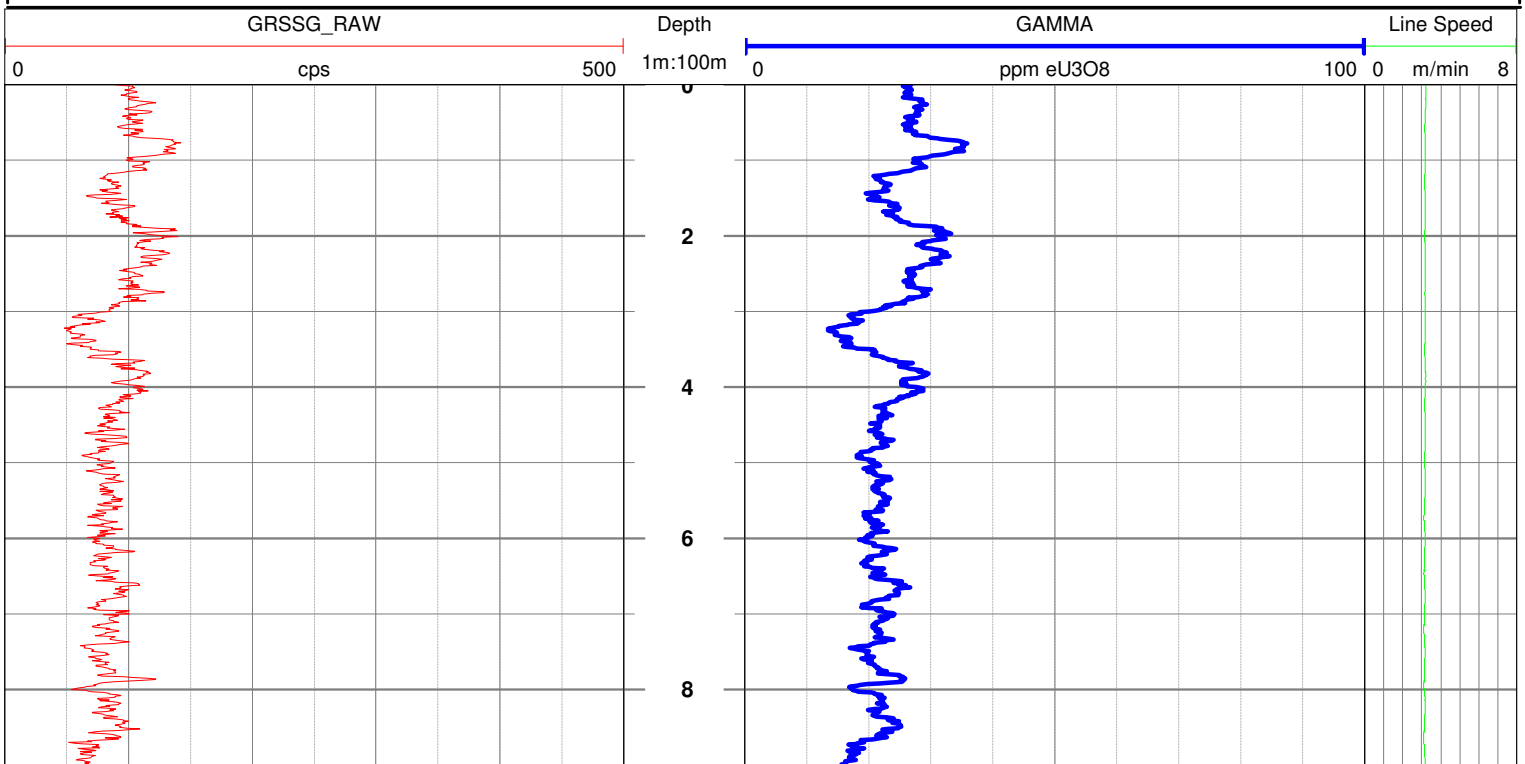
K Factor 0.0000105201662

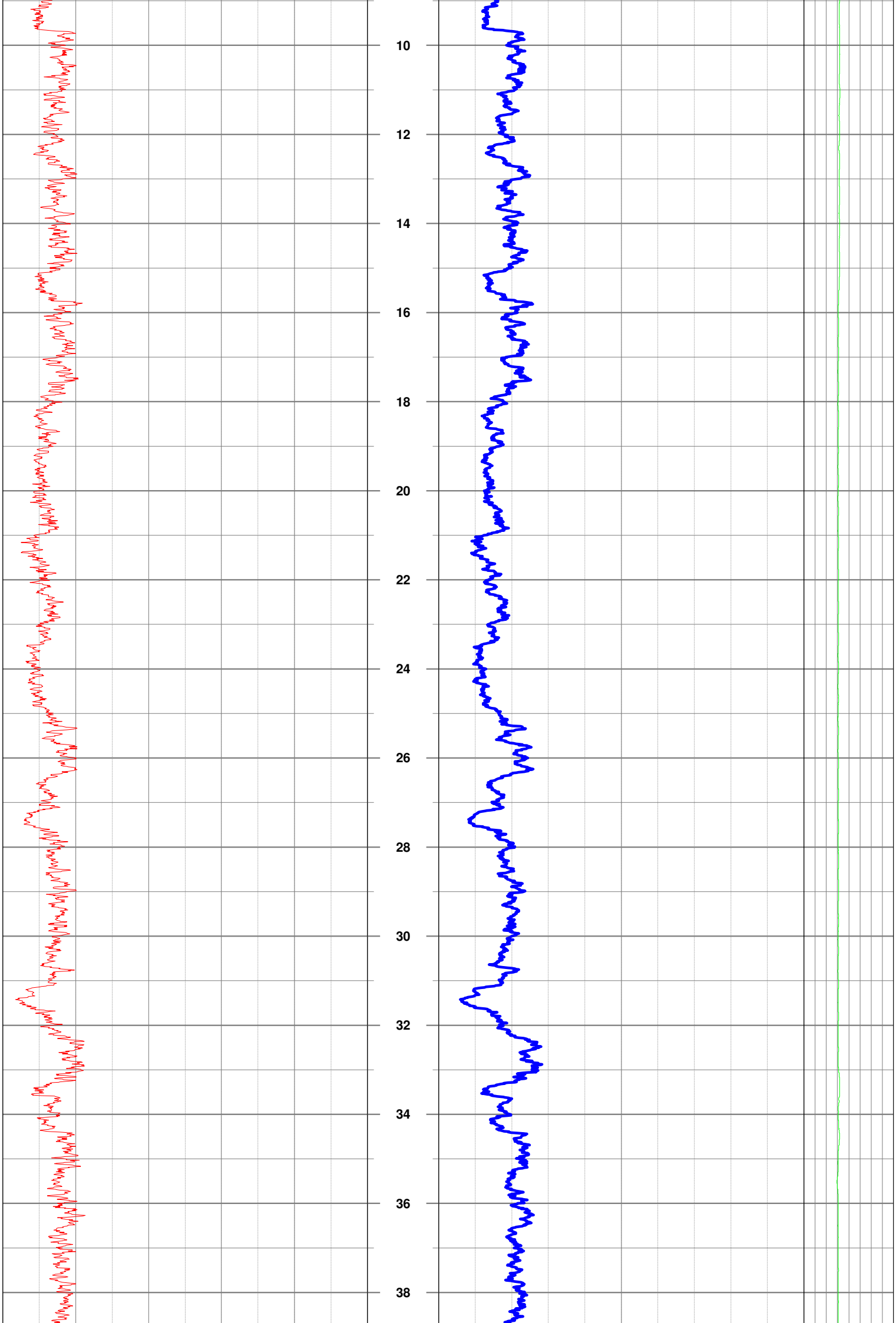
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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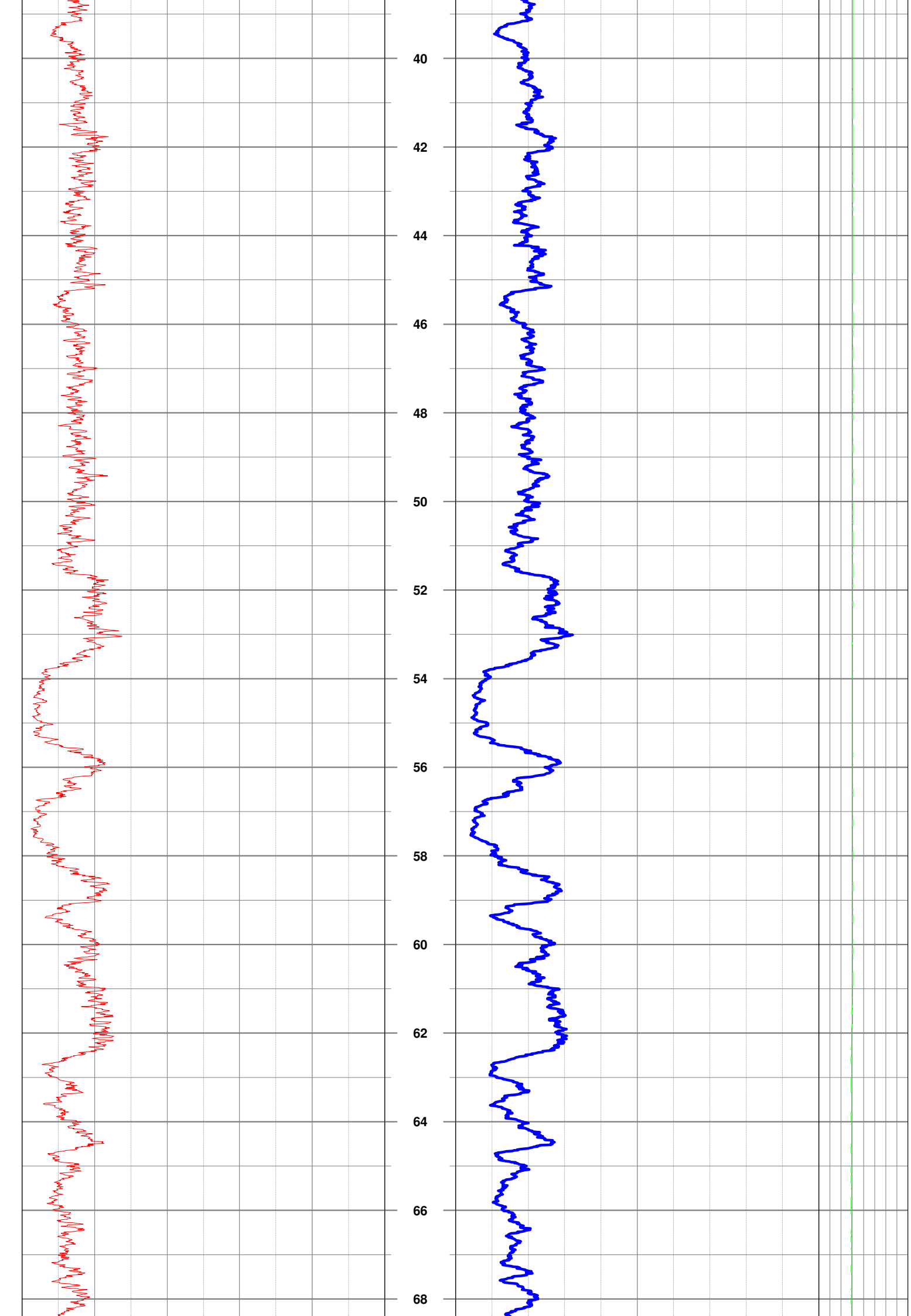
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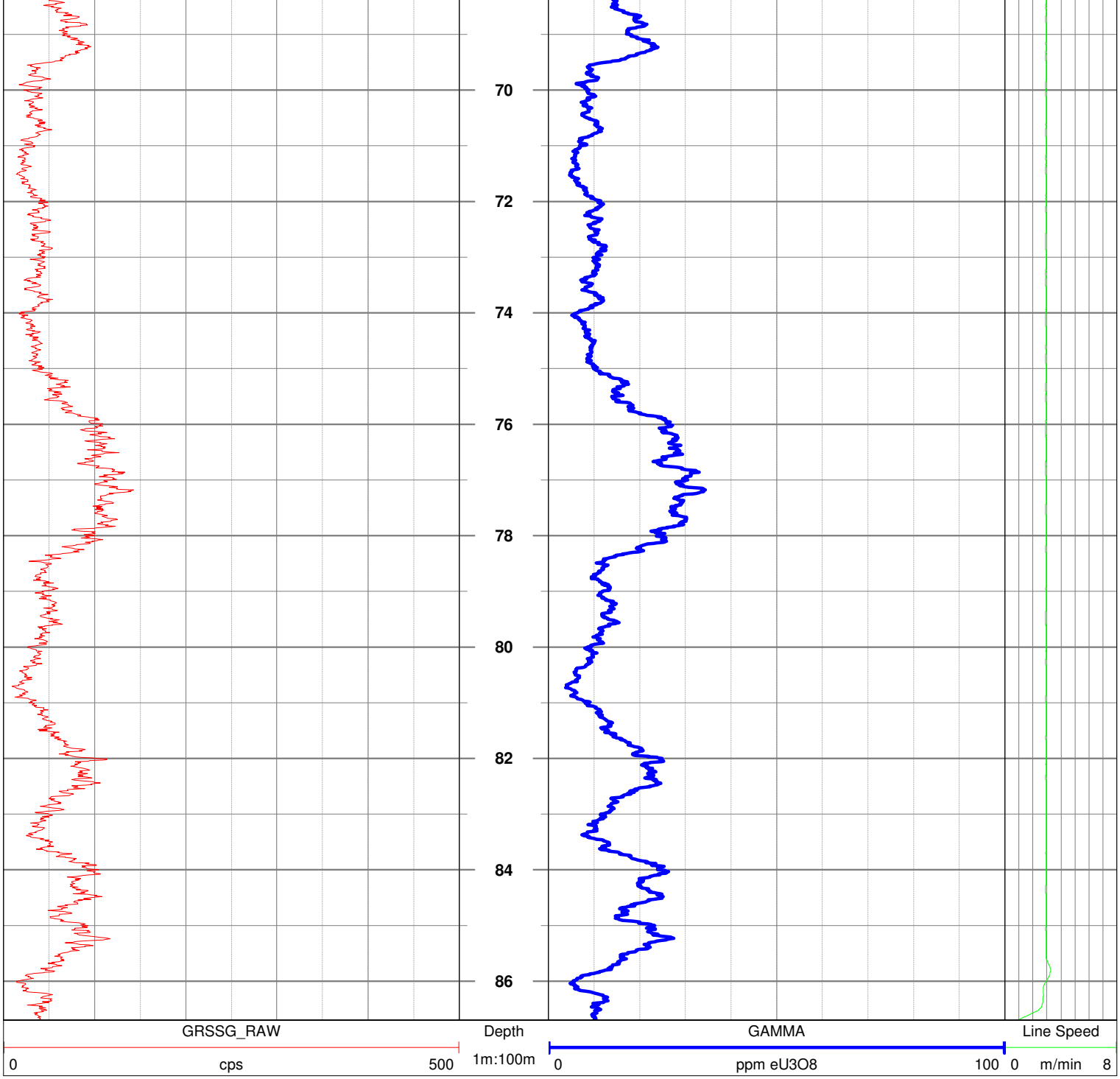
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GRSSG_RAW
Depth
GAMMA
Line Speed
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cps
500
1m:100m
0
ppm eU3O8
100
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL **NNRC42** | UWI | LOG TYPE **GAMMA**

SCALE	1:100	STATE	**NT** PROVINCE NABARLEK
LAT.	LONG. ELEVATION m	UNIT	**AL23** DRILLED BY RIG NO
FIELD	**NABARLEK NORTH**	EASTING	NORTHING DATUM GDA94 COORD MGA53
RECORDED BY	**GERARD CONLON**	LOCATION	**EL 24868**
WITNESSED BY		LOG DATE	**23/08/2011**
FLUID TEMP	degrees celsius	DATUM	**GL**
FLUID TYPE		DRILLED DEPTH	**90** m
FLUID LEVEL	m	LOGGED DEPTH	**86.76** m
		INT LOGGED	**0-86.76** m

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged through drill rods.Hole size correction 1.00875, Rods Correction 2.45

GAA GAMMA

Tool ID SSG02

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

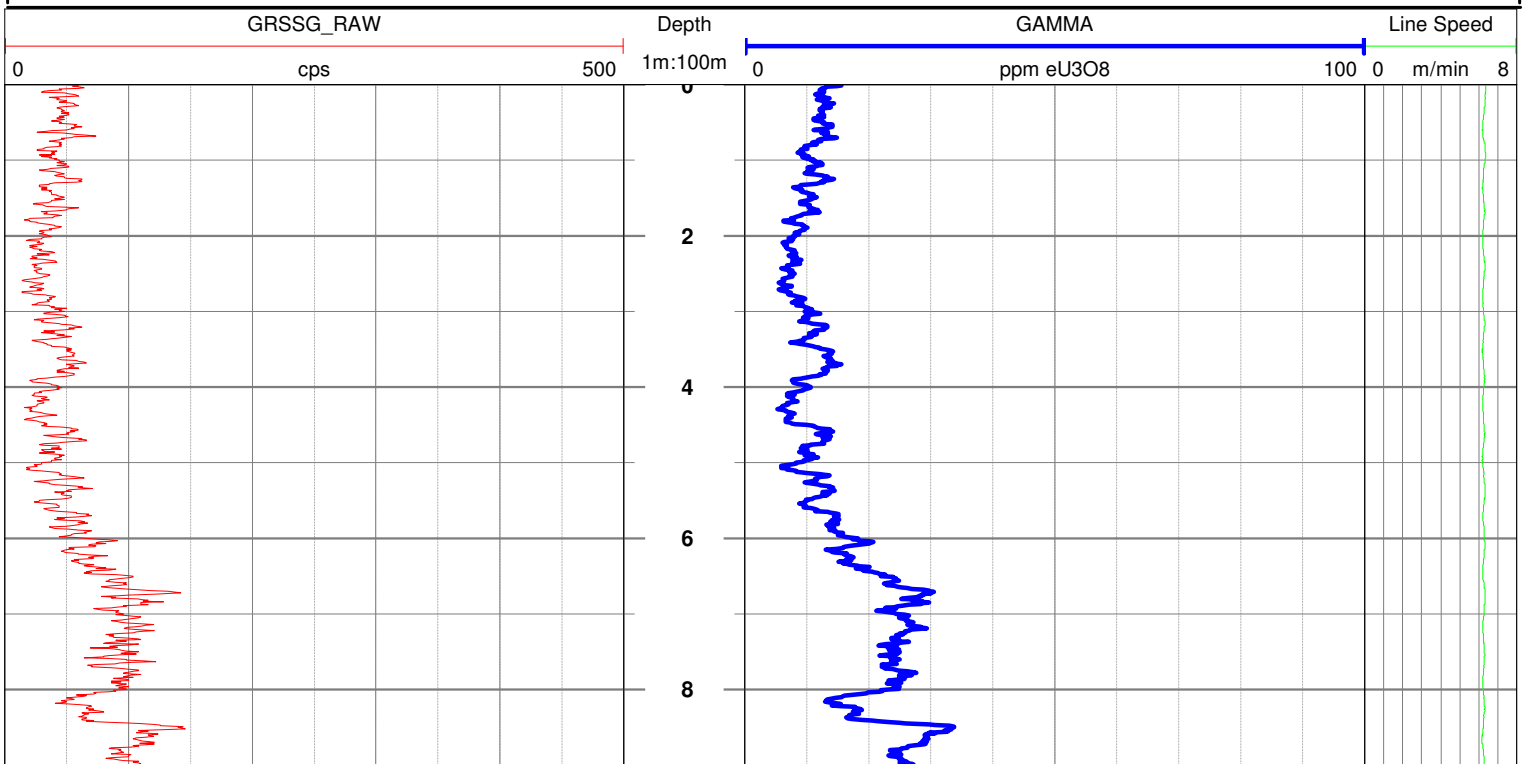
K Factor 0.0000105201662

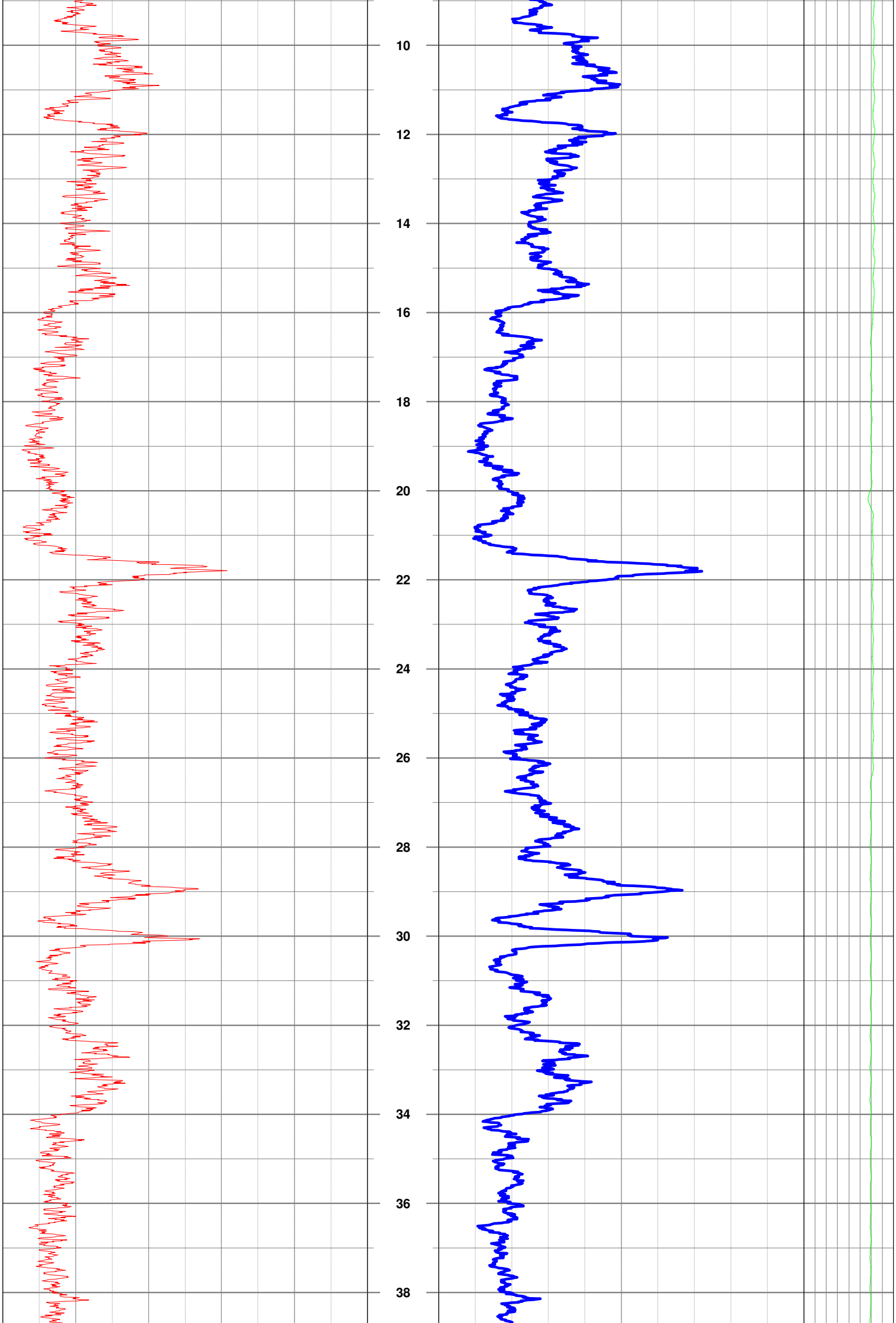
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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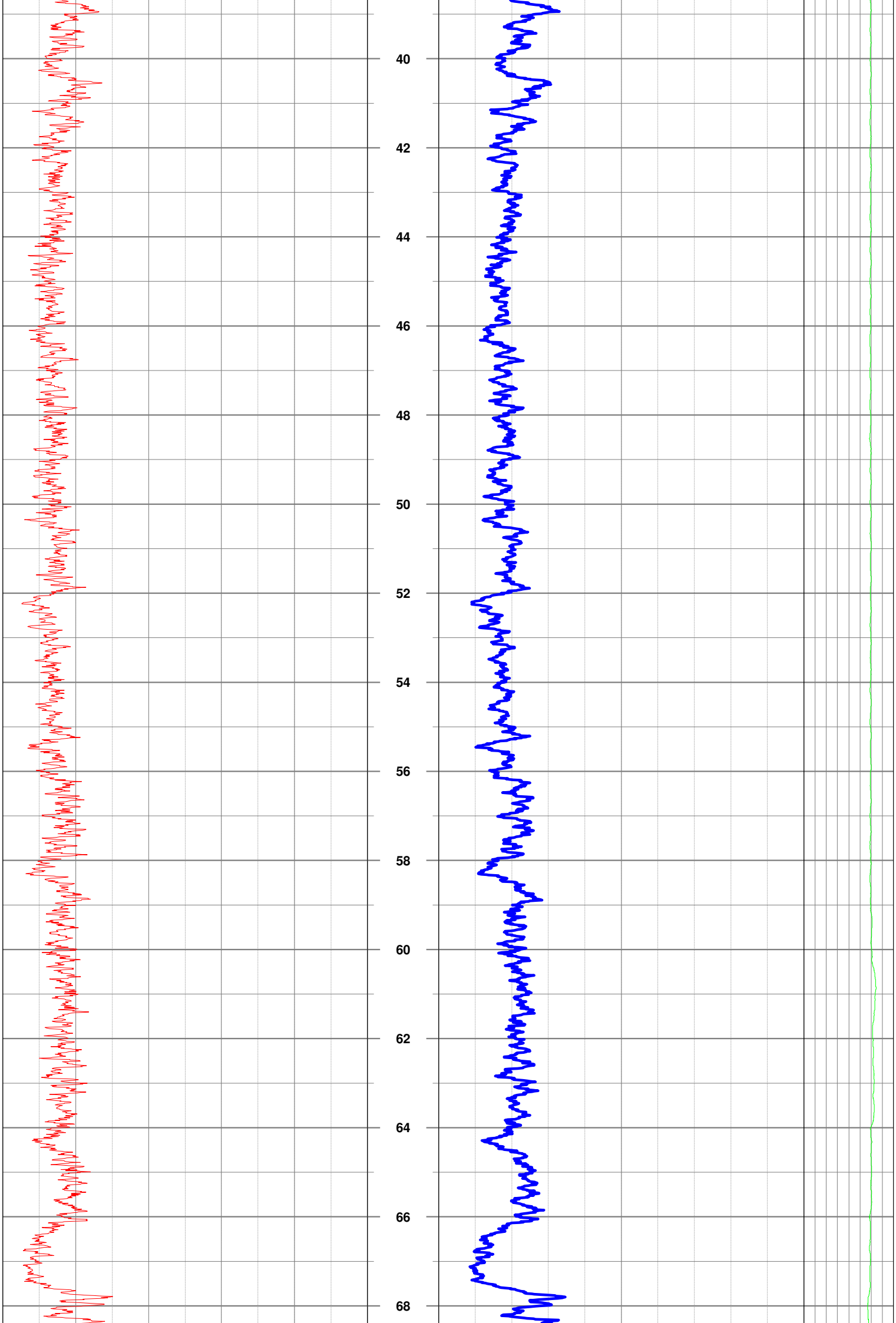
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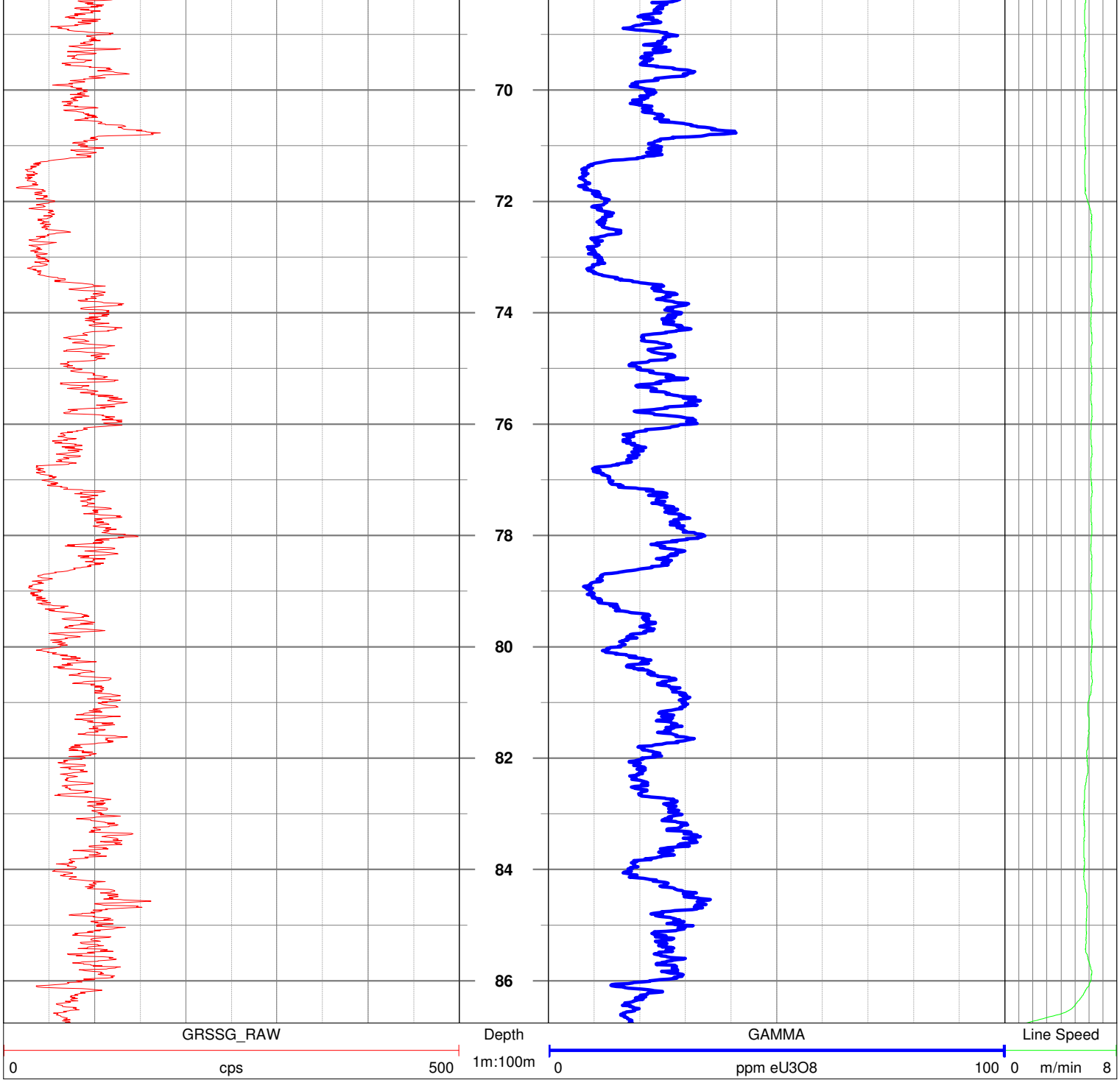
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Depth
1m:100m
GAMMA
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ppm eU3O8
100
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY **UXA RESOURCES**

WELL **NNRC43** | UWI | LOG TYPE **GAMMA**

SCALE	1:100	STATE	**NT**
LAT.	LONG.	ELEVATION m	EASTING / NORTHING / DATUM **GDA94** / COORD **MGA53**
FIELD	**NABARLEK NORTH**	PROVINCE	NABARLEK
RECORDED BY	**GERARD CONLON**	UNIT	**AL23**
WITNESSED BY		DRILLED BY	
FLUID TEMP	degrees celsius	RIG NO	
FLUID TYPE		LOCATION	**EL 24868**
FLUID LEVEL	m	LOG DATE	**23/08/2011**
		DATUM	**GL**
		DRILLED DEPTH	**90** m
		LOGGED DEPTH	**86.6** m
		INT LOGGED	**0-86.6** m

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged Through Drill Rods. Hole Size Correction 1.00875, Rods Correction Factor 2.45

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

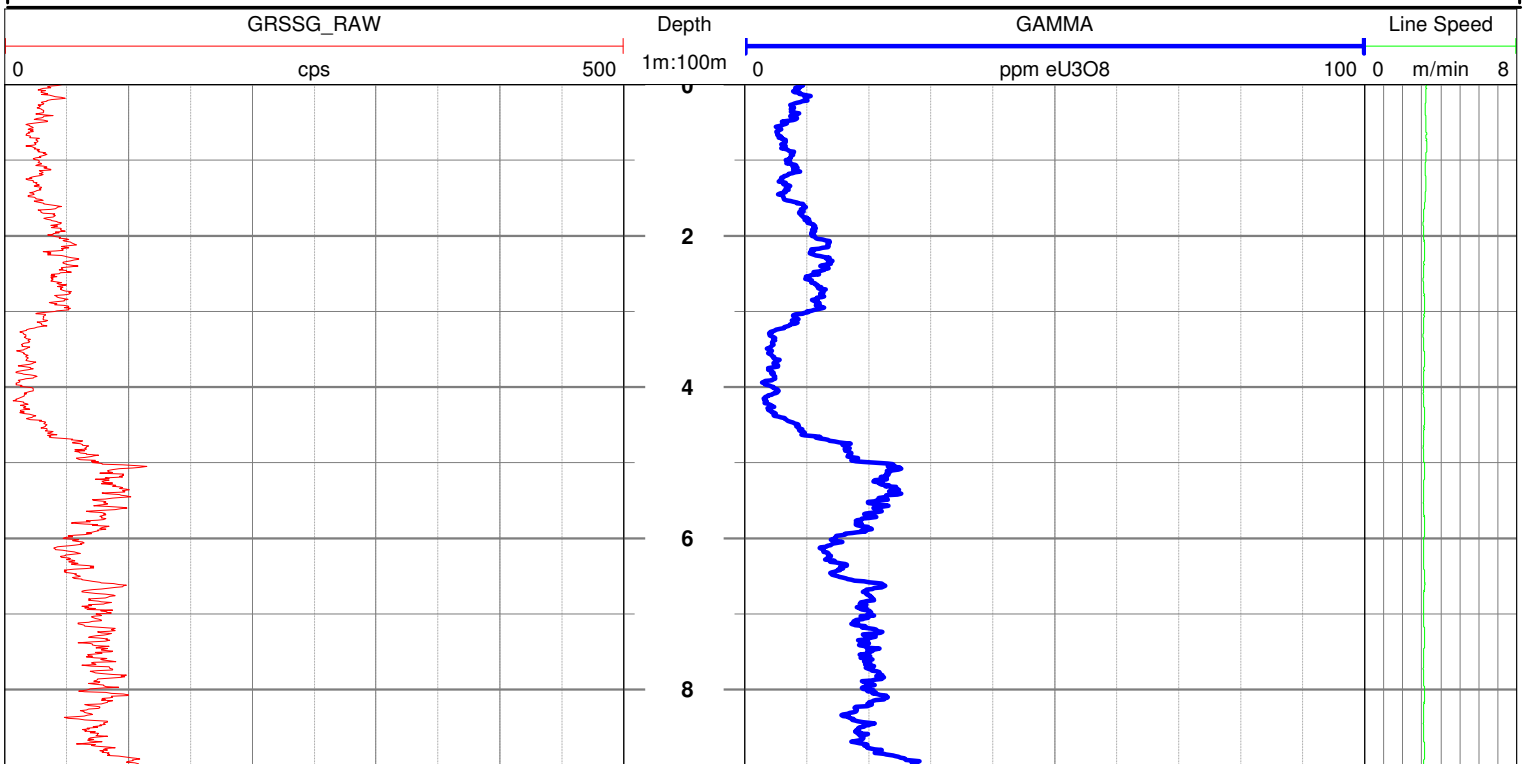
K Factor 0.0000105201662

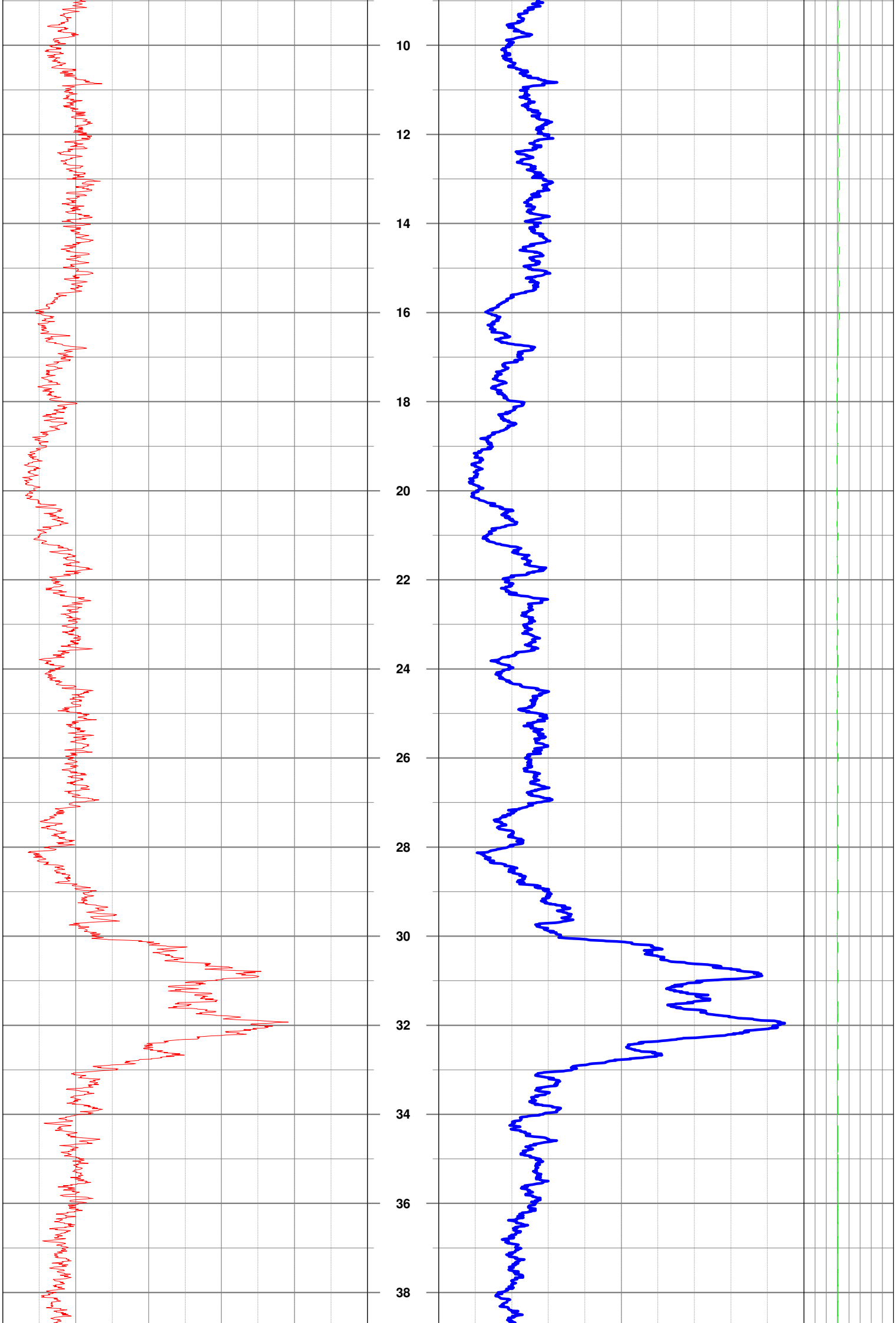
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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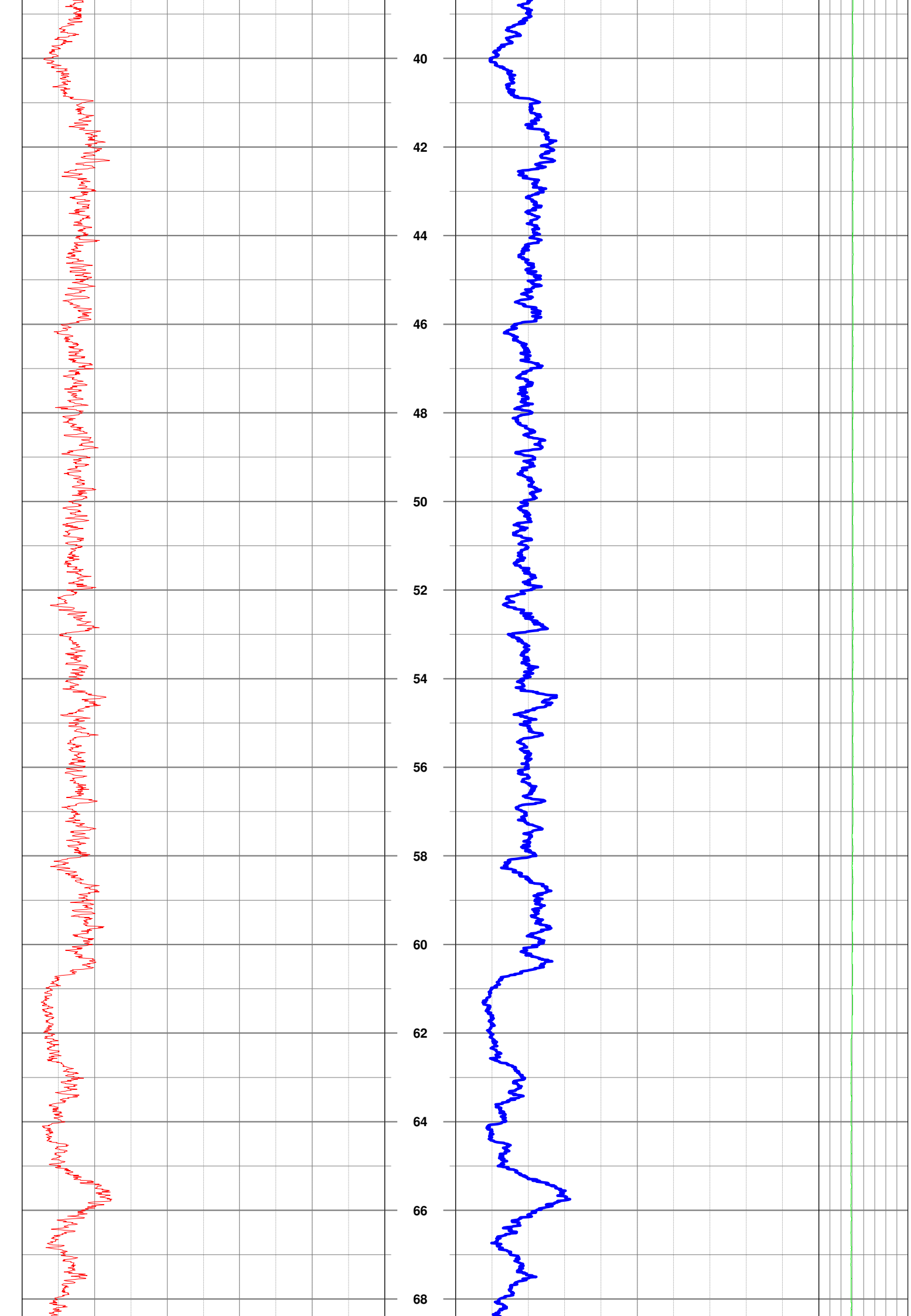
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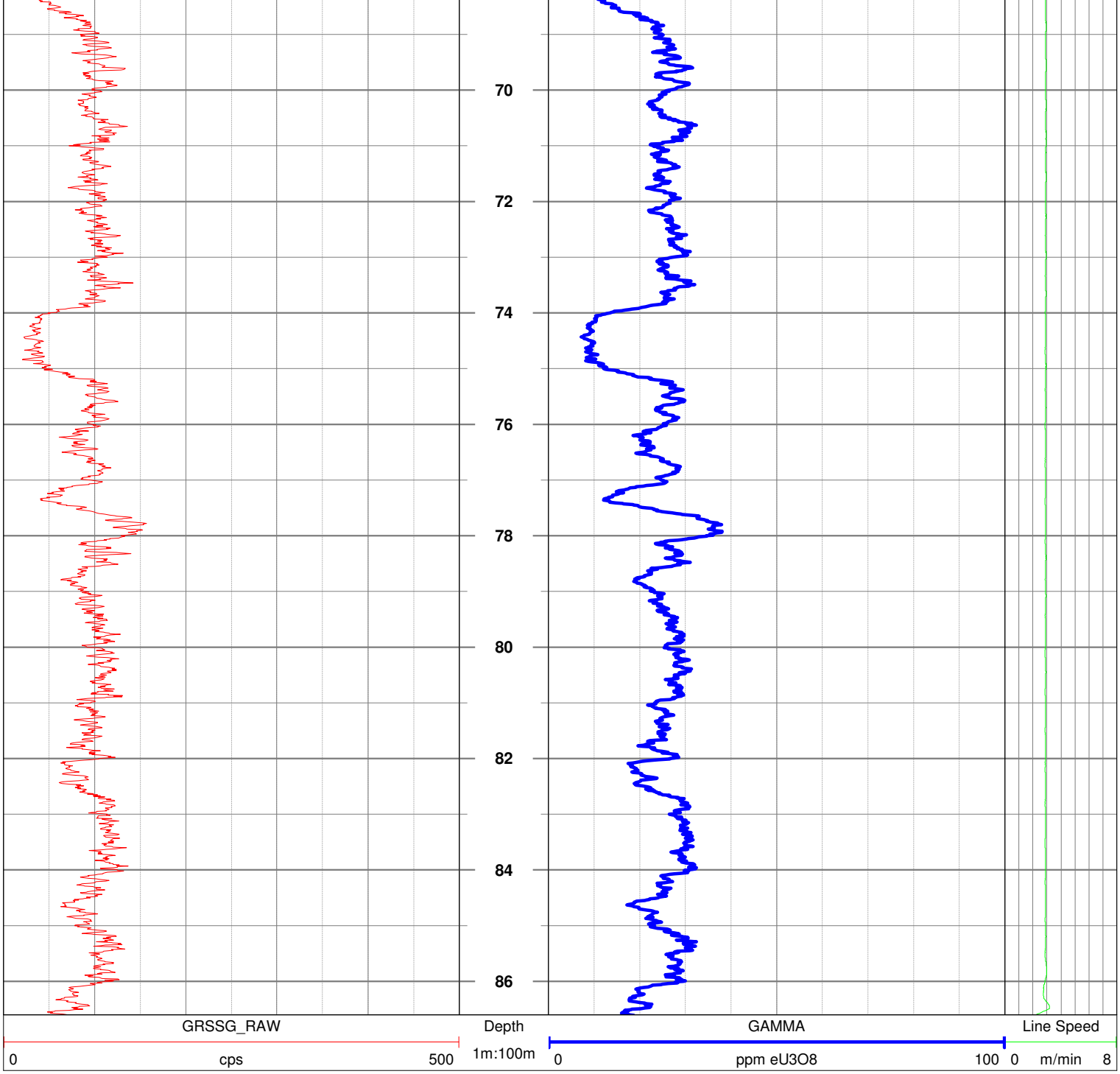
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GAMMA
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ppm eU3O8
100
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY **UXA RESOURCES**

WELL	UWI	LOG TYPE
NNRC44		**GAMMA**

SCALE	1:100	STATE	**NT** PROVINCE NABARLEK
LAT.	LONG. ELEVATION m	UNIT	**AL23** DRILLED BY RIG NO
FIELD	**NABARLEK NORTH**	EASTING	NORTHING DATUM GDA94 COORD MGA53
RECORDED BY	**GERARD CONLON**	LOCATION	**EL 24868**
WITNESSED BY		LOG DATE	**23/08/2011**
FLUID TEMP	degrees celsius	DATUM	**GL**
FLUID TYPE		DRILLED DEPTH	**90** m
FLUID LEVEL	m	LOGGED DEPTH	**86.5** m
		INT LOGGED	**0-86.5** m

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			*SSG02*	
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged Through Drill Rods. Rods Correction Factor 2.45. Hole Size Correction 1.008

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

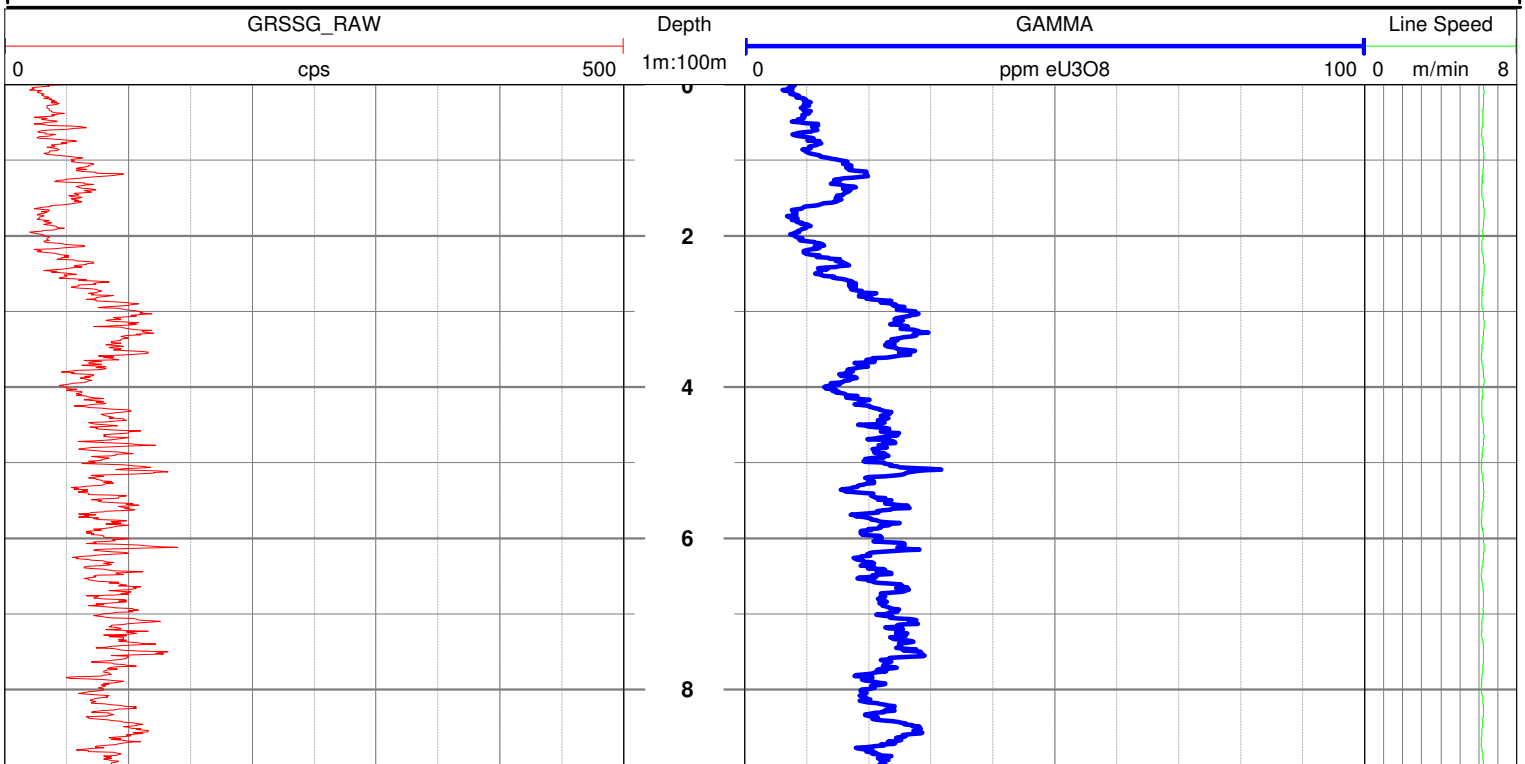
K Factor 0.0000105201662

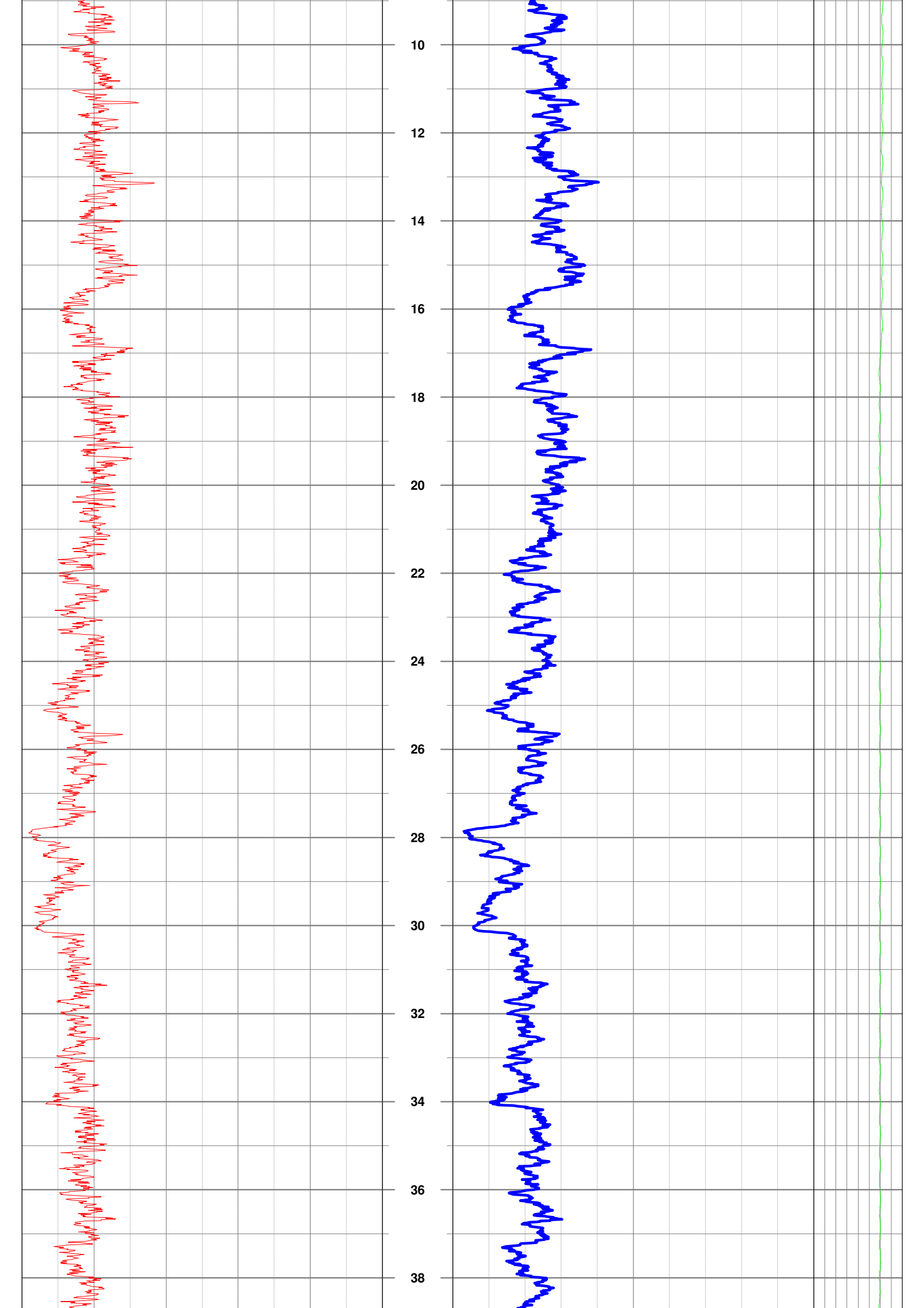
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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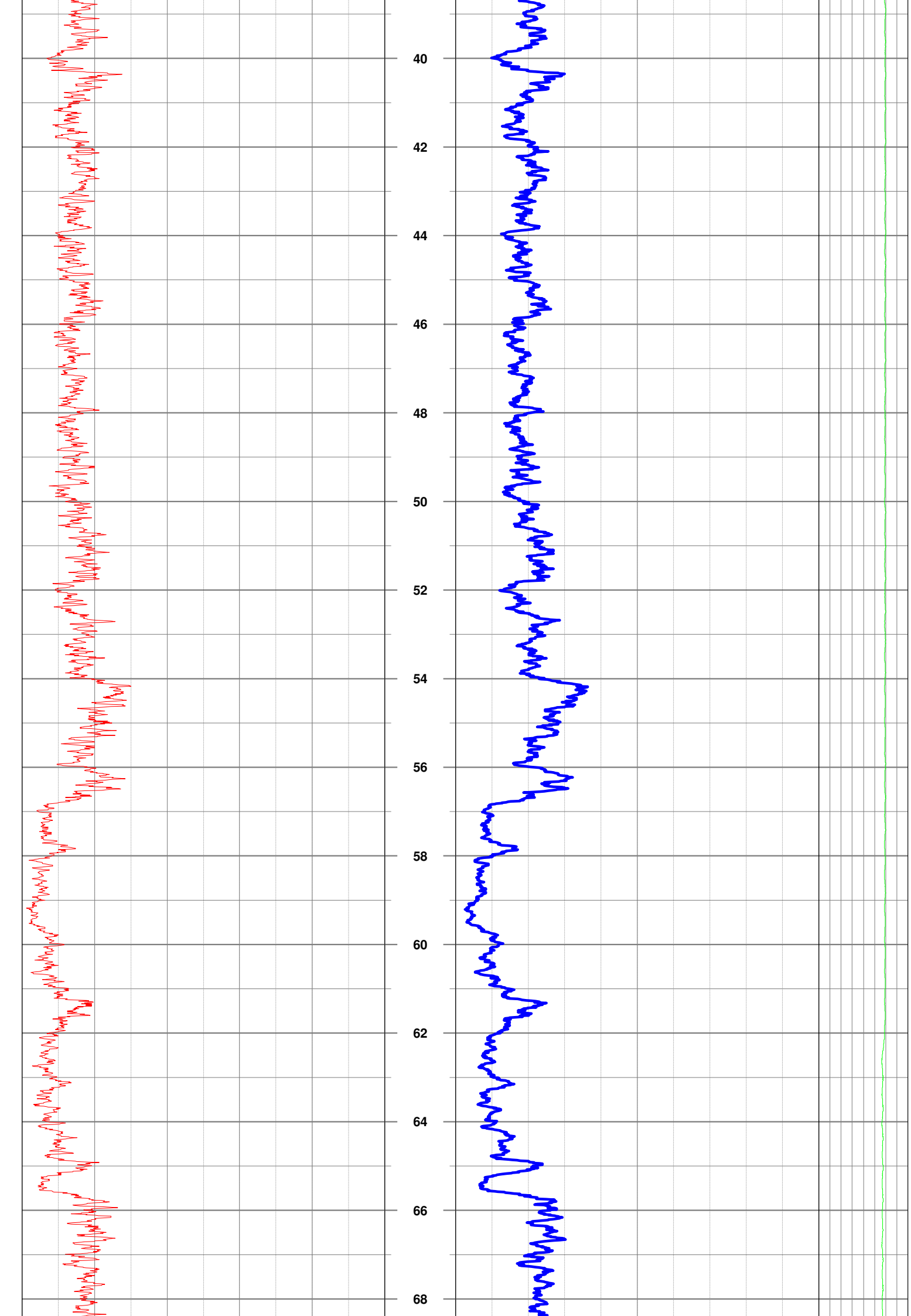
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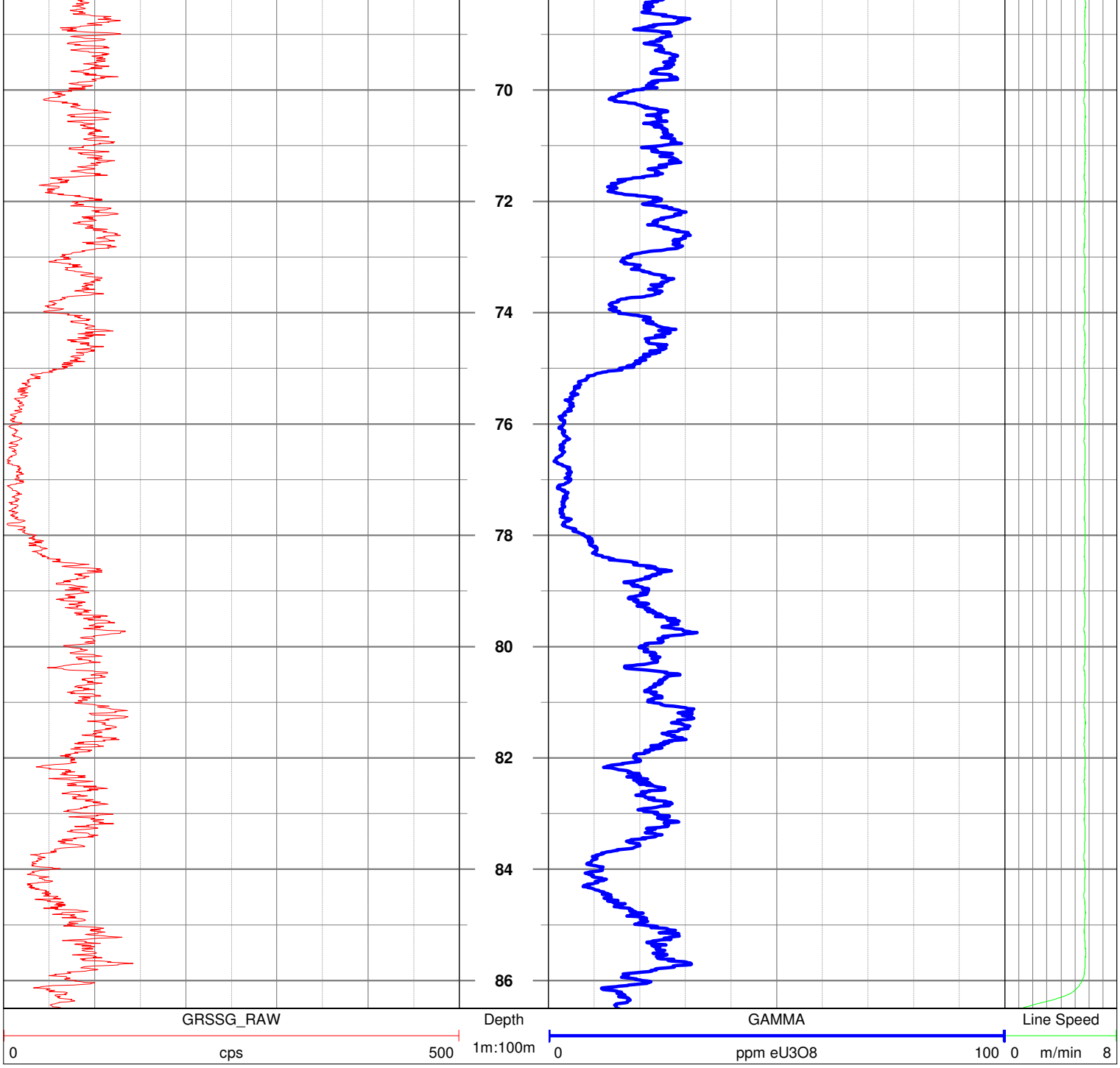
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GAMMA
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ppm eU3O8
100
Line Speed
0
m/min
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GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC45		**GAMMA**

STATE	**NT**	PROVINCE	NABARLEK
UNIT	**AL23** DRILLED BY		RIG NO
EASTING	NORTHING	DATUM GDA94	COORD MGA53
LOCATION	**EL 24868**		
LOG DATE	**24/08/2011**		
DATUM	**GL**		
DRILLED DEPTH	**90** m		
LOGGED DEPTH	**86.5** m		
INT LOGGED	**0-86.5** m		

SCALE	1:100
LAT.	LONG. ELEVATION m
FIELD	**NABARLEK NORTH**
RECORDED BY	**GERARD CONLON**
WITNESSED BY	
FLUID TEMP	degrees celsius
FLUID TYPE	
FLUID LEVEL	m

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	2.45
2					
3					
4					
5					
6					

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged Through Drill Rods. Hole Size Correction Factor 1.008. Rods Correction Factor 2.45

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

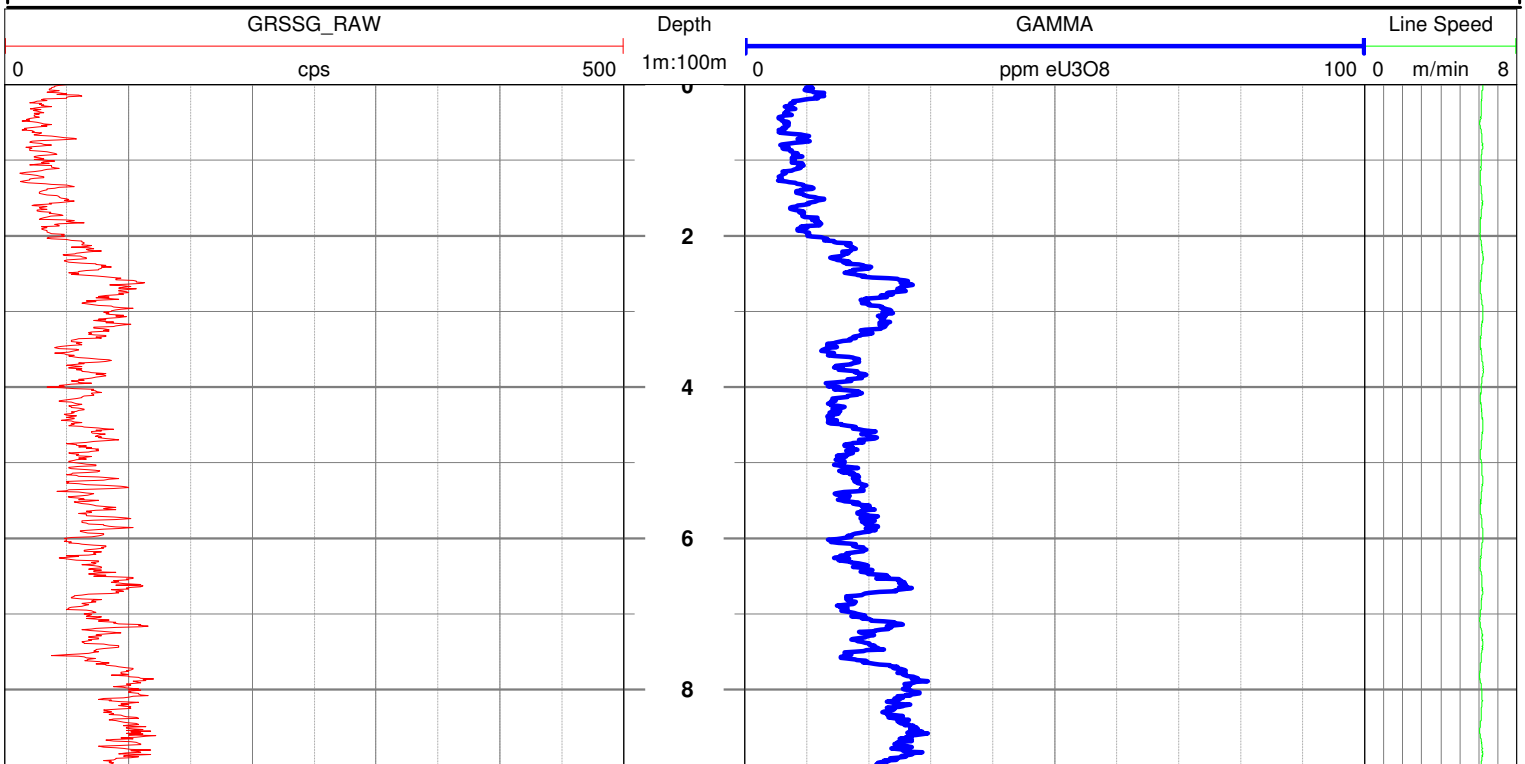
K Factor 0.0000105201662

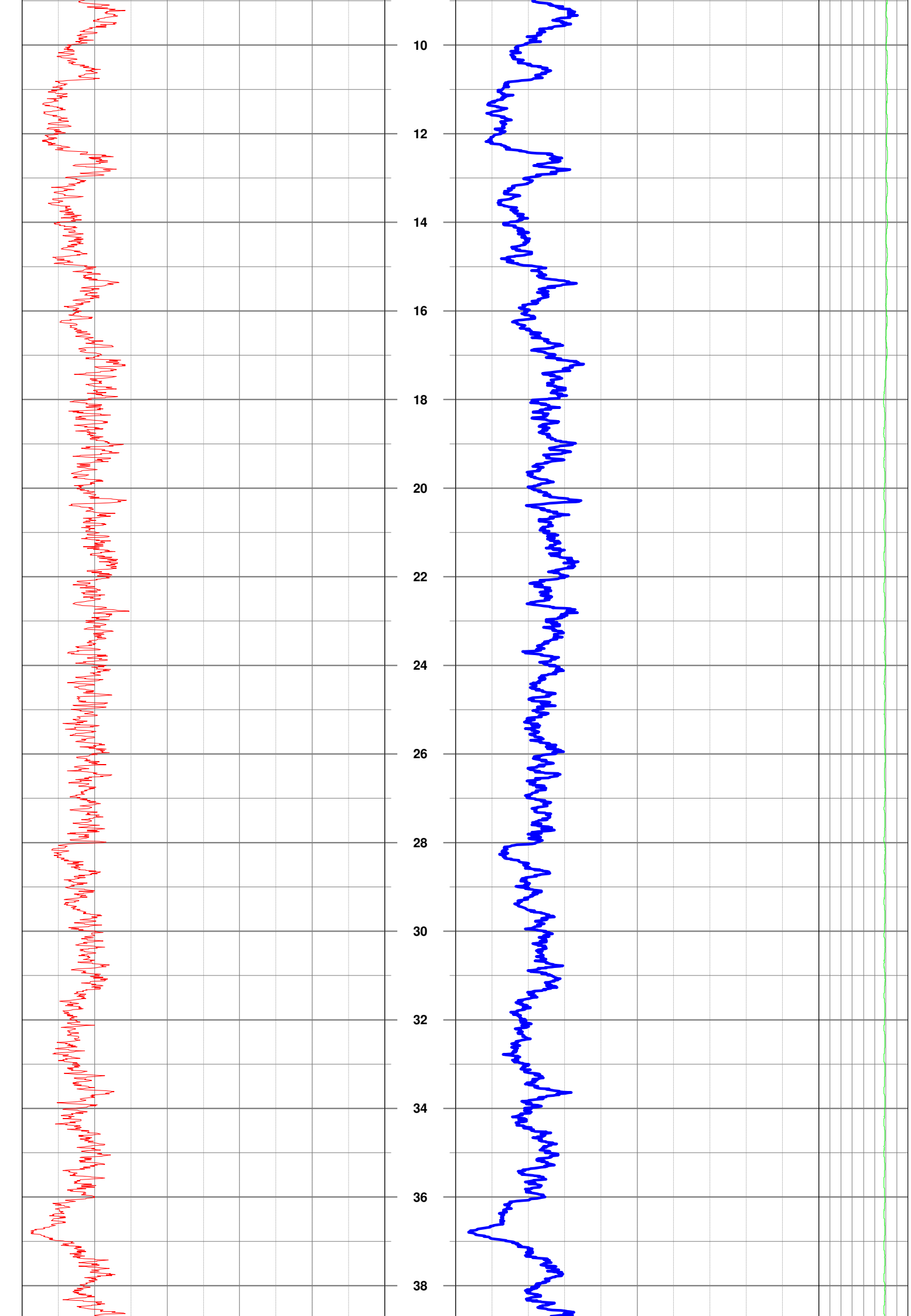
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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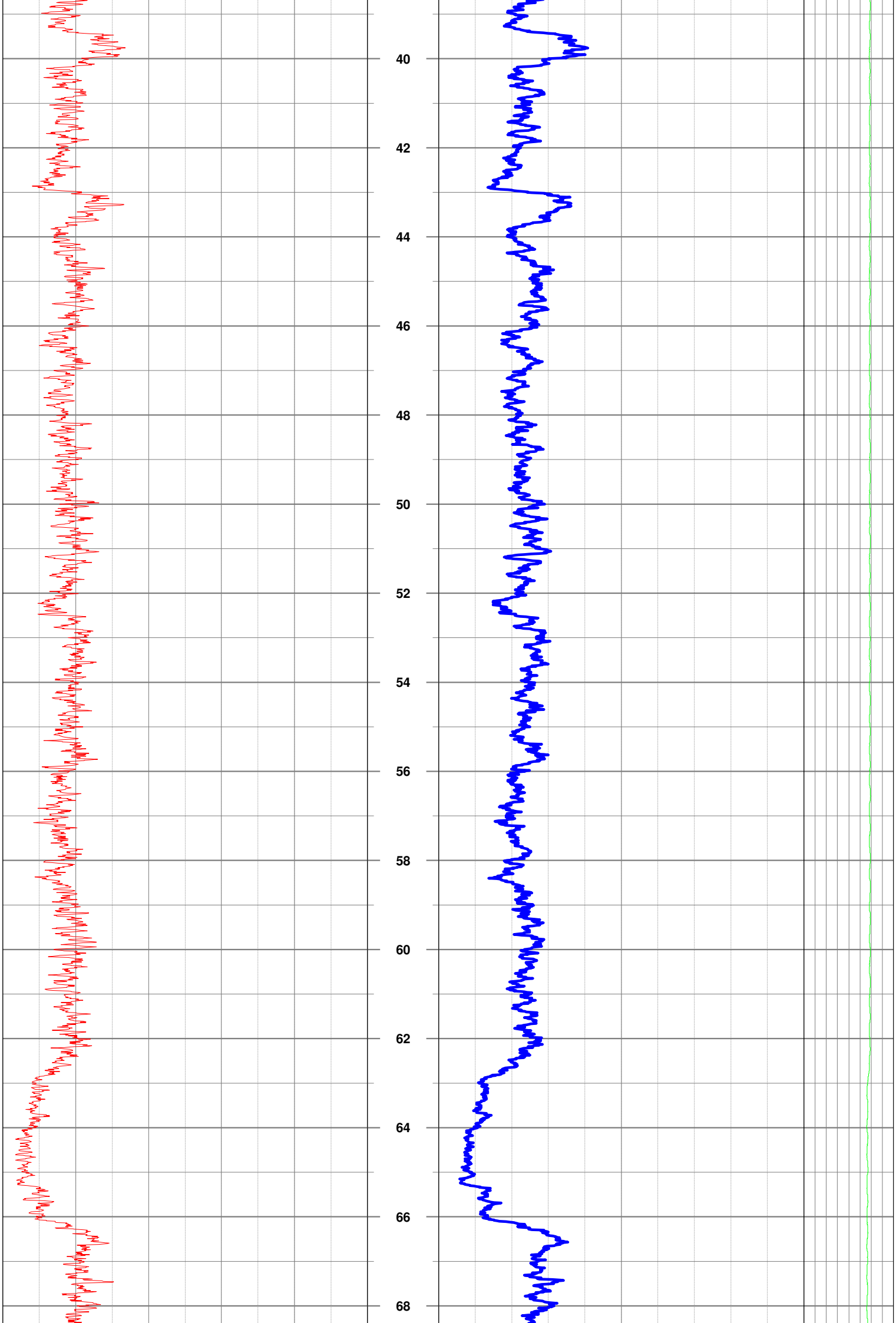
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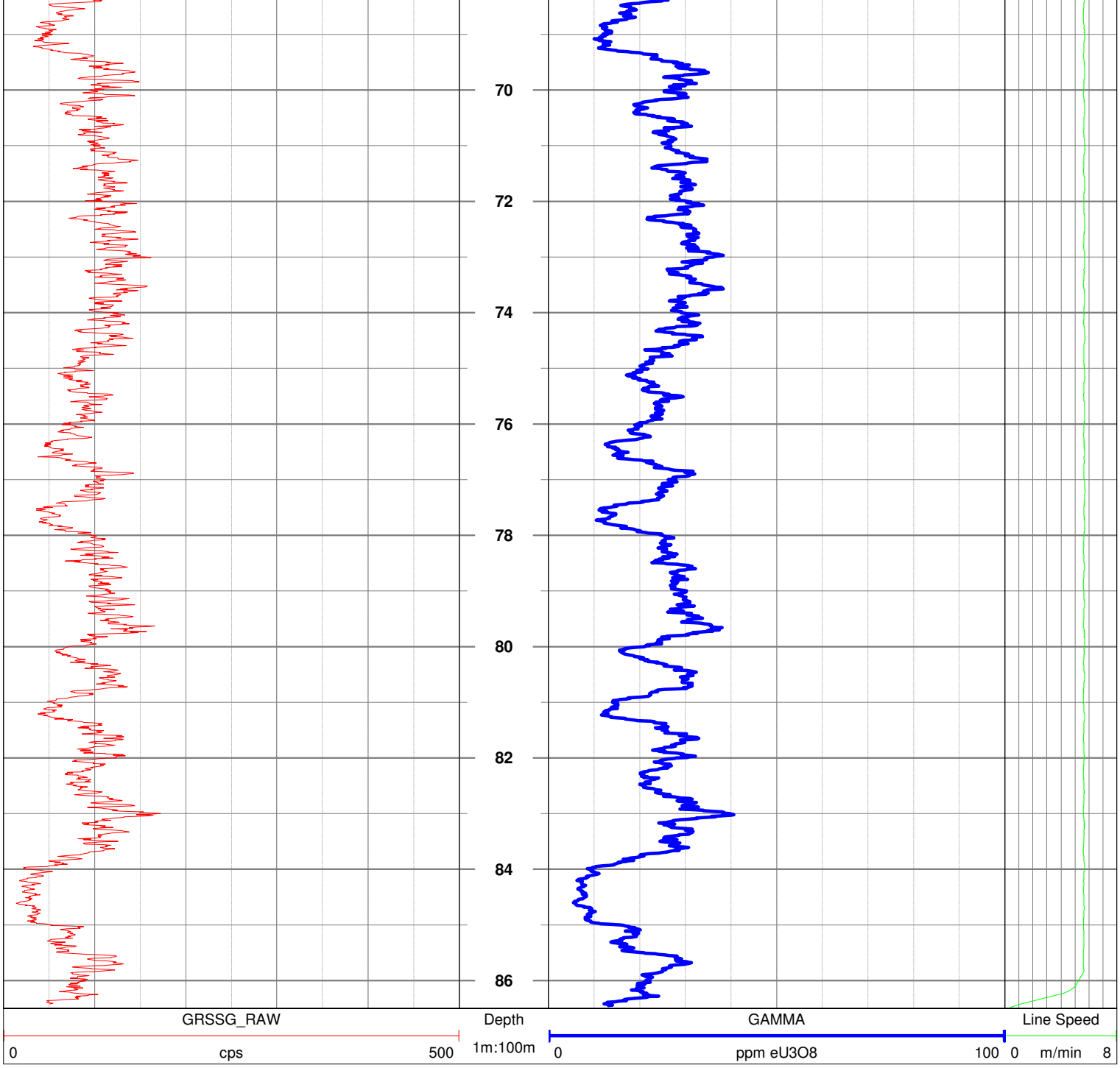
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Depth
1m:100m
GAMMA
0
ppm eU3O8
100
Line Speed
0
m/min
8

GAA WIRELINE

WIRELINE LOGGING AND INTERPRETATION SERVICES

COMPANY ***UXA RESOURCES***

WELL	UWI	LOG TYPE
NNRC46		**GAMMA**

SCALE	1:100	STATE	**NT** PROVINCE NABARLEK
LAT.	LONG. ELEVATION m	UNIT	**AL23** DRILLED BY RIG NO
FIELD	**NABARLEK NORTH**	EASTING	NORTHING DATUM GDA94 COORD MGA53
RECORDED BY	**GERARD CONLON**	LOCATION	**EL 24868**
WITNESSED BY		LOG DATE	**24/08/2011**
FLUID TEMP	degrees celsius	DATUM	**GL**
FLUID TYPE		DRILLED DEPTH	**90** m
FLUID LEVEL	m	LOGGED DEPTH	**86.9** m
		INT LOGGED	**0-86.9** m

RUNS		START	FINISH	TOOL ID	Coefficient
Circulation					
1	**Gamma**			***SSG02***	2.45
2					
3					
4					
5					
6					

BOREHOLE RECORD

BIT SIZE	FROM (m)	TO (m)
5.5"	0	TD

CASING COMPLETION RECORD

CASE TYPE	SIZE	FROM (m)	TO (m)
RODS	4.5"	0	TD

REMARKS Collar - 60 degrees towards 270. Logged Through Drill Rods - Coefficient 2.45. Rod Hole Size Correction 1.00875

GAA Wireline (08) 8393 0900

Tool ID SSG02

GAA GAMMA

Calibration Factors (108mm pit)

Calibration Date 29/08/2011

API

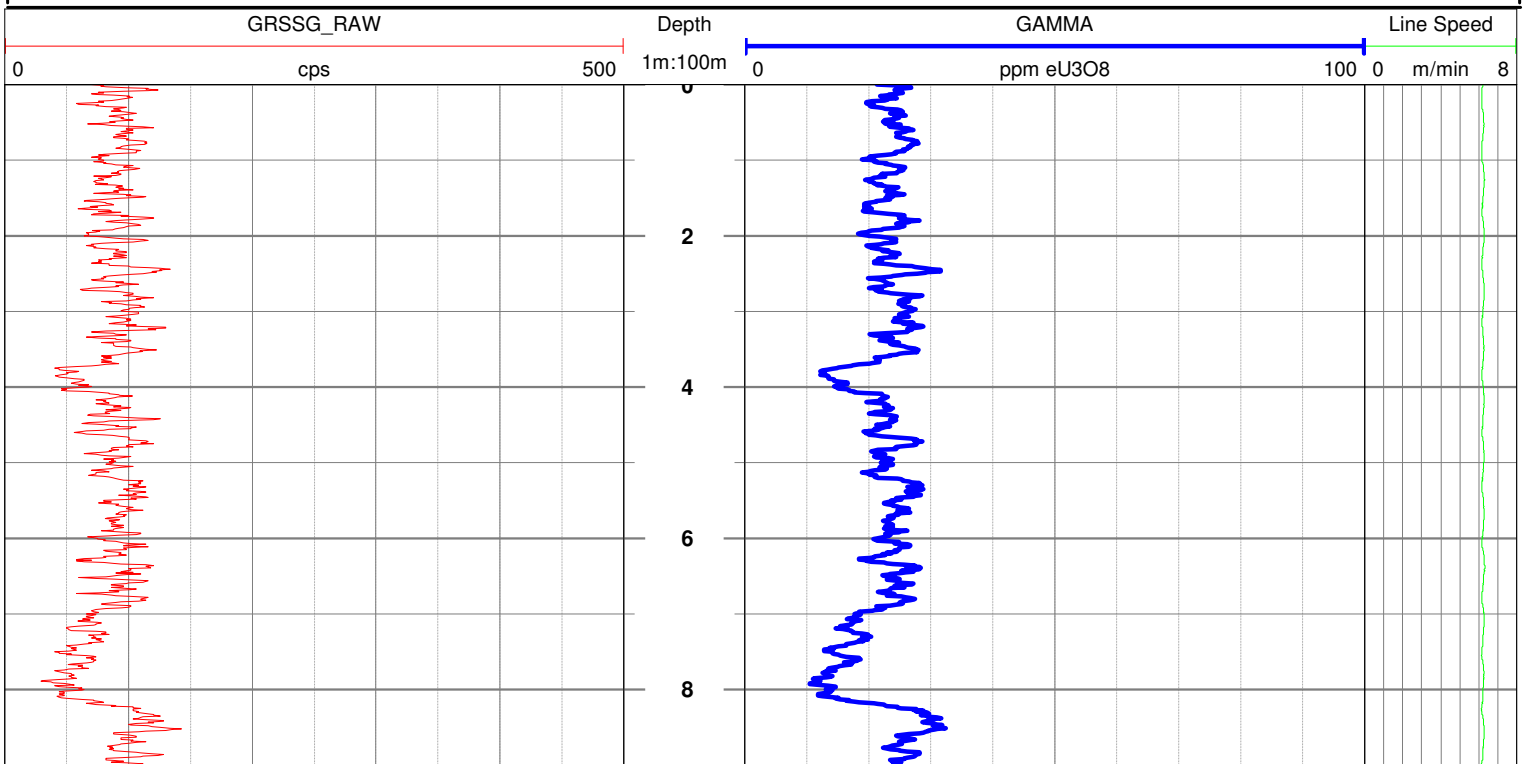
K Factor 0.0000105201662

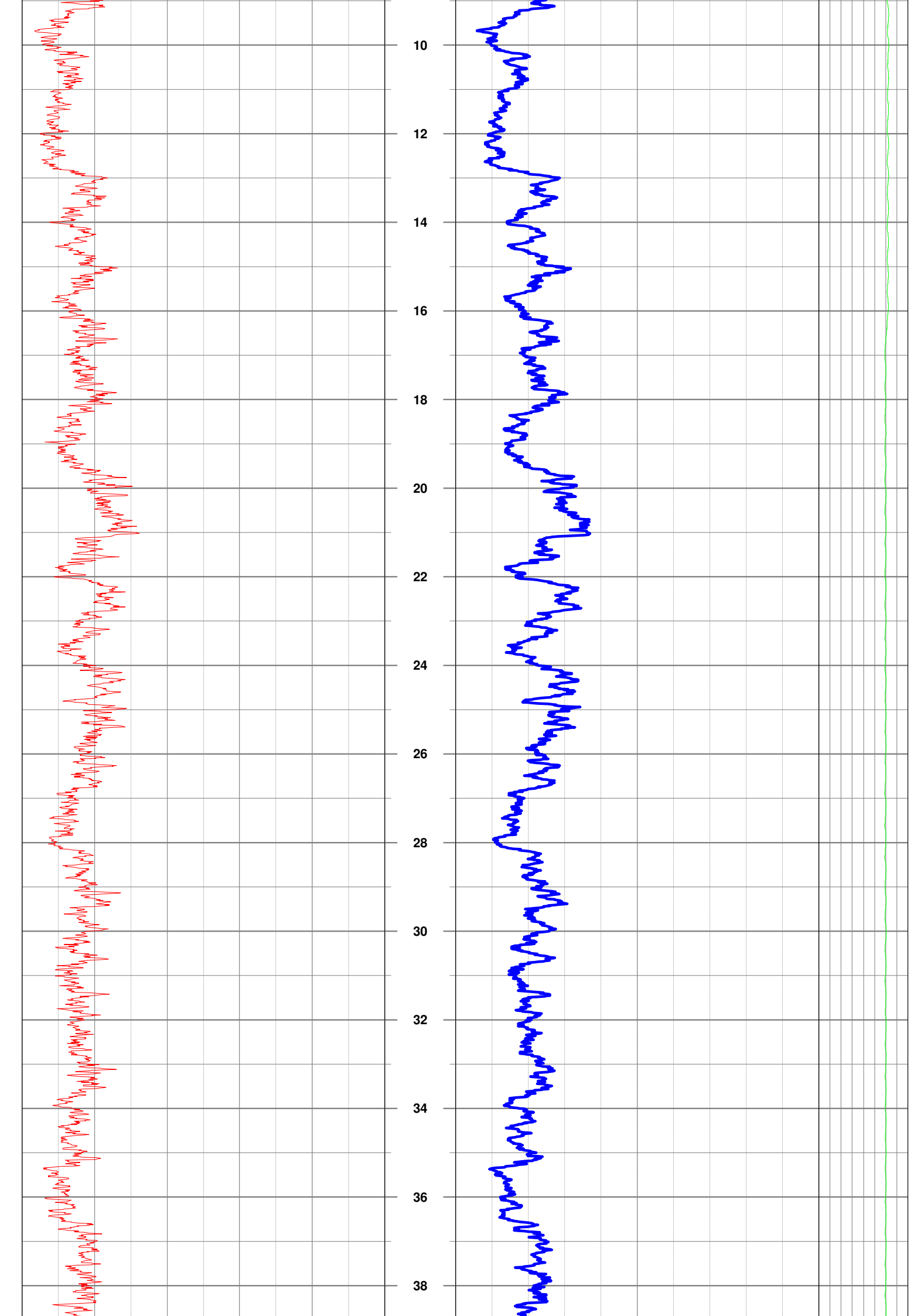
Hole Correction 0.1394ln(x) + 0.3482

Correction Factors

Dead Time 0.0000167355

TOOL LENGTH 0.90 METRES. DIAMETER 38mm

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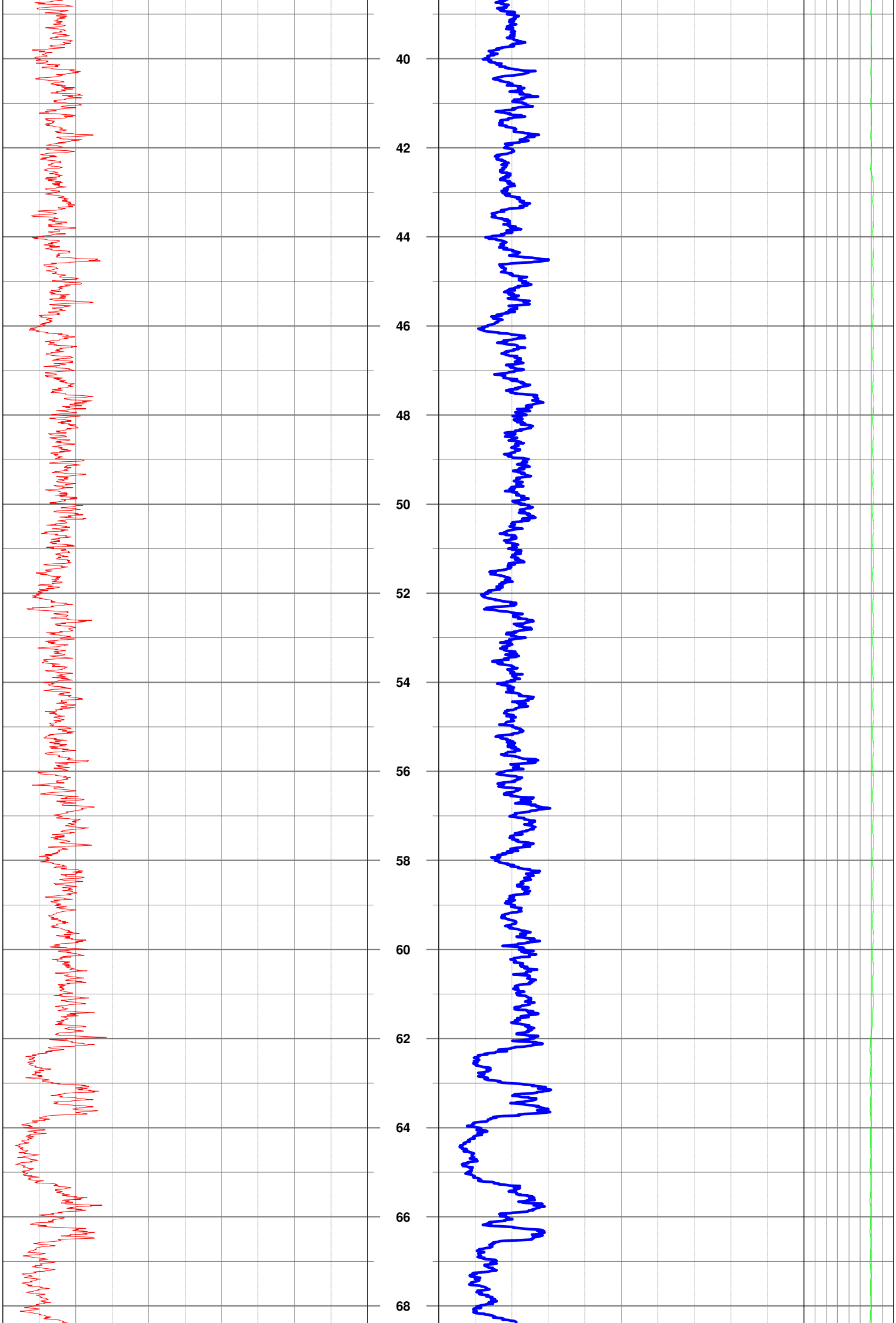
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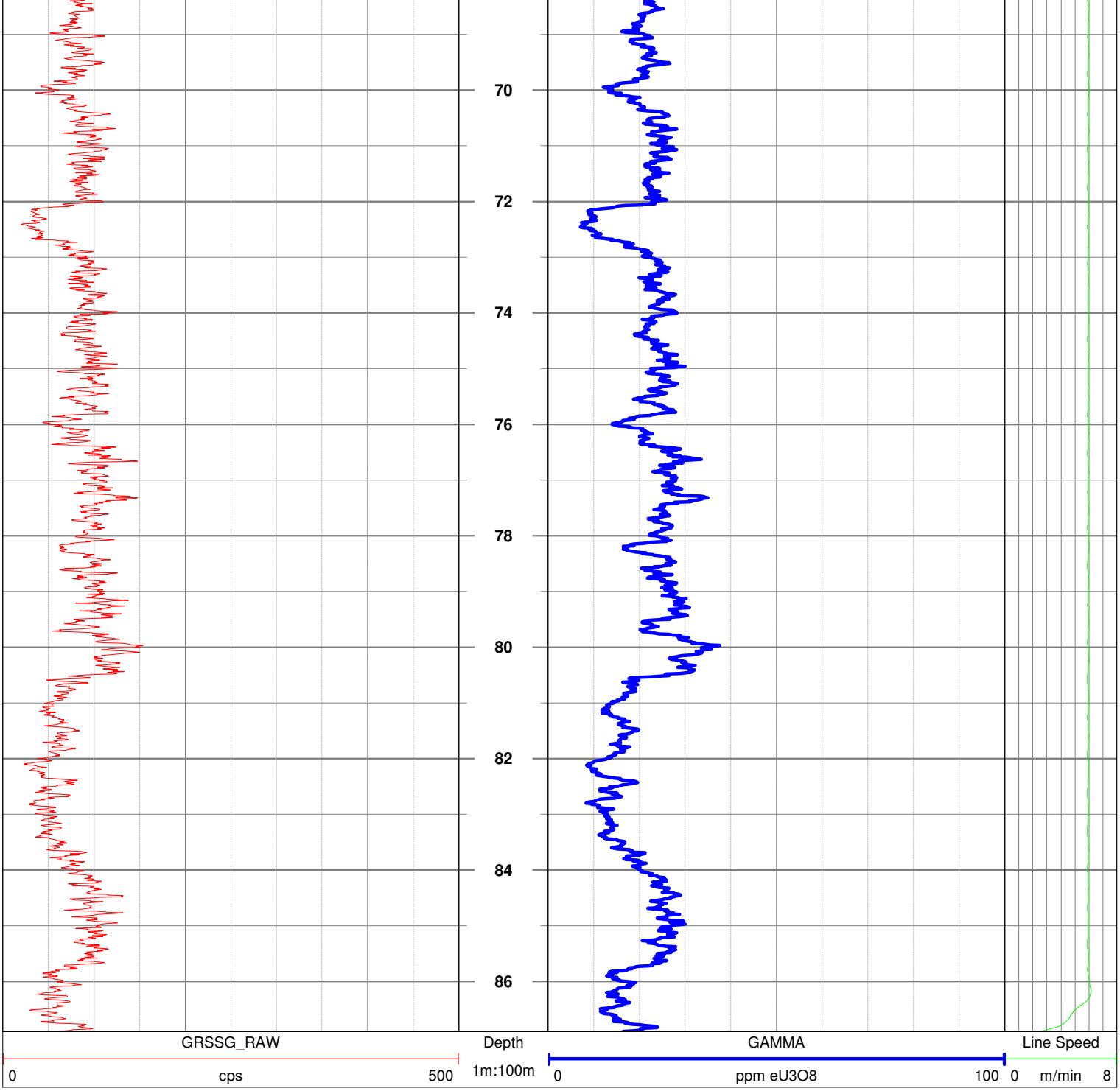
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APPENDIX 7

Petrological Report

Pontifex & Associates Pty Ltd

MINERALOGY – PETROLOGY · SECTION PREPARATION

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MINERALOGICAL REPORT No. 9985

by Alan C. Purvis, PhD

September 30th, 2011

TO :	Mr Simon Powell Exploration Manager UXA Resources Ltd 43a Fullarton Road KENT TOWN SA 5067
YOUR REFERENCE :	Memo from Jurgen Schusterbauer 16/8/11
MATERIAL :	Narbarlek North RC Drill Chips (Hole Nos. RC11 to 14)
IDENTIFICATION :	500000 to 500006
WORK REQUESTED :	Thin section preparation, description and report with comments as specified.
SAMPLES & SECTIONS :	Returned to you with hard copy of this report.
DIGITAL COPY :	Emailed 6/10/11 to: <spowell@uxa.com.au>

PONTIFEX & ASSOCIATES PTY. LTD.

SUMMARY COMMENTS

Seven chip samples described from thin sections of the chips mounted in epoxy in this report are from RC holes RC11-14 at UXA Resources' Nabarlek North tenement. Selected photomicrographs are integrated with the individual descriptions.

Your covering memo indicates that the RC holes were drilled into part of the Achaean-Palaeoproterozoic Nimbuwah Domain on the eastern side of the Pine Creek Orogen (Polito et al, 2011 and references therein). The Nimbuwah Domain is unconformably overlain by unmetamorphosed arenites and mafic volcanic rocks belonging to the Kombolgie Subgroup, which is the basal succession of the Proterozoic Katherine River Group (Sweet et al. 1999, see references at the end of this summary).

A summary is provided by the following listing of headers from the individual descriptions followed by discussion.

500000: RC11, 79m:
Chips mostly of quartz-feldspar-biotite schist and gneiss, with minor to abundant sericitised fibrolitic sillimanite in two chips. Interpreted as psammitic and pelitic metasediment

500001: RC12, 75m:
Altered granulose quartz-biotite-plagioclase-sillimanite-K-spar-muscovite schist, with sericite-clay-carbonate alteration

500002: RC13, 25m:
Weathered biotite-quartz-bearing amphibolite, with quartz-rich veins and chips of vein-quartz.

500003: RC13, 70m:
Large gneissic chips of composite quartz, K-spar, partly sericitised plagioclase, partly clay-altered biotite and muscovite ± garnet ± sericite ex-fibrolitic sillimanite. Smaller chips of quartz-feldspar-biotite-muscovite, + weakly sericitised plagioclase ± K-spar. Interpreted as quartzofeldspathic to semipelitic metasediments.

500004: RC14, 45m:
Altered quartz-biotite amphibolite with sericitised plagioclase, partly chlorite/clay-altered biotite, locally with prehnite parallel to the cleavage, and olive-green hornblende. Interpreted as metamorphosed mafic material; possibly silicified.

500005: RC14, 75m. Chips variously as follows:

- Quartz-rich gneissic chips with albite/sericite-altered plagioclase, partly clay-chlorite-altered biotite, post-tectonic muscovite and sericite ex-fibrolitic sillimanite (psammite/pelite)
- One chip with K-feldspar, quartz, partly sericitised plagioclase, altered biotite and sericite ex-fibrolitic sillimanite (pelite?)
- One chip with quartz, garnet, altered biotite and muscovite (semipelitic)
- One chip of granular pyrite enclosing muscovite and biotite.

500006: RC11, 40m. Chips variously as follows:

- Quartz-rich quartz-feldspar-biotite schist ± muscovite (psammite)
- Plagioclase-rich quartz-feldspar-biotite schist ± K-spar (possible psammite)
- Plagioclase-rich mafic amphibolite and quartzofeldspathic material with hornblende
- Biotite-bearing quartz-poor mafic amphibolite

Discussion

As indicated above, these samples are from the metamorphic basement to the Macarthur Basin, forming part of the Pine Creek Orogen, as summarised in Polito et al, 2011. The Pine Creek Orogen is divided into three domains, which from west to east are the Litchfield Province, the Central Domain, and the Nimbuwah Domain. The principal U deposits in the ARUF (Alligator Rivers Uranium Field); Jabiluka, Ranger, Nabarlek and Koongarra, all located within the Nimbuwah Domain. The Nimbuwah Domain comprises the 2520 ± 3 Ma Nanambu Complex, the Kakadu Group, the Cahill Formation and the Nourlangie Schist. The 1870 ± 6 Ma Zamu Dolerite intrudes the Cahill Formation and Nourlangie Schist placing a younger age on these formations.

Mineralisation in the Nabarlek deposit is considered to be hosted by Nourlangie Schist and the samples described in this report may belong to this unit, which has psammitic and pelitic schists accompanied by amphibolites. Peak metamorphism in these samples is close to the transition between sillimanite-muscovite and sillimanite-K-spar zones of the amphibolite facies, locally with garnet in semipelitic and pelitic schists, and with olive-green hornblende in amphibolites. The hornblende colour may indicate less titanium than in high amphibolite to granulite facies mafic-derived metamorphic lithologies, consistent with the evidence from the metasediments. These samples commonly contain sericite ex-plagioclase and fibrolitic sillimanite, with some

fresh or albitised plagioclase, also minor K-feldspar that is mostly fresh but locally contains carbonate ± clay.

Polito et al indicate that U mineralisation occurs equally in illite/sericite-dominated assemblages and illite-chlorite assemblages. It is unclear however whether all sericite/illite alteration is of equal significance to uranium deposition, eg clays in sample 500002 seem to have resulted from weathering. The origin of pyrite in sample 500005 is unclear, but supergene or low temperature hydrothermal pyrite seems likely.

REFERENCES

P. A. POLITO, T. K. KYSER, P. ALEXANDRE, E. E. HIATT & C. R. STANLEY (2011): Advances in understanding the Kombolgie Subgroup and unconformity-related uranium deposits in the Alligator Rivers Uranium Field and how to explore for them using lithogeochemical principles, *Australian Journal of Earth Sciences*, **58:5**, 453-474

I. P. SWEET., A. T. BRAKEL & L. CARSON 1999: The Kombolgie Subgroup—a new look at an old 'formation.' *AGSO Research Newsletter* **30**, 26–28.

INDIVIDUAL DESCRIPTIONS

500000: RC11, 79m **Chips of mostly quartz-feldspar-biotite schist and gneiss, with minor to abundant sericitised fibrolitic sillimanite in two chips. Interpreted as psammitic and pelitic metasediment**

Several chips in this thin section consist of altered quartz-feldspar-biotite-muscovite schist with abundant (55-85%) quartz as interlocking anhedral grains to 4mm long in some chips and to 2mm in others. Suggested mostly sericitised or sericite-clouded plagioclase is common to abundant. Schistose biotite has been altered to clay or chlorite, and is partly present in micaceous lamellae with minor partly post-tectonic muscovite.

One chip is largely quartzofeldspathic gneiss with weakly sericitised plagioclase to 2.5mm in grainsize and quartz as interstitial grains to 7mm long as well as altered biotite, disseminated and in a layer along one side of the chip. These chips seem to represent original psammites.

Other chips contain minor to abundant micaceous laminae/foliae with altered biotite, muscovite and sericite, including sericite derived from fibrolitic sillimanite. These chips have quartz ± sericite-clouded plagioclase, and appear to represent semipelite and pelite.

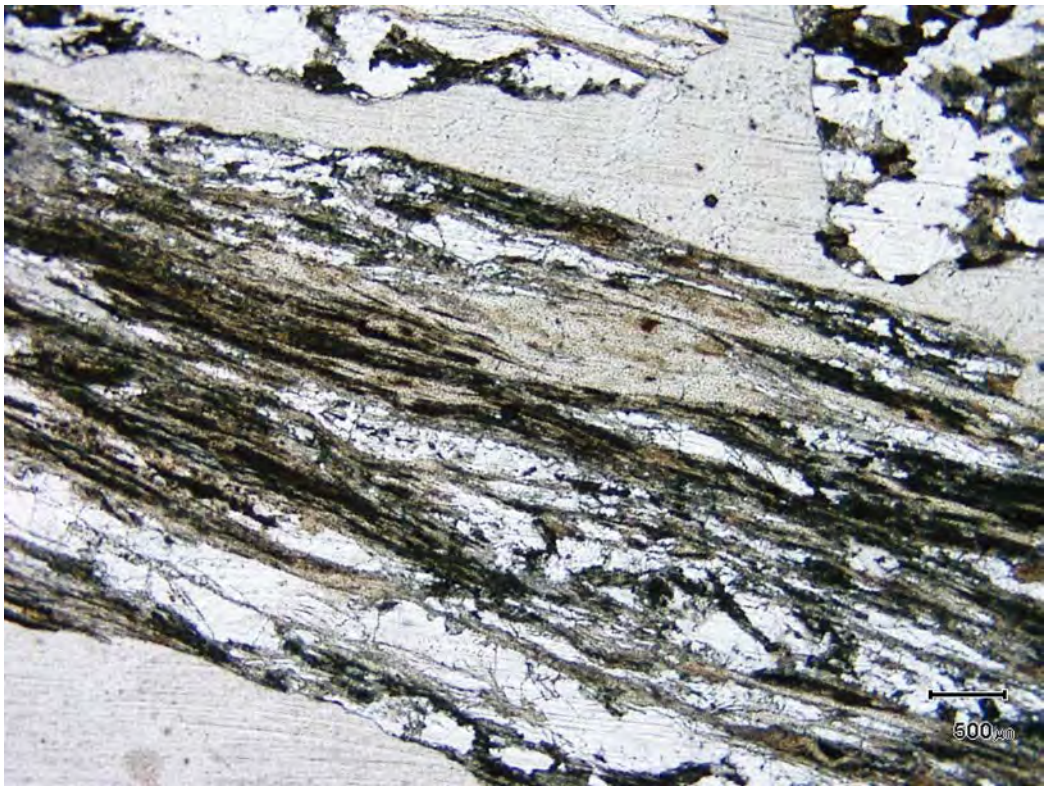


Fig 1 **500000** **500 µm**

Thin section (TS), Ordinary light (OL). Magnification (x20). Central 'large' chip in this photo is an example of pelitic schist, with dark streaky foliae of partly altered biotite ± sericite interlayered with clear white laminae of quartz and feldspar.

Fig 2 **500000** **500 µm**

TS. OL. (x20). Microgneiss (metapsammite), white clear granulose quartz and altered feldspar mosaic. Dark schistose biotite SW quadrant.

500001: RC12, 75m **Altered, granulose quartz-biotite-plagioclase-sillimanite-K-spar-muscovite schist with sericite-clay-carbonate alteration.**

These chips represent pelitic or semipelitic schists with an overall visually estimated mineralogy containing 46% quartz, 19-20% clay-chlorite-leucoxene-altered biotite, 15% sericitised plagioclase, 15% fresh or sericitised fibrolitic sillimanite, 3% post-tectonic muscovite and 1-2% K-spar, mostly in a single chip.

Most chips include quartz-rich quartzofeldspathic lenses and laminations to 3 or 4mm thick with minor sericitised plagioclase and minor altered biotite. The quartz is anhedral and as much as 2mm in grainsize, with mostly fine-grained plagioclase and biotite, but one chip has orthoclase to 2.5mm in grainsize. One K-spar grain contains carbonate and is clay-clouded. Laminae of altered biotite, mostly sericitised fibrolitic sillimanite and sparse post-tectonic muscovite are common, with some fibrolitic sillimanite also in quartz.

This sample has sericite-clay-carbonate alteration.

Fig 3 **500001** **500 µm**

TS. OL. (x20). Granulose clear quartz, clouded feldspar metamorphic mosaic, incorporating dark schistose partly altered biotite and fibrolitic sillimanite.

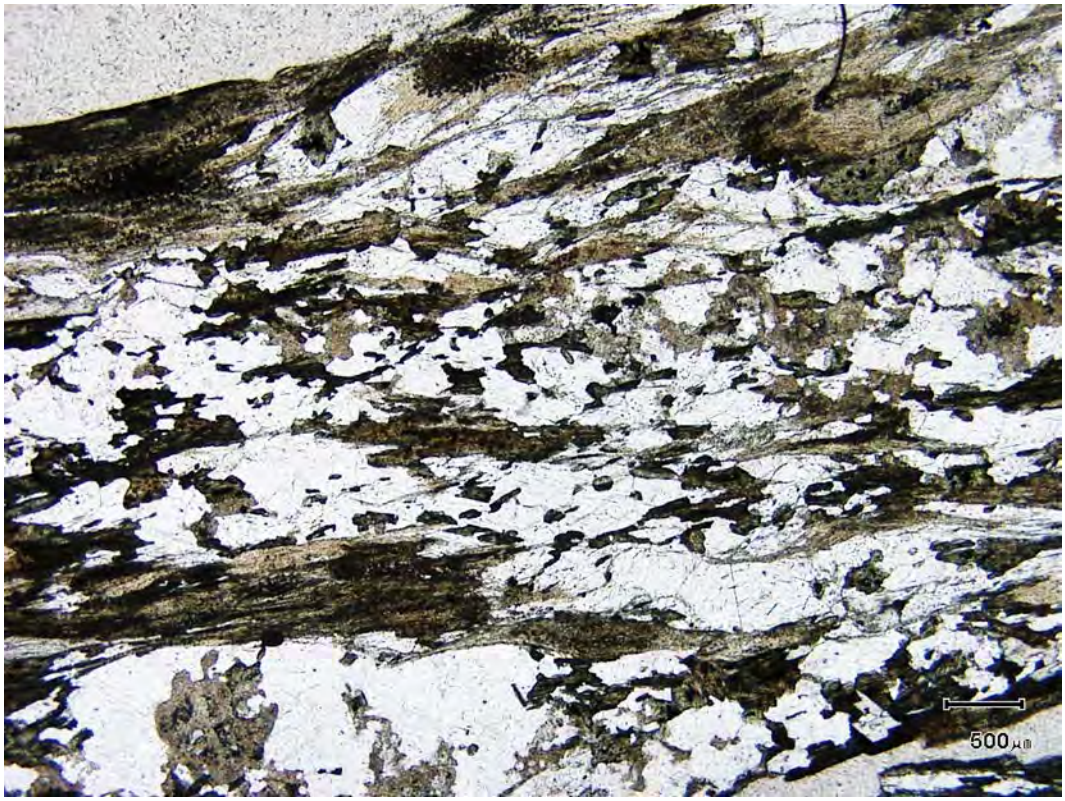


Fig 4 **500001** **500 µm**

TS. OL. (x20). Granulose schist with more (clouded) sillimanite, together with biotite than in Fig 3.

500002: RC13, 25m **Weathered biotite-quartz-bearing amphibolite with quartz-rich veins and chips of vein-quartz.**

Most of the chips in this thin section seem to represent weathered biotite and quartz-bearing amphibolite with clays replacing amphibole and plagioclase.

Several chips contain fresh or altered biotite, with clay ± earthy hematite replacing probable biotite in some chips. One chip has fresh green hornblende to 4mm long and there are also chips with veins containing quartz, clay and limonite or earthy hematite. One chip has a vein of granular quartz with limonite and sparse leucoxene derived from platy opaque oxide, which may have been hematite or ilmenite.

Chips of vein-quartz are also present, some of which have quartz grains elongate at a high angle to their c-axes. Other vein-quartz chips contain granular quartz, however.

Fig 5 **500002** **200 µm**

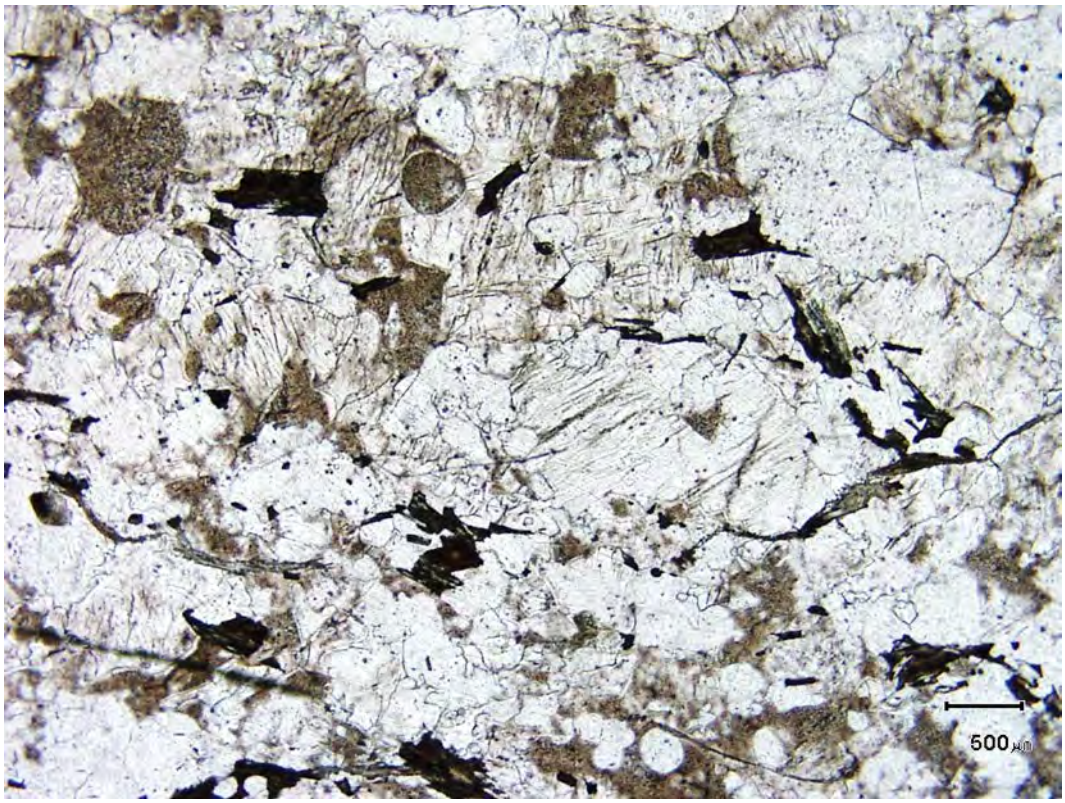
TS. OL. (x50). Weathered amphibolite, with green commonly aligned altered hornblende, within metamorphic mosaic of dusty/altered plagioclase. Rare white quartz and opaque oxide grains.

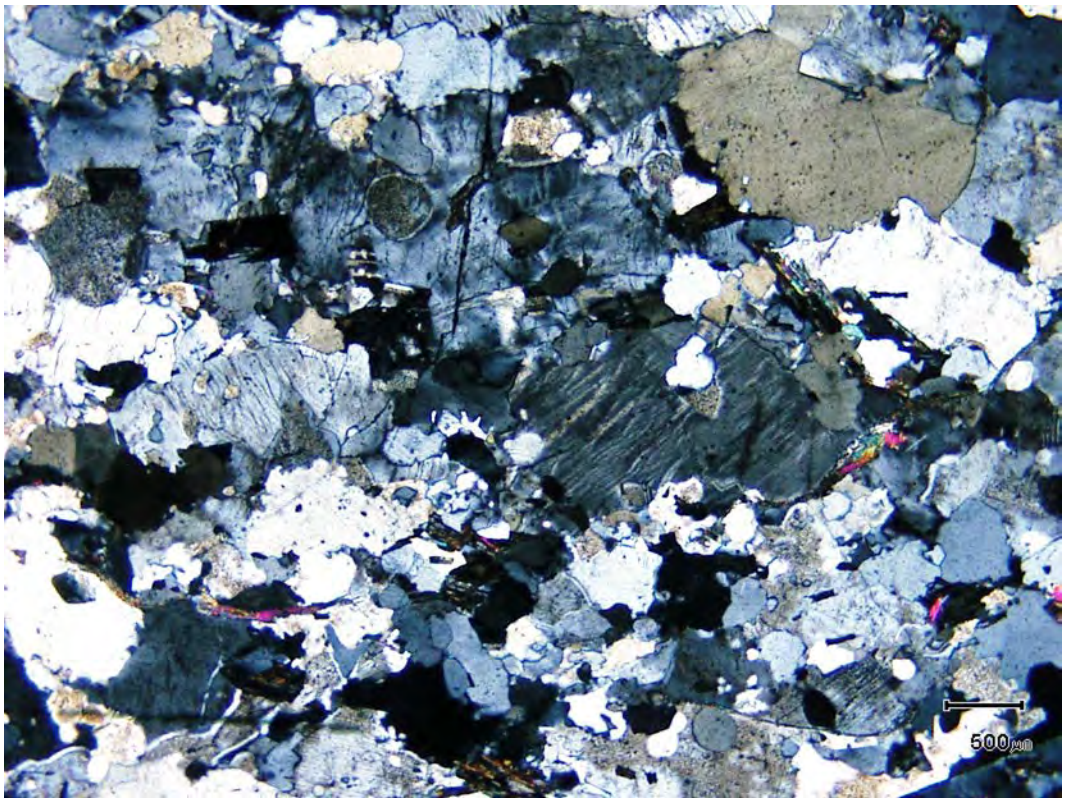
500003: RC13, 70m **Large gneissic chips of composite quartz, K-spar, partly sericitised plagioclase, partly clay-altered biotite and muscovite ± garnet ± sericite ex-fibrolitic sillimanite. Smaller chips of quartz-feldspar-biotite-muscovite, ± weakly sericitised plagioclase ± K-spar. Interpreted as quartzofeldspathic to semipelitic metasediments.**

Larger chips in this thin section are mostly granular-gneissic and variously rich in quartz, K-spar (perthitic orthoclase or microcline) and plagioclase, to 2 or 3mm in grainsize, commonly with minor clay-chlorite-altered biotite and muscovite or lenses of sericitised fibrolitic sillimanite. One chip also contains sparse fine-grained garnet.

Two strongly foliated chips are rich in muscovite and altered biotite together with quartz-rich lenses. One of these chips also contains weakly sericitised plagioclase and a lens of sericite possibly ex-sillimanite. These chips may represent psammitic and semipelitic metasediments.

Some of the smaller chips in this thin section consist of laminated quartz-feldspar-biotite schist with various proportions of quartz, fresh or sericitised plagioclase and fresh or clay-leucoxene-altered biotite. A large laminated chip is largely quartzofeldspathic, quartz, sericite-clouded plagioclase and sparse K-spar, but finer-grained than the other large chips and richer in schistose biotite, disseminated and in a lamination with minor muscovite. These may also represent semipelitic metasediment.





Figs 6 & 7 **500003** **500 µm**

TS. Fig 6: OL. Fig 7: Xnic. (x20). Granular-gneissic mosaic of quartz, K-spar, cloudy sericitised plagioclase, minor altered dark biotite, muscovite.

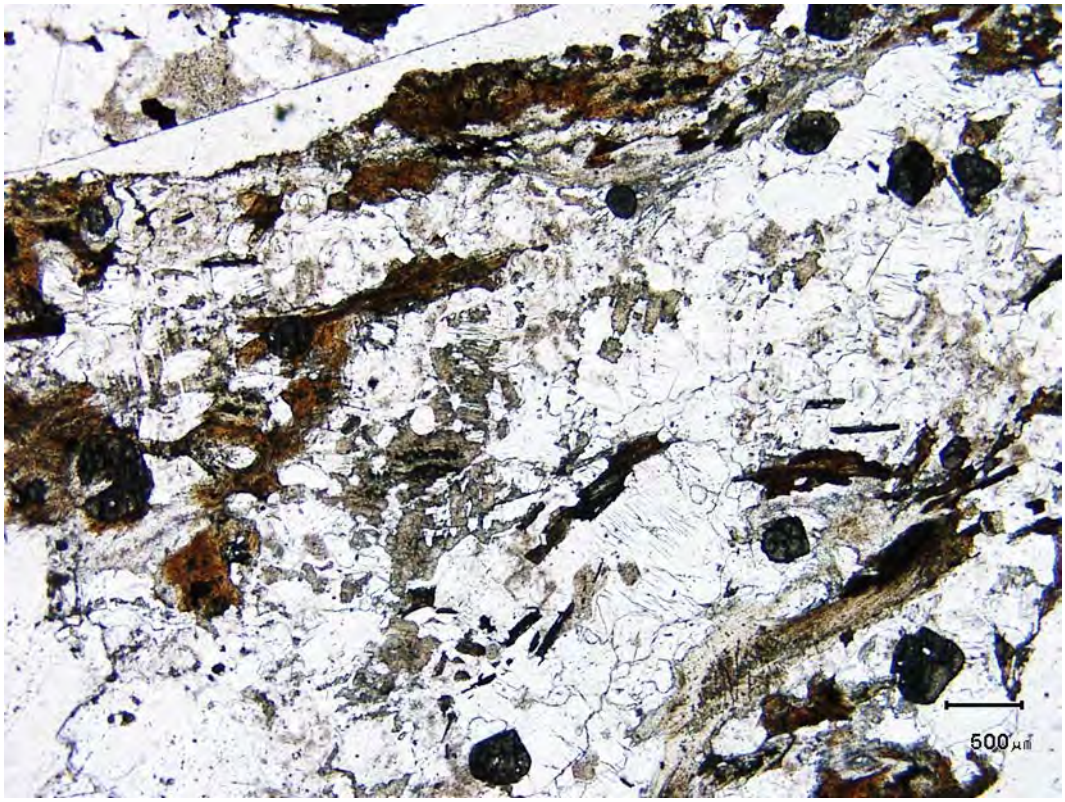


Fig 8 **500003** **500 µm**

TS. OL. (x20). Gneiss basically as in Figs 6 & 7, but with several dark fibrous prisms of altered sillimanite and small dark garnets.

500004: RC14, 45m **Altered quartz-biotite amphibolite with sericitised plagioclase, partly chlorite/clay-altered biotite, locally with prehnite parallel to the cleavage, and olive-green hornblende: metamorphosed mafic material, possibly silicified.**

This sample represents fresher biotite and quartz-bearing amphibolite than that in the amphibolite sample 500002. It has chips with various proportions of olive-green hornblende, weakly to strongly sericitised plagioclase, schistose biotite and fine to coarse-grained quartz. The hornblende is granular to prismatic and weakly foliated, with some chips having grains to 2mm long, but most chips have fine-grained hornblende. The plagioclase is irregularly disseminated, locally with abundant fine-grained quartz, but some coarse-grained quartz, to 3 or 4mm long, occurs in a quartz-plagioclase lens in one of the chips. Quartz varies in abundant from 2-3% to possibly 10% where the quartz is fine-grained and 20% with coarse-grained quartz. Biotite flakes to 2mm long are commonly fresh but locally altered to chlorite or clay. Some of the biotite has prehnite parallel to the cleavage.

This sample may represent metamorphosed mafic material with quartz partly in a boudinaged quartzofeldspathic vein and partly of metamorphic origin.

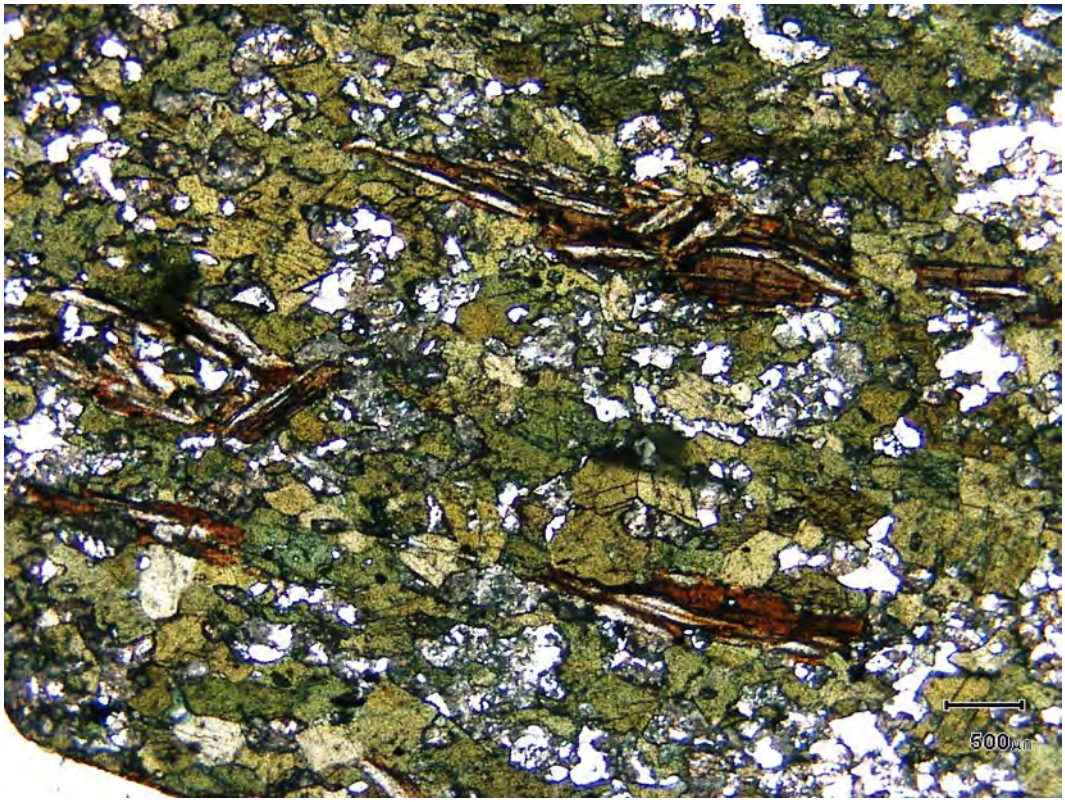


Fig 9 **500004**

TS, OL. (x20). Amphibolite with bronze-green hornblende incorporating oriented flakes of dark biotite with internal white laminae of prehnite along cleavages. Scattered small white grains of quartz interstitial.

500005: RC14, 75m

- **Quartz-rich gneissic chips with albite/sericite-altered plagioclase, partly clay-chlorite-altered biotite, post-tectonic muscovite and sericite ex-fibrolitic sillimanite (psammite/pelite)**
- **A chip with K-feldspar, quartz, partly sericitised plagioclase, altered biotite and sericite ex-fibrolitic sillimanite (pelite?)**
- **A chip with quartz, garnet, altered biotite and muscovite (semipelitic)**
- **A chip of granular pyrite enclosing muscovite and biotite.**

Several chips in this thin section are dominated by gneissic coarse-grained quartz with a maximum grainsize of 4mm to 7mm in different chips. Albitised and/or sericitised plagioclase is also common, as well as partly clay-chlorite-altered recrystallised but mostly foliated biotite and irregular grains of post-tectonic muscovite.

Several other chips have sericite derived from knotted or foliated fibrolitic sillimanite and there are rare irregular grains of clouded garnet in two chips. One large chip consists of a microcline grain 8mm in diameter as well as coarse-grained quartz, minor weakly sericitised plagioclase, partly clay-chlorite altered biotite, sericitised fibrolitic sillimanite and muscovite as ragged post-tectonic grains. One biotite flake has a lens of carbonate parallel to the cleavage.

A single large quartz-rich chip also includes abundant partly clouded granular or skeletal garnet to 4mm in diameter as well as partly altered coarse-grained biotite and post-tectonic muscovite. There is also a single large chip of massive pyrite with sparse inclusions of muscovite and altered biotite.

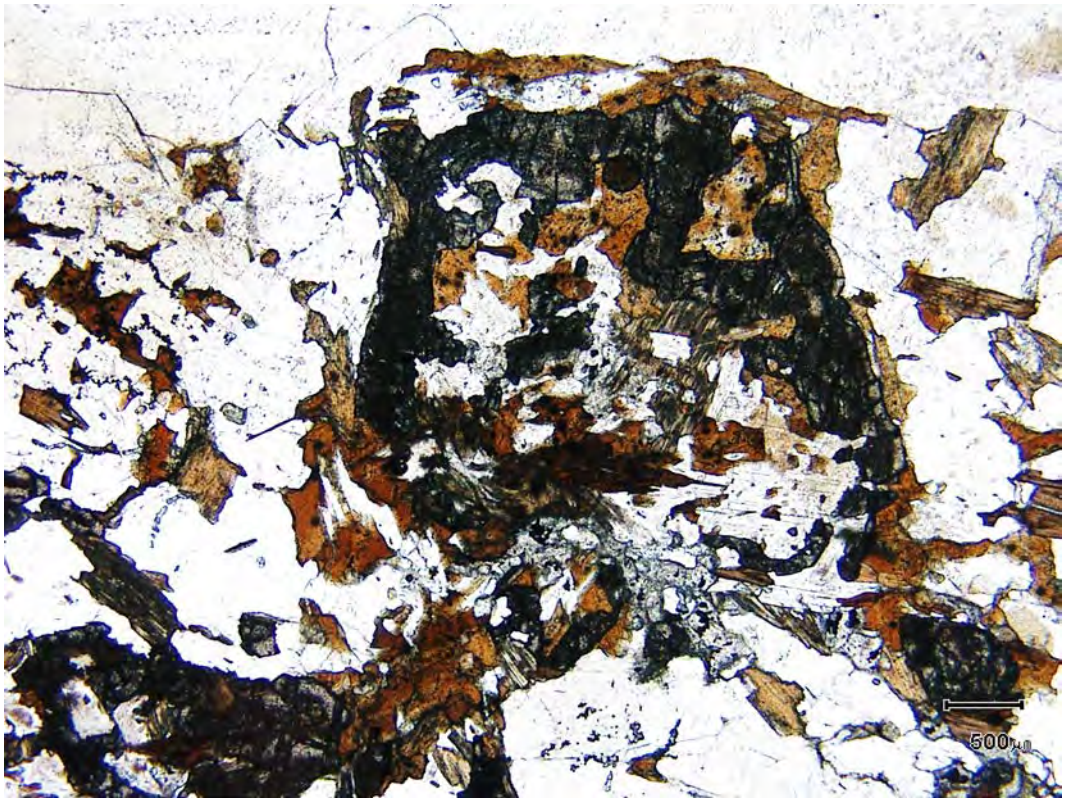


Fig 10 **500005**

TS. OL. (x20). Single gneissic chip with an unusual ring of dark garnet, intergrown with tan biotite, enclosed in white granular quartz mosaic. Minor clouded muscovite flakes.

500006: RC11, 40m

- **Quartz-rich quartz-feldspar-biotite schist ± muscovite**
- **Plagioclase-rich quartz-feldspar-biotite schist ± K-spar**
- **Plagioclase-rich mafic amphibolite and quartzofeldspathic material with hornblende**
- **Biotite-bearing quartz-poor mafic amphibolite**

Various chips occur in this thin section as follows.

- Two quartz-rich chips with quartz grains to 4mm in size accompanied by abundant totally sericitised plagioclase, minor clay-altered biotite and, in one chip, minor late muscovite. The biotite is rarely interlaminated with muscovite. These chips may represent psammite.
- A single chip rich in totally sericitised granular plagioclase to 1.5mm in grainsize with lesser K-spar (orthoclase) to 4mm, and quartz as grains to 4mm long. This chip also contains minor chloritised and sericitised foliated biotite and lamellae of sericitised fibrolitic sillimanite. Some of the K-spar has been partly replaced by poikilitic muscovite containing optically continuous orthoclase. This chip may represent pelite.
- Another chip is dominated by totally sericitised granular feldspar about 0.5mm in grainsize with minor quartz and minor clay-chlorite-leucoxene-sericite-altered weakly schistose biotite. This may be psammitic or of igneous origin.
- A heterogeneous chip has a quartzofeldspathic zone at one end, with quartz > sericitised plagioclase > olive-green hornblende and a less quartz-rich zone with sericite and minor prehnite as well as hornblende and sparse fine-grained carbonate. The rest of the chip is hornblende-poor amphibolite with abundant sericitised plagioclase, minor olive-green hornblende to 1.5mm in grainsize and minor altered biotite to 1.5mm long with sericite in lamellae parallel to the cleavage. The amount of hornblende increases away from the quartz-rich zone. Minor clear feldspar may include K-spar as well as plagioclase. Very minor quartz and titanite also occur. The amphibolite seems to be of mafic origin with a quartzofeldspathic zone of uncertain origin.
- The remaining chip is composed of normal amphibolite with abundant olive-green hornblende to 1mm in grainsize, abundant totally sericitised plagioclase and minor (7-8%) schistose biotite to 3mm long. Minor (2-3%) quartz is also disseminated but is mostly fine-grained and interstitial. This chip is of mafic origin and is similar to other amphibolites in the basement to the Kombolgie Subgroup sandstones.

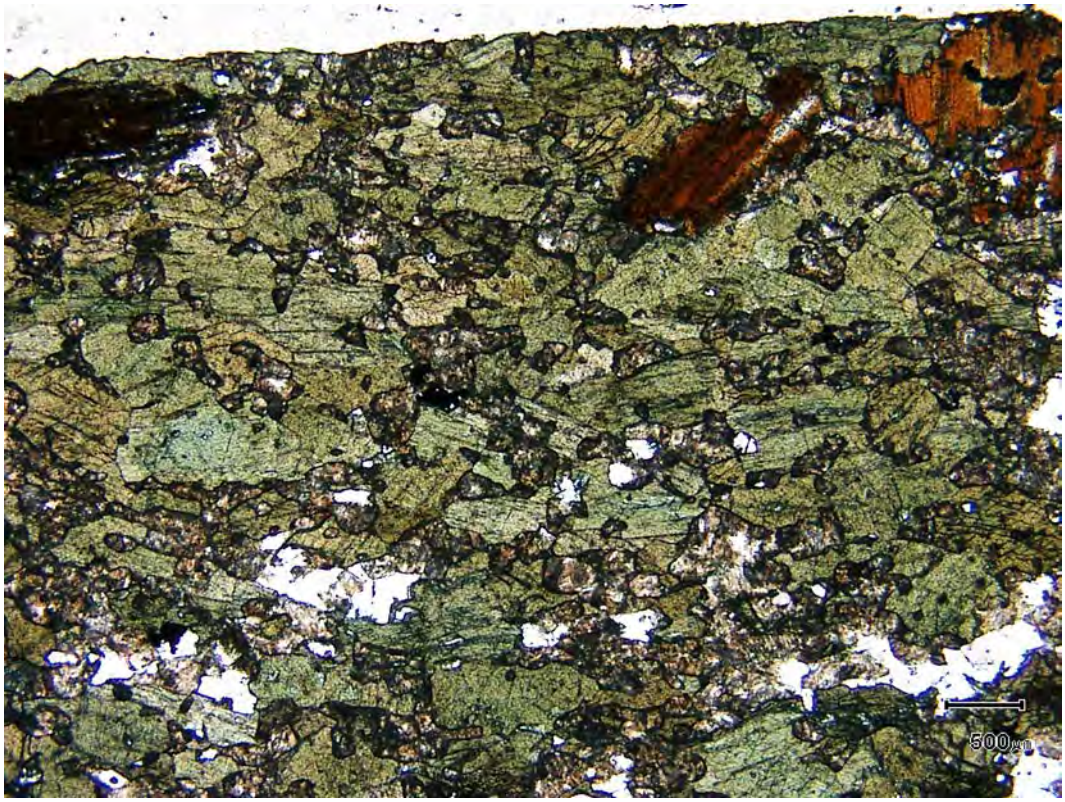
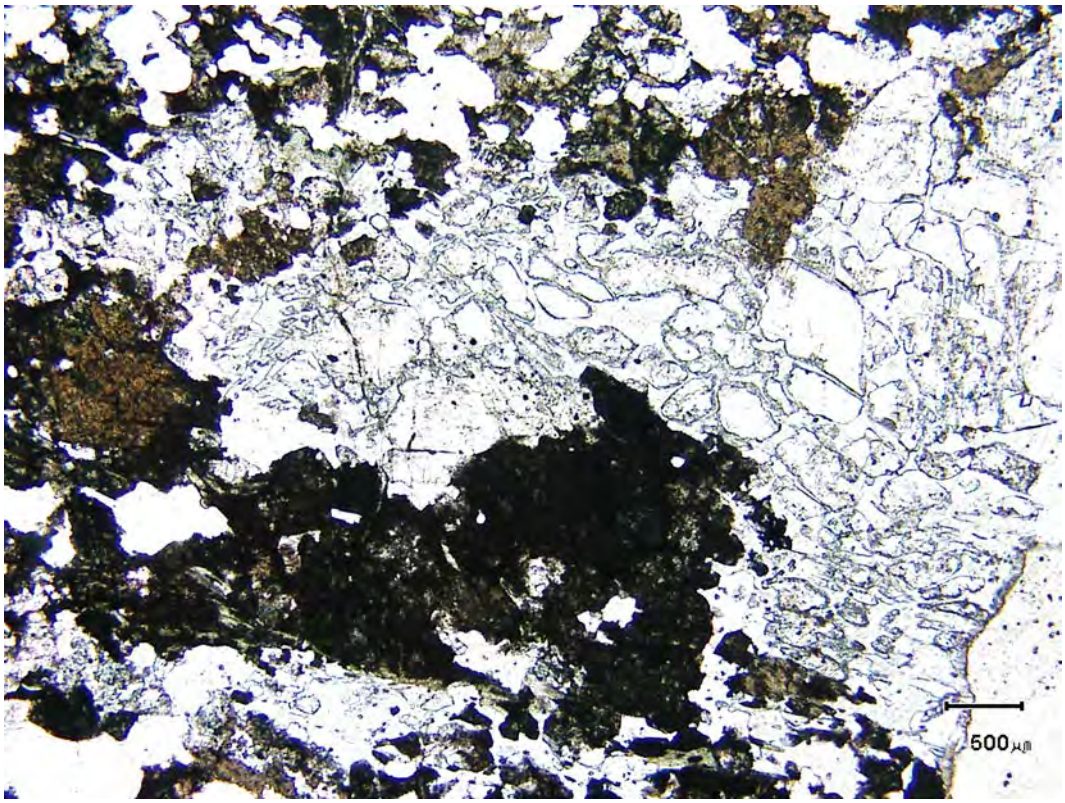
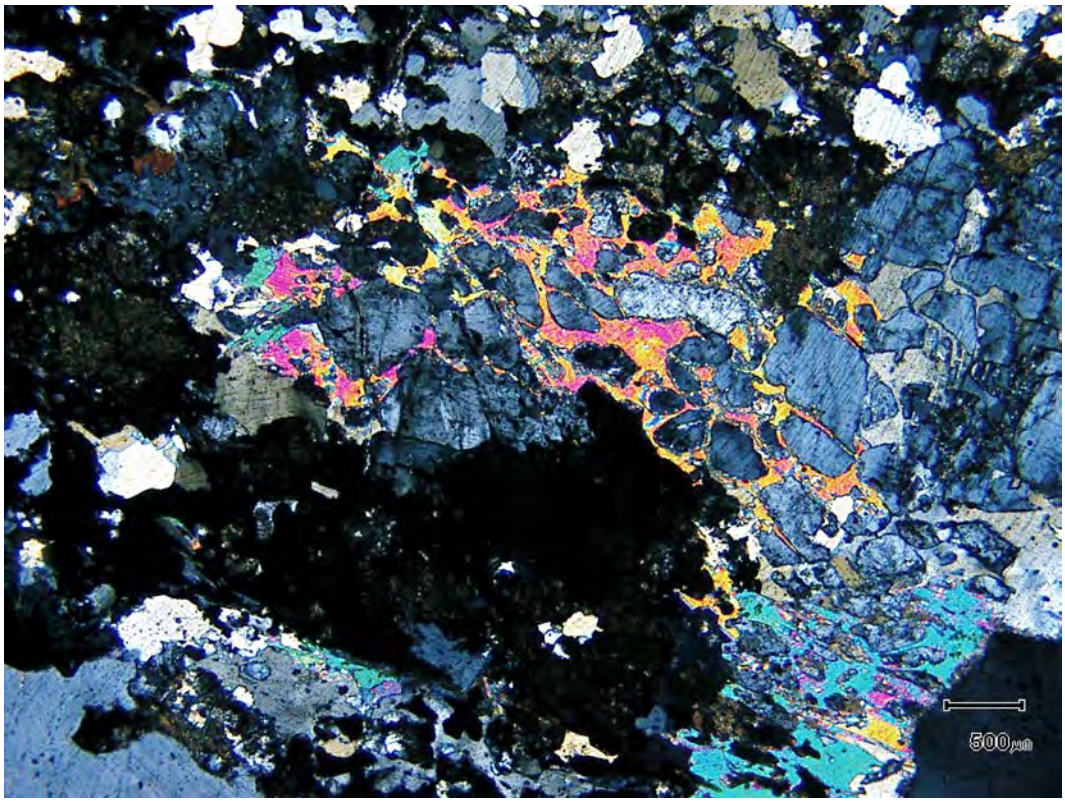


Fig 11 **500006** **500 µm**

TS. OL. (x20). One chip of amphibolite in this sample dominated by green hornblende enclosing minor brown biotite.





Figs 12 & !3 **500006** **500 µm**

TS, Fig 12 OL and Fig 13 Xnic. (x20). Another chip in this sample with dark brown clouded/altered plagioclase, with clearer areas of intergrown colourless quartz and muscovite.

Fig 14 **500006**

TS. OL. (x20). Another chip in this sample, basically a microgneiss (or granulose schist), with oriented altered biotite throughout a metamorphic mosaic of sericitised plagioclase and quartz.