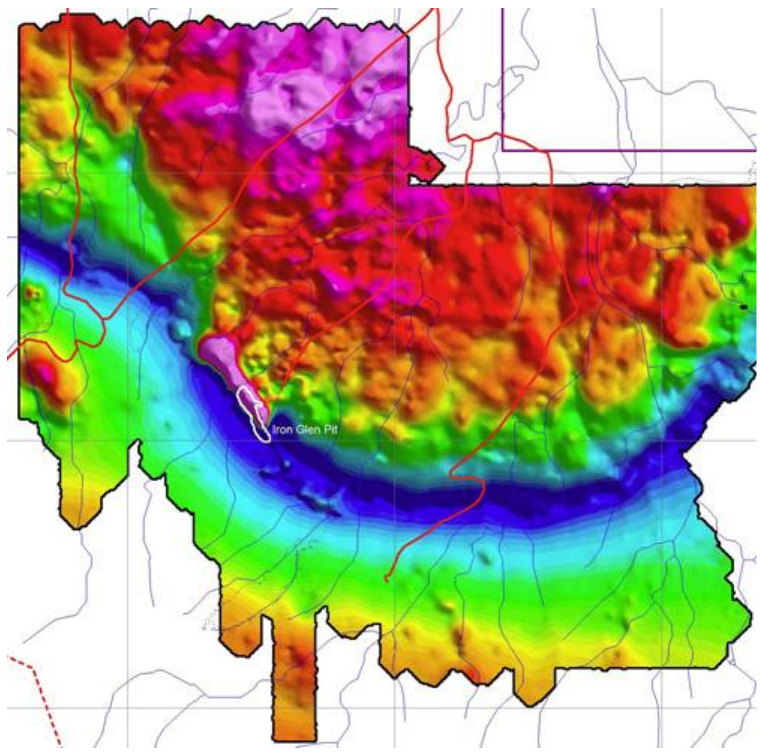
Iron Glen Project:
Northeast Queensland, Australia
Competent Persons Report (CPR)

for:

Allenby Capital Limited
Strategic Minerals plc
London, England



By

Michael D. Campbell, P.G., P.H.
and
Jeffrey D. King, P.G.

I2M Associates, LLC
Houston, Texas and Seattle, Washington

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Version 1.7

Section 2.0 Table of Contents

Figures

Tables

CPR Executive Summary

Allenby Capital Limited and Strategic Minerals plc have received a Competent Persons Report (CPR) from I2M Associates (I2M) dated March 30, 2011, and revised on May 2, 2011, on the Iron Glen tenement located in Northeast Queensland, Australia. The key elements of I2M's assessment are:

- A preliminary drilling program was completed in October, 2010, indicating that a magnetite unit occurs at depth over an area larger than an existing pit. The magnetite encountered is of sufficient thickness and quality to be of potential interest commercially and is located in proximity to local infrastructure that would support a rapid start-up of mining operations. Section 6.2 of this CPR sets out the description of the asset (tenement) suggested in the AIM Guidance Notes for Mining Companies for Appendix 1.
- I2M concurs with the determination offered by Terra Search recently that additional drilling and diamond coring are merited to determine the available resources and reserves present in the steeply dipping and faulted magnetite body.
- As suggested in the AIM Guidance Notes for Mining Companies for Appendix 2 and 3, Section 18.1 and Section 19.0 of this CPR indicate that this project just completed the preliminary drilling stage and that there are insufficient drilling data at this date to estimate resources and reserves. It calls for additional drilling for the purpose of supporting a feasibility study for establishing the available resources and reserves in the near future.
- I2M also concurs that the base-metal anomalies indicated from the recent drilling also should be investigated further.
- I2M also concludes that the skarn-related, base-metal anomalies should be pursued at depth throughout the Iron Glen tenement beyond the magnetite association.
- Two types of exploration targets are now apparent at the Iron Glen tenement. One is the magnetite; the other is an assemblage of minerals containing anomalous copper, zinc, and silver.
- The massive types of iron mineralization typically offer a superior grade of magnetite, favorable beneficiation characteristics (good separation and low phosphorous, aluminum, and titanium).
- In general, the massive magnetite zones are assigned to 40% plus iron or 60% plus magnetite.

- The magnetite bodies remain open down dip, and along strike to the north and south, but faulting is evident in those areas. Anomalous copper, lead, zinc, and silver (and vanadium) have been encountered, both within the magnetite zone and within associated zones.

- Copper in the high-grade magnetite ranges from 0.02% copper in the north to over 0.25% copper in the south, with selected rock chips of highly sulphidic material from the pit returning 2% to 3% copper.

- Of particular note, high zinc and silver analyses were reported in drilling samples within and away from the massive magnetite zones, and Hole IGRC002 returned 28 m @ 59.2 g/t silver from a downhole depth of 48 m to 76 m. This 28 m zone included a 2 m sample assaying 7 ozs silver, copper at 1% and anomalous gold and bismuth.

- I2M concurs that the base-metal anomalies indicated from the recent drilling also should be investigated further by: a) mapping structural relationships in the area to evaluate faulting and geological associations, b) assessing the various skarn models available from world-class deposits, and c) developing guides to future drilling and coring targets of opportunity developed as a result of these evaluations.

- I2M confirms that while this CPR incorporates the comprehensive format of NI 43-101, this report is also considered to be JORC-compliant as the asset is based in Australia. Certifications are provided in Section 24.0 of this CPR.

- I2M confirms that there has been no material change in conditions, assumptions, or facts regarding the Iron Glen project since our meetings and site visit in Queensland in December, 2010.

Section 3.0 Project Summary

Iron Glen Holdings Limited (Iron Glen) is a Queensland-based company that controls EPM 15654, which is located approximately 40 kms southwest of Townsville, Queensland. The Iron Glen tenement holds a permit for exploration through mid-2012, granted by the Queensland Government on May 24th, 2007. The tenement originally consisted of 8 sub-blocks. The EPM currently consists of seven sub-blocks; one was relinquished in May, 2010.

The area of primary interest is near the center of the tenement, with a current focus on an area known as the Iron Glen Pit, abandoned since 1969. Since EPM 15654 was granted on May 24th, 2007, the tenement has had several holders beginning with Walter Doyle, followed by Australian Gold Holdings Limited. It was then returned to Walter Doyle (Iron Glen Pty Ltd.) who then transferred the EPM in 2010 to Iron Glen Holdings Limited. These title holders have conducted a variety of exploration programs that included soil sampling, rock-chip sampling and some geophysics. Over the past few years, Terra Search Pty Ltd. (Terra Search) has concentrated on geological and geophysical evaluations on the Iron Glen magnetite skarn deposit and surrounding area for Iron Glen, which included researching previous exploration data and geological investigations, geological mapping, rock-chip and soil sampling, reprocessing of available aeromagnetics and satellite imagery data and of undertaking new ground-magnetics and geological mapping and associated sampling programs.

A preliminary drilling program was completed in October, 2010, indicating that the magnetite unit, known from reports of previous small-scale mining, occurs at depth over an area larger than the existing pit. The magnetite encountered is of sufficient thickness and quality to be of potential interest commercially and is located in proximity to local infrastructure that would support a rapid start-up of mining operations. Based on the drilling sampling, the quality of the magnetite appears to meet typical requirements, especially since titanium, aluminum, and phosphorus values are low. However, the available tonnage remains to be evaluated by additional drilling.

We have reviewed the available geochemical data produced during earlier exploration and from the recent drilling program, including a preliminary petrographic report on samples from the Iron Glen tenement in context with data from deposits of similar characteristics in various deposits of the world that have been mined, and have concluded that the Iron Glen property has sufficient merit established by drilling to date to recommend: 1) additional surface mapping, 2) additional geological assessment in terms of developing potential exploration models to guide future drilling, and 3) additional drilling and coring in the area of the preliminary drilling, but also north and south along the contact of the igneous intrusives where carbonate units may be in proximity or at some distance away, based on some models of mineralization.

Two types of exploration targets are now apparent at the Iron Glen tenement. One is the magnetite; the other type an assemblage of minerals containing anomalous copper, zinc, and silver. In some hole intervals, the latter are associated with the magnetite zone. These metals are also found in other hole intervals that are associated with skarn-type mineralization, an assemblage of minerals similar to those found in other deposits in various parts of the world that are being mined or have been mined in the past for these metals, and others.

Section 4.0 Introduction

4.1 Location of Property

Iron Glen engaged I2M Associates, LLC (I2M) on November 25, 2010 to provide an independent assessment and review of the current technical information and future exploration and development plans for the Iron Glen tenement located in Northeast Queensland, (see Figure 1). In the form of a Competent Persons Report (CPR), this report is to be used by Iron Glen as part of a future listing on the London Stock Exchange's international market (AIM).

4.2 Scope of Work

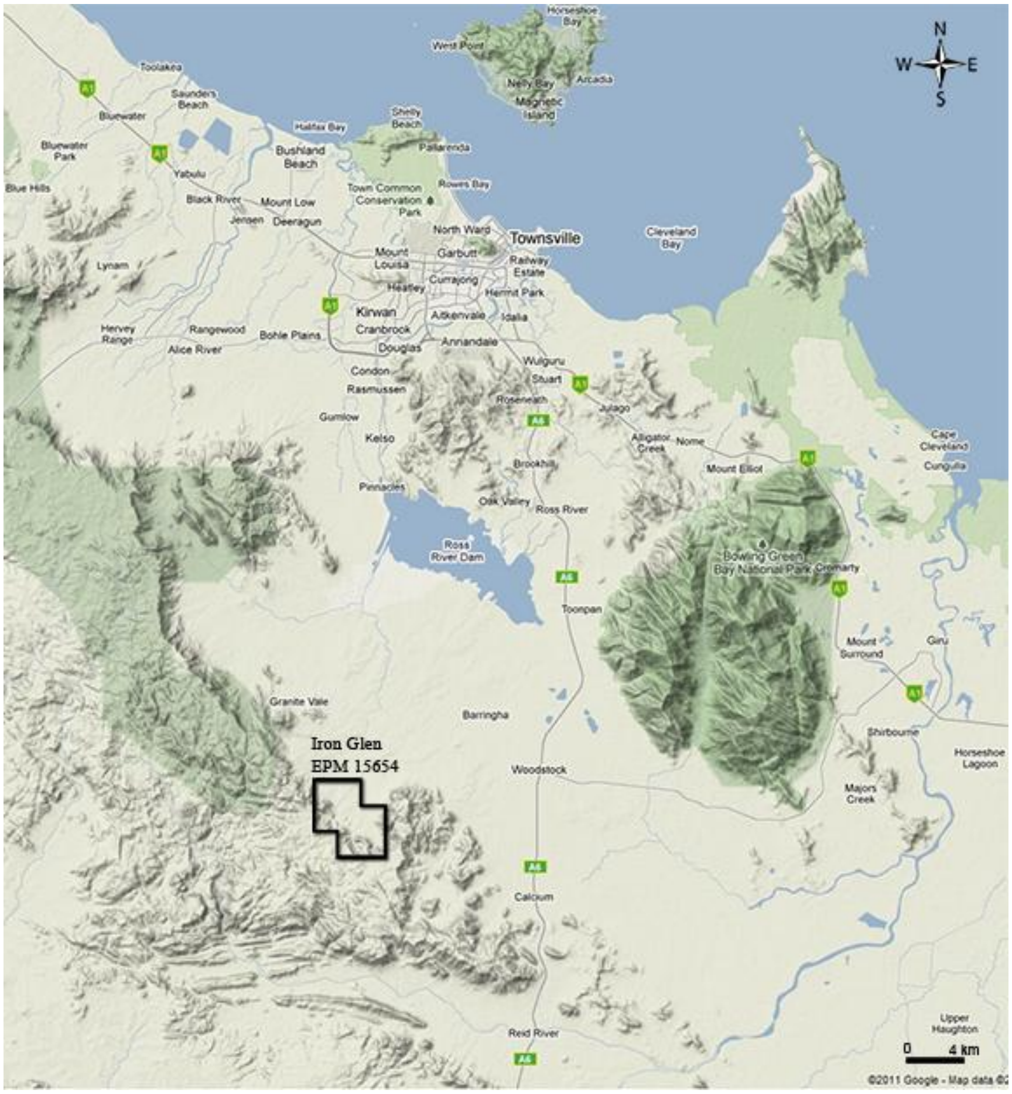
This report has been prepared based on our review of the available internal Iron Glen data and information and on information provided by their principal consultant, Terra Search located in Townsville, Queensland. Additional information has been obtained from various Australian governmental agencies and from the available geoscience literature, and from the files of I2M Associates, LLC in Houston, Texas, and Seattle, Washington.

For this report, I2M personnel carried out the following tasks:

- Discussions on December 15th, 2010 with senior personnel of Iron Glen Holdings Limited in Brisbane, Qld. regarding the status of the project.
- Discussions on December 15th, 2010 with senior personnel of the Queensland Department of Mines and Exploration in Brisbane, Qld. regarding Department activities in Northeast Queensland.
- Discussions with Queensland Environmental Protection Agency senior personnel Townsville, Qld. on December 16th, 2010 regarding potential environmental issues should Iron Glen be developed as a mining operation.
- Discussions with Terra Search Personnel, Townsville, Qld. on December 17th, 2010 regarding their results to date, with special emphasis on the recent drilling results.
- Site visit to the Iron Glen Pit and environs south-southwest of Townsville, Qld. on December 18th, 2010.
- Independent review of historical reports on previous exploration from the 1970s to date in the Iron Glen EPM area and environs.
- Independent review of recent geological reconnaissance reports, geochemical soil surveys and ground-magnetics reports, and recent reverse-circulation drilling reports prepared by Terra Search and associated personnel.
- Independent audit of drill-hole databases, assay certificates, and associated data.
- Independent geological assessment of mineralized zones in context with other similar deposits in the world that have been studied in detail.
- Independent assessment of the basis for pursuing additional exploration at Iron Glen.

Figure 1

General Location of the Iron Glen Tenement



4.3 Iron Glen Tenement

The general location of the Iron Glen tenement (EPM 15654) is shown in Figure 1. In Figure 2, the location of the tenement and surrounding tenements and mining leases (shown in dark patterns) are shown. The regulatory status of the tenements shown is either "granted" (medium-brown shade) or "application" status (shown in light-brown shade). There is an old mining lease located within the

Iron Glen tenement filed a number of years ago to mine limestone. There has been no apparent activity on the lease and it expires in 2013.

Additional information is provided on the companies with tenements either granted or in application stage surrounding the Iron Glen tenement in Section 17.0 - Adjacent Properties (Tenements).

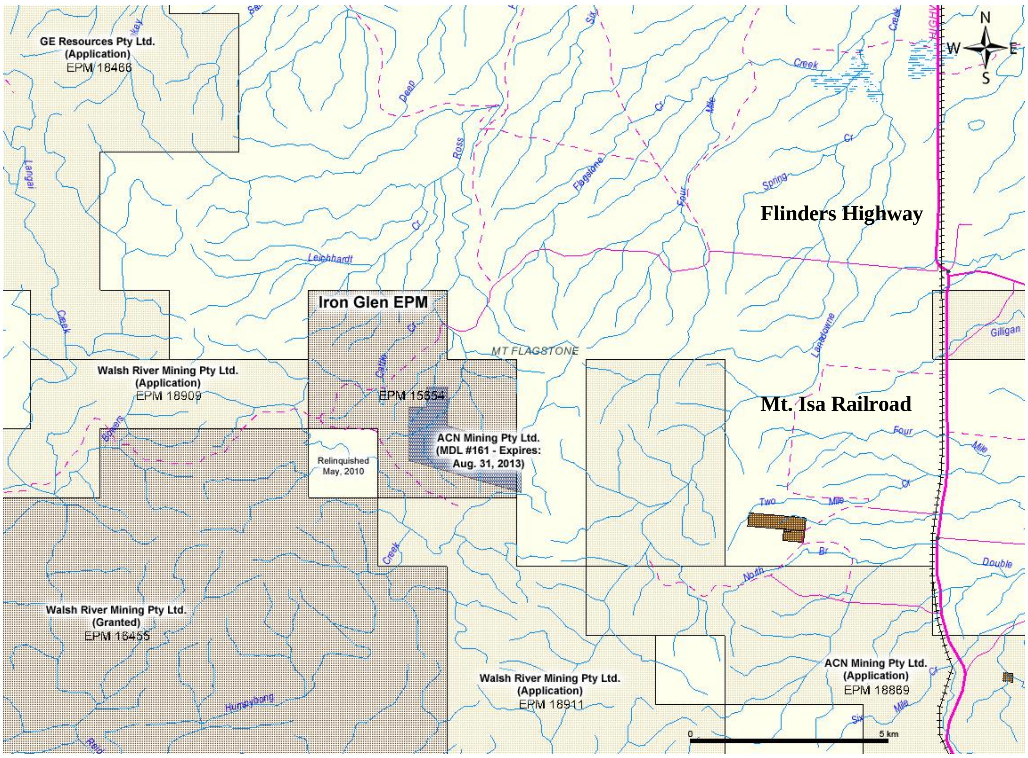


Figure 2 - Iron Glen & Surrounding Tenements (As of January 12, 2011)
Source: QDEX Tenement Database

Exploration within the southern section of the EPM 15654 is somewhat constrained by the Mingela State Forest which encompasses the high hills, wrapping around the southwestern to southeastern section of the EPM. Special conditions apply to exploration in the Queensland State Forest in the event Iron Glen management elects to conduct exploration in the restricted sections of the EPM (see Figure 6).

Updates on the location of the above tenement boundaries are available from the Queensland Department of Mines and Energy, which provides at no charge an interactive tenement-mapping database via a website that should be consulted to confirm native and tenement boundaries. See citation and link: Section 23.0 - References.

During December 18th, 2010, I2M personnel, consisting of Michael D. Campbell, P.G., P.H., Thomas C. Sutton, Ph.D., P.G., and M. David Campbell, P.G., visited the subject tenement by helicopter and on foot. I2M personnel also observed the Iron Glen pit, recent drilling sites, and the terrain and access to the area (see Figures 3 and 4).

Figure 3 – Aerial View of the Iron Glen Pit Looking Southwest (Photo by M. David Campbell)

Figure 4 – Site Visit Personnel at Iron Glen Pit during Mid-December, 2010.
(Photo by M. David Campbell, P.G.)

4.4 Units

The Metric System is the primary system of measure and length used in this Report and is generally expressed in kilometers (kms), meters (m), and centimeters (cm); volume is expressed as cubic meters (m^3); mass is expressed as metric tonnes (t); area as hectares (ha); laboratory analyses are reported as elements or are converted to oxide percents (in parts per million (ppm)). Grams per tonne (g/t) is an equivalent unit to ppm. One tonne is the equivalent of 2,204.6 lbs.

Monetary units are in Australian Dollars. Mining and mineral acronyms in this report conform to mineral industry-accepted usage. The reader is directed to the glossary of commonly used terms: www.maden.hacettepe.edu.tr/dmmrt/index.html.

Section 5.0 Reliance on Other Experts

The authors of this report have relied on the available pertinent reports of Terra Search, the technical literature and company reports made available online by the Geological Survey of Queensland and other sources. Queensland exploration reports are collected using an internet document management system called QDEX (**Q**ueensland **D**igital **EX**ploration Reports system). QDEX contains company reports, associated figures, tables, maps, and geophysical information from 1960 to the present on mineral exploration and development projects in Queensland. The reports consulted have been cited in this report and in Section 23.0 - References.

The I2M personnel selected for this project also included Thomas C. Sutton, Ph.D., P.G., and M. David Campbell, P.G. Their resumes may be viewed in Section 26.0 - Appendix III. During the week of December 12, 2010, I2M personnel met in Brisbane with Mr. Patrick Griffiths, Executive Director, Iron Glen Holdings Limited on December 15, and with Mr. David Mason, Executive Director, Geological Survey of Queensland, Department of Employment, Economic Development and Innovation; Mr. Terry Denaro, BSc (Hons) - Project Leader-Mineral Geoscience, Geological Survey of Queensland, Queensland Government Department of Mines and Energy; and with Mr. Ian Withnall, BSc (Hons), FGSAust - Geoscience Manager - Minerals, Geological Survey of Queensland, Queensland Mines and Energy, Department of Employment, Economic Development and Innovation, to discuss the geological information available in the area of the Iron Glen tenement.

On December 16, I2M personnel met with Mr. Kevin Doyle, representative of Iron Glen Holdings Limited, in Townsville to discuss the status of the Iron Glen project, and with Ms. Tania Laurencont, Manager – Environment, Queensland Environmental Protection Agency and associated staff members to discuss environmental matters that may impact current and future exploration and mining operations on the Iron Glen tenement.

During December 17, 2010, I2M personnel met with Simon Beams, Ph.D., Principal Geologist, and Mr. Tim Beams, B.Sc., Geophysicist, of Terra Search to discuss the ground magnetics program, the soil and rock-chip programs conducted over the past few years, and the recent drilling and sampling program and the status of the report thereon. On December 18, 2011, I2M personnel, in the company of Mr. Kevin Doyle, conducted a site visit of the Iron Glen tenement by helicopter and on the ground, with special emphasis on the Iron Glen pit and associated recent drilling sites and surrounding outcrops. The next day, I2M personnel visited James Cook University to consult the library for any geological reports focusing on the area of interest.

I2M personnel also were provided with copies of the technical reports and associated literature on past exploration on the Iron Glen tenement. Input was also subsequently received from the Iron Glen management regarding current land status (see Sections 6.2 and 6.3).

Section 6.0 Property Description and Location

6.1 General Description

EPM 15654 is located about 40 kms south-southwest of Townsville, south of the Ross River Dam, and approximately 10 kms west of Woodstock (Figure 5). The latitude/longitude coordinates for the center of the EPM are East 146 degrees 42 minutes and South 19 degrees 37 minutes. The EPM occurs on the Mingela 100,000 topographic sheet (#8258) and is located at an elevation of some 200 m above mean sea level. See Figures 5 and 6.

The Iron Glen EPM is located in proximity of well-developed infrastructure (see Figure 5):

- Townsville (population 170,000) is Australia's largest tropical city and a major regional center for commercial and government services in North Queensland.
- It occurs 10 kms west of the Mt. Isa Railway and Flinders Highway that connect the mining/industrial complex of Mt. Isa to Townsville.
- It is less than 40 kms along the railway line to the deep water port of Townsville.
- It is approximately 20 kms south of Lake Ross, the main water supply for Townsville.
- A major electricity transmission line traverses the northwest section of the EPM.

The EPM occurs on the property "Mount Flagstone" owned by Mr. Peter Bucknell, Jones Road, in nearby Woodstock, Qld. Access is obtained via the Ross River Dam and a series of public and station tracks south though Laudham Park and Humpybong land holdings. Access past the Ross River Dam requires permission from North Queensland Water Authority and is not unreasonably withheld.

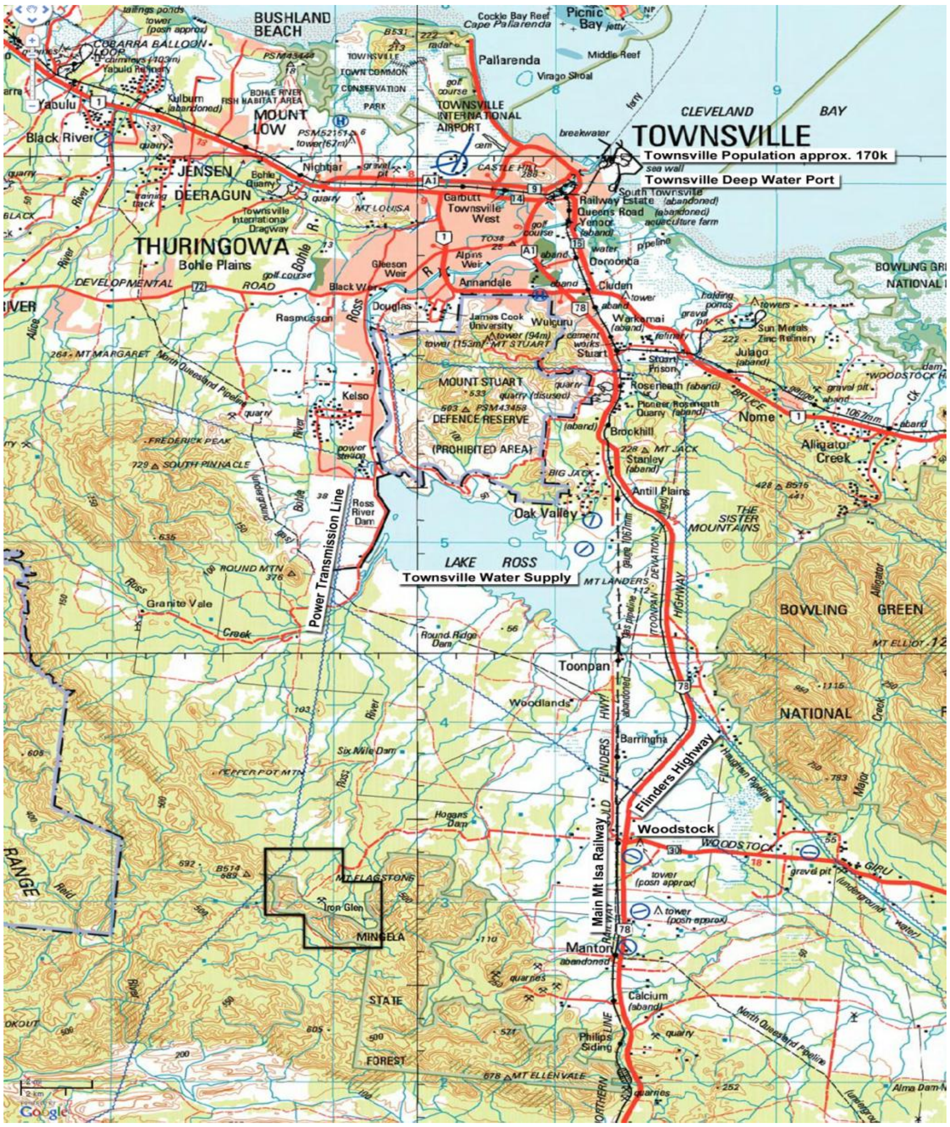


Figure 5 - Section of Topographic Sheet (100,000 sheet (#8258)), showing the Iron Glen Tenement and Infrastructure (roads, railroad, power line, creeks, and the Mingela State Forest).

EPM 15654 is located approximately 55 kms by road from Townsville using this access. In June, 2008, during exploration conducted by Terra Search, the road was reported to be in reasonable condition having been graded and the trip by vehicle took approximately 1.5 hrs. A four-wheel drive vehicle is required to negotiate some creek crossings. In view of the many creek crossings, access after extended rain periods during the wet season could be difficult even after the dry period has returned unless the crossings and gullies have been repaired by bulldozer.

6.2 Property Ownership and Financial Obligations

Iron Glen Pty Ltd, domiciled in Australia, is a 100%-owned subsidiary of Iron Glen Holdings Ltd. On June 14, 2010, Iron Glen Holdings Limited acquired a 100% interest in Iron Glen Pty Ltd. The purchase consideration, assets and liabilities arising from the acquisition are reported in the Director's Financial Report of the period ending November 30, 2010, signed by Patrick Griffiths, Director, dated January 17, 2011. This and other aspects of the Remuneration Report of Iron Glen Holdings Limited contained therein have been validated by Grant Chatham, Partner of PKF Accountants, in their Independent Auditor's Report dated January 17, 2011.

The financial obligations of holding the Iron Glen tenement include yearly rentals. We have included our estimates of the likely rentals fees (in Table 1). It is the responsibility of the EPM holder to check the current rental rate and to pay the rentals before the indicated due date.

The anticipated increase in the annual rental rates through 2012 have been estimated at AUS$ 6.30 and incorporated in Table 1. As incorporated in Table 1, the Iron Glen EPM is required to be reduced as required by the Queensland Department of Mines and Environment (DME). At some point in the exploration program, assuming results are favorable, a Mineral Development License (MDL) and lease will be required to permit the mining venture to proceed. The MDL is designed to allow time to conduct various permitting requirements, one of which will be the confirmation of a Native Title Agreement. Others include agreements on water-use rights, railway agreements (if possible), and others focusing on the construction of facilities or infrastructure, and with the holder of any overlapping MDL (see Section 6.4 - Permitting.

Table 1
Rentals for Sub-Blocks Held

Year of Project	Cost per Sub-Block	Number of Sub-Blocks	Total Cost
Year 2011	$143.50*	7 (2,100 ha)	$ 1,004.50
Year 2012	149.8 0**	6 (1,800 ha)	898.80
Total:			$1,903.30

* Based on Tenure Rental Current Yearly Rates – 2011 for EPMs at AUS $143.50 per sub-block (~300 ha)
** Based on 2011 Rate Sheet
*** Anticipated increase of $6.30 per year through 2012.

A minimum annual expenditure statement (MAE) is required by the DME and is included in the application by the applicant based on a scope of work (and cost estimate), the latter becoming the MAE if approved by the Queensland Government. Furthermore, there is a minimum MAE of $1,000 per sub-block. Based on the extensive exploration carried out over the past few years, including the recent drilling program, the MAE requirements have been met.

A bond is required to be paid to the Australian Environmental Protection Agency of $2,500 per EPM for a five-year period. At the end of 5 years, the bond is refundable if all required restoration activities (if any) have been carried out.

6.3 Current Royalties and Agreements Concerning Land Access

Mr. Scott Standen, Partner, Hynes Lawyers, Brisbane, attorneys to Iron Glen have responded to I2M inquires regarding royalty, land access, and native titles that may be applicable in the subject area.

6.3.1 Royalty

Mr. Standen advises that under the *Mineral Resources Act 1989* (Qld) (Act), the holder of a prospecting permit must pay, in respect of all minerals mined or purported to be mined, a royalty to the Minister. The royalty rate for each mineral is provided for at Schedule 4 to the *Mineral Resources Regulation 2003* (Qld). The royalty rate for iron ore is calculated as follows:

(a) if the average price for each tonne of iron ore is $100 or less - $1.25 for each tonne; or

(b) if the average price for each tonne of iron ore is more than \$100 - the rate is worked out using the following formula, rounded down to 2 decimal places:

$$R = 1.25\% + ((A-100)/A \times 1.25\%)$$

Where:

R is the rate.

A is the average price for each tonne of iron ore.

Note: The royalty payable for iron ore under paragraph (b) is worked out by applying the royalty rate as a percentage of the value of the iron ore sold, disposed of or used in the return period.

Mr. Standen advised that there are no other current royalties in affect involving future production from the Iron Glen EPM. This is not to imply that additional royalties may not be offered by Iron Glen and/or accepted by a third-party at some time in the future.

6.3.2 Agreements Concerning Land Access

Mr. Standen reviewed the existing Compensation Agreement entered into between Australian Gold Holdings Limited and Peter Bucknell that Iron Glen elected to honor. The Compensation Agreement in its current form provides that Iron Glen compensate Peter Bucknell for any disturbance caused to the Mount Flagstone property by Iron Glen.

Land Access Code

Mr. Standen indicated that the Queensland Parliament has recently introduced a new Land Access Code that will form part of the conditions of all tenements issued under the Act. The Code updates the existing notice of entry (NOE) and compensation provisions contained under the Act and aims to ensure consistency in the definitions of “compensatable effects” for which tenement holders must compensate landowners. A breach of the Code may result in pecuniary penalty, and can also potentially lead to forfeiture of a tenement.

Access / NOE provisions under the Code

Proposed activities for which access to the land is required are categorized as either a 'preliminary activity' or an 'advanced activity.' A 'preliminary activity' is an authorized activity "that will have no impact, or only a minor impact, on the business or land use activities of any owner or occupier of the land on which the activity is to be carried out". Some examples are provided below:

- walking the area;
- driving along an existing road or track;
- taking soil or water samples;
- drilling without constructing earthworks;
- geophysical surveying without site preparation; and
- aerial, electrical or environmental surveying.

Activities on land that is less than 100 ha or that is used for intensive farming or broad-acre agriculture, an activity that is carried out within 600 m of a school or an occupied residence, or that affects the lawful carrying out of an organic or bio-organic farming system, is considered a preliminary activity. All other activities are considered to be 'advanced activities'.

NOE requirements under the Code provide that a tenement holder can enter the land in accordance with an existing agreement, such as the subject Compensation Agreement. However, for advanced activities, broad overview compensation must be determined first, and once that has occurred, an NOE may be given. If an agreement can't be reached, a negotiation notice must be given to the land owner to commence negotiating the entry of the tenement holder on the land.

Mr. Standen recommends that a new agreement be made with Mr. Bucknell to reflect the new Code that takes into account Iron Glen's progress with its exploration that has occurred since the Compensation Agreement between Australian Gold Holdings Limited and Peter Bucknell was executed.

6.3.3 Native Title

Mr. Standen previously communicated with the National Native Title Tribunal (NNTT) and the North Queensland Land Council (NQLC) in August, 2010 about any Native Title claims over the Iron Glen EPM and provided Iron Glen with the following advice:

> *"NNTT confirmed that there were no registered Native Title claims over the land where EPM 15654 is concerned. However, as EPM 15654 was granted under the Expedited Procedure under section 237 of the Native Title Act 1993 (Cth), Iron Glen must follow the Conditions (as previously provided to you by DEED). The Conditions oblige Iron Glen to provide "Notified Native Title Parties" with written notice of any proposed "Exploration Activities". We note that you have satisfied this condition by contacting the NQLC.*
>
> *After discussions with the NQLC, we understand that while there are no registered Native Title Claims over the land where EPM 15654 is concerned, a previous Native Title claim was filed but not registered. As such, Iron Glen has an obligation under the Aboriginal Cultural Heritage Act 1993 (Cth) to notify this party. NQLC have contacted this party to inform them of Iron Glen's proposed "Exploration Activities." As yet, they have not received a response. We understand that this party may elect to meet with Iron Glen to discuss the proposed "Exploration Activities" and may even do a "walk over" of the site concerned. NQLC confirmed that they will advise Iron Glen of that party's decision."*

6.4 Permitting

At present, a Mining Development License (MDL) is currently held by a limestone mining company whose lease expires in 2013. The area covers part of the Iron Glen EPM where limestone is apparent at the surface (see Figures 2 and 6), mostly within the area designated as a State Forrest. Iron Glen personnel should monitor any activities on this lease, although they should not have any impact on any future Iron Glen exploration or development operations.

A permit was required to drill test wells; coring and logging are considered part of the drilling program. Drilling of the test holes also required a Class 3 driller with all the appropriate certificates for permission to drill in the Iron Glen area. Other permitting requirements include yearly reports on the exploration program to the Queensland Department of Natural Resources and Water (DNRW).

In the event that Iron Glen requires a ground-water supply at some time during the project, they will be required to communicate with the staff at the DNRW and the Department of Infrastructure and Planning (DIP) offices in Brisbane and Townsville to evaluate the current conditions and availability of ground-water resources for use in Iron Glen operations. A bore census may be required to assess ground-water usage in the area, followed by a title search of the nearby bores. These activities would identify the nearby bores in the area so that selected landowners could be contacted, if need be, and negotiations initiated concerning the possible transfer of the ground-water license for use in any Iron Glen operations. Iron Glen may elect to drill a new bore to secure an independent water supply, if permitted by the regulatory agencies. These activities would be considered sometime in the future should Iron Glen management contemplate mining operations.

6.5 Environmental Issues

Magnetite is the principal ore mineral in iron skarns such as that of the Iron Glen deposit. Ore grades are typically 40 to 50 weight percent iron and higher, but these deposits have relatively low sulfide mineral contents and therefore relatively low acid-generating potential in the surface water run-off. According to Hammarstrom, *et al*., (1986), in addition to the acid-buffering potential afforded by the common presence of carbonate-bearing rocks, epidote minerals in the rocks also consume acid generated that may be in contact with the environment.

Magnetite is generally stable in the surface environment (as is evident in Figures 12 and 13), and persists as a heavy mineral in stream sediment during mechanical erosion. Furthermore, metals, including mercury, selenium, cadmium, and arsenic, that pose the most significant threats to the environment when they become bioavailable, are generally not associated with most magnetite skarns. In recent work, magnetite has been found to be useful in coal processing in a new process that removes mercury from raw coal before it is burned to produce electricity in various parts of the world, see Section 18.2 - Desirable Properties for Coal Processing.

The Iron Glen EPM is not currently subject to any known environmental study. However, potential environmental and infrastructure issues may include, but not be limited to, the proximity to the border of a State Park. An Environmental Impact Study (EIS) will likely be required to assess and identify any possible issues created by developing or using new or existing infrastructures to develop the Iron Glen project involving processing plant operations, ground-water use, waste handling, rail and port use, and other supporting infrastructure. Because the Iron Glen site is located within the upper reaches of the Ross Drainage Basin, another environmental consideration would also likely focus on the potential impact of Iron Glen operations on the Ross River and Ross Lake, which are sources of drinking water for Townsville located approximately 40 kms downstream from the Iron Glen EPM (see Figure 5).

Section 7.0 Accessibility, Climate, Local Resources, and Physiography

7.1 Topography, Elevation, and Vegetation

The topography and associated elevation in the general area of the subject tenement is illustrated in Figure 6, along with the boundaries of the subject tenement. Based on information provided by the Australian Government (see Section 23.0 - References), the vegetation in the area of interest is mainly native forests and woodlands with native shrublands and heathlands in the Mingela State Forest to the south and east.

The subject tenement lies within the upper reaches of the Ross Drainage Basin and is part of the Brigalow Belt North and Einasleigh Uplands bioregions. The elevated regions of the tenement that are part of the Mingela State Forest to the south and east are in the Einasleigh Uplands bioregion, while the northern lower elevations are in the Brigalow Belt North bioregion. This bioregion generally includes coastal areas, rugged ranges and alluvial plains. Its main town centers include Townsville, Bowen, Clermont, Emerald and Collinsville. The bioregion has a subhumid to semiarid climate.

The region to the immediate north and east of the tenement contains rangelands (or savannas) much of which has been developed for agriculture and is generally found on the more fertile soils that was originally occupied by brigalow (*Acacia harpophylla*) or grasslands of eastern grasses (*Dichanthium* and *Bothriochloa spp.*). The rangelands occur as eucalypt woodland, often in a mosaic pattern with pastures and farmland.

The vegetation of the Brigalow Belt North bioregion consists of woodlands of ironbarks (*Eucalyptus melanophloia, Eucalyptus crebra*), poplar box (*Eucalyptus populnea*) and Brown's box (*Eucalyptus brownii*) with forests of brigalow (*Acacia harpophylla*), blackwood (*Acacia argyrodendron*) and gidgee (*Acacia cambagei*).

The alluvial plains to the north of the tenement support woodlands of poplar box, gidgee or coolibah (*Eucalyptus coolabah*) with forest areas of Dawson gum-brigalow (*Eucalyptus cambageana-Acacia harpophylla*). Along the water courses, such as the Ross River and associated tributaries are tall woodlands to open-forests of red gum (*Eucalyptus camaldulensis* and *E. tereticornis*) and coolibah.

The wetter climate to the east of the tenement supports open forests including ironbark (*Eucalyptus drepanophylla*) and lemon-scented gum (*Corymbia citriodora*). River red gums (*Eucalyptus camaldulensis*) are found to occur along large water courses in the bioregion.

There are 78 rare, 53 vulnerable and 13 endangered plant species within this broad bioregion. Mammal species in this bioregion are generally adapted to the eucalypt woodlands and open forests. Approximately 43 mammal species have been recorded with ten species of macropods, including the bridled nailtailed wallaby (*Onychogalea fraenata*), brushtailed rock-wallaby (*Petrogale penicillata*), wallaroo (*Macropus robustus*), eastern gray kangaroo (*Macropus giganteus*) and the black-striped wallaby (*Macropus dorsalis*).

There are four presumed extinct, 10 endangered, 30 vulnerable and 35 rare animal species that reportedly exist within the bioregion. The extinct animals include the western quoll (*Dasyuria geoffroii geoffroii*), white-footed rabbit-rat (*Conilurus albipes*), downs hopping-mouse (*Notomys mordax*) and the paradise parrot (*Psephotus pulcherrimus*). Native plants includes the cycad (*Cycas couttsiana*) and a number of dry rainforests species such as *Atalaya calcicola* and *Alectryon tropicus*. Heath and woodland species east of Herberton include mottled gum (*Eucalyptus pachycalyx*), the purple flowering wattle (*Acacia pupureipetala*) and *Grevillea glossadenia*. Approximately 62 plant species are listed as rare and threatened in this bioregion and *Plectranthus minutus* and *Tylophora rupicola* are considered endangered.

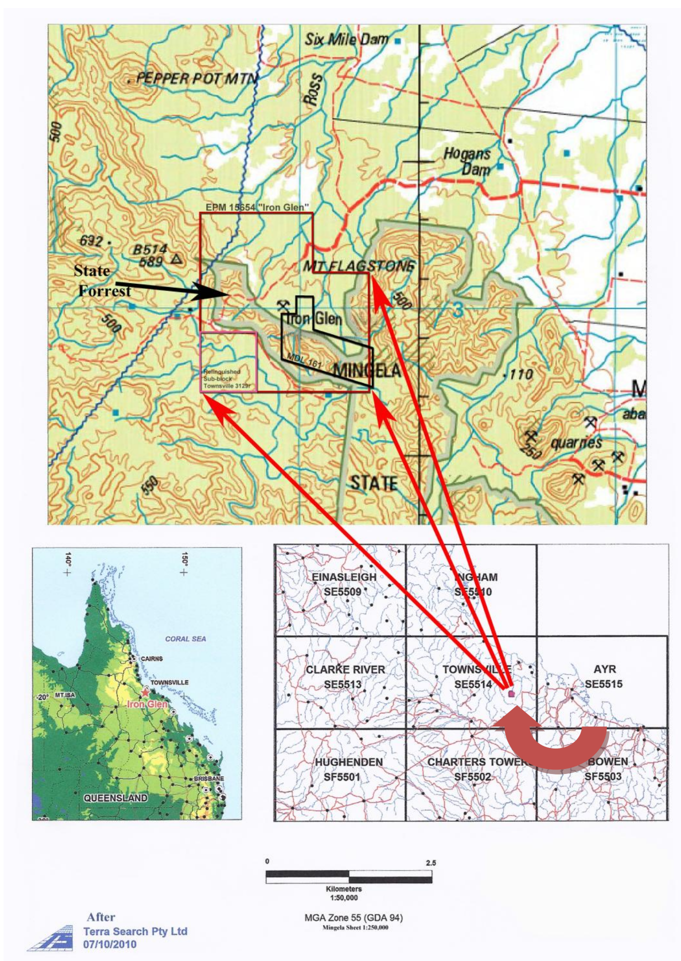


Figure 6 - Topography and Elevation, State Forest Boundaries, and Current Mining Development Lease in the Iron Glen EPM

7.2 Accessibility to Properties

The subject area is located approximately 40 kilometers south of Townsville and 12 kilometers south of the Ross Lake. Access to the tenement is possible from the east along a road from the Flinders Highway at Woodstock with permission from the property owner. Otherwise, access is from the north near the Ross River Dam along a series of public and station tracks and seven gates, which adds about 15 kilometers to the distance to the tenement from Townsville. All site access past Flinders Highway west toward the subject tenement is via unpaved roads and crosses multiple creeks (see Figure 6). The Iron Glen area is one of monsoonal climate and heavy rainfall during the wet season on soils desiccated during the warm dry months and not only produces severe gully and sheet erosion, but also results in ground-water recharge with excess discharging as surface run off via streams and rivers.

7.3 Local Resources

Ground-water resources are available from water bores (windmills and tanks (ponds)) in areas where fractures and joints are prevalent (see Figure 6). In areas where granite and other igneous and metamorphic rocks are present in the subsurface, ground-water supplies would be available, especially near dry creeks where major fractures or joints often occur. Lower meadows surrounded by hills consisting of igneous and metamorphic rocks serve as collection areas for shallow ground water. The depth to the water table in such areas will need to be monitored because the volume of ground water available within the fracture systems may not be large, although sufficient supplies can be available under certain circumstances, see Larsson, I., M. D. Campbell, *et al.*, (1984). Surface water was noted in numerous creeks leading out of the immediate area, eventually to the Ross River north of the subject tenement. Typically, these creeks are dry and only run during and after rainfall. A few cattle were observed during the I2M Associates' site visit the week of December 12th, 2010.

A major power transmission line right-of-way crosses the subject tenement's northwest corner heading toward Townsville to the north and to Charters Towers to the south. The nearest railway is the main Mt Isa Railway located parallel to Flinders Highway, approximately 10 kms east of the subject tenement (see Figure 6).

7.4 Climate and Seasonal Operations

The general area experiences a semi-arid to tropical climate with dry winters. Rainfall decreases with the distance from the coast, but extensive precipitation can occur in association with the passage of tropical cyclones emanating out of the Coral Sea across the coast and inland. The annual average rainfall ranges from 400 mm in the subject area to 1,200 mm along the coast, except during drought periods that may last 5 years or more. Drought conditions occur more frequently inland than near the coast.

Temperatures in the Townsville area range from 17°C to 44°C in the summer and from 1°C to 33°C in winter. During the summer, field conditions related to industrial development are not usually conducive to optimal production. However, the prevailing weather factors could be favorable for year-round operations if certain precautions were taken concerning the rainy season and high temperatures and humidity during the summer. Because the Iron Glen site is located only a few kilometers from maintained roads and blacktop highway and about 40 kms from Townville, the site is strategically located for easy access even during some periods of the wet season. During the dry season of moderate temperature, low rainfall, and low humidity, the area offers near optimal conditions for explorations and potential mining operations. The prevailing weather factors, based on many years of accumulated weather data collected in Townsville are illustrated in Figures 7, 8, and 9.

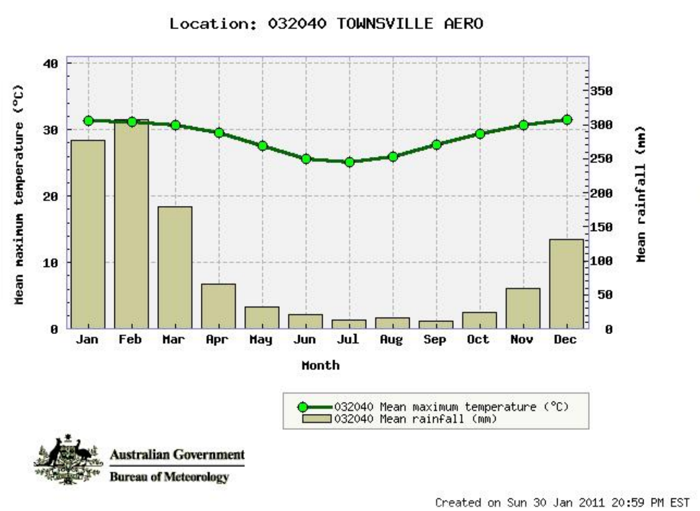


Figure 7 - Mean Maximum Monthly Temperatures and Rainfall

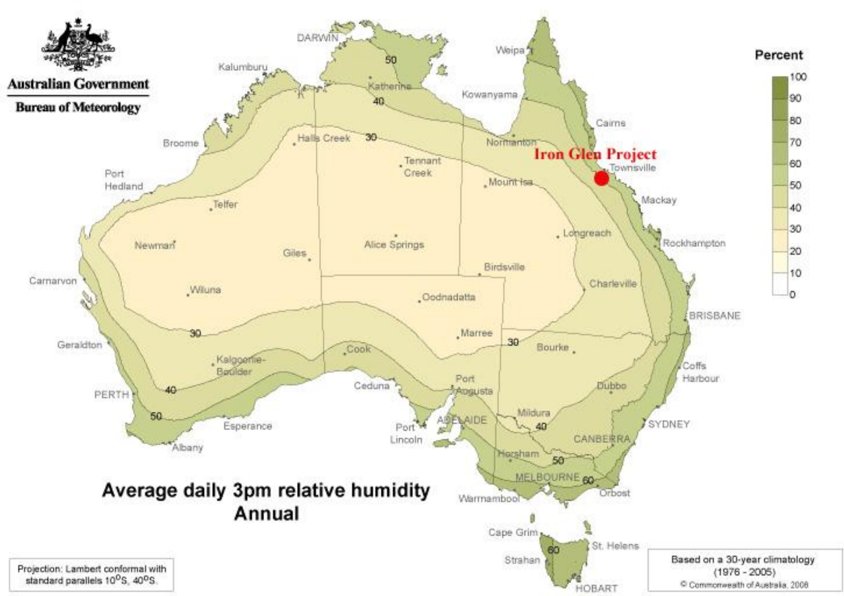


Figure 8 - Average Daily Relative Humidity (@ 3:00 PM)

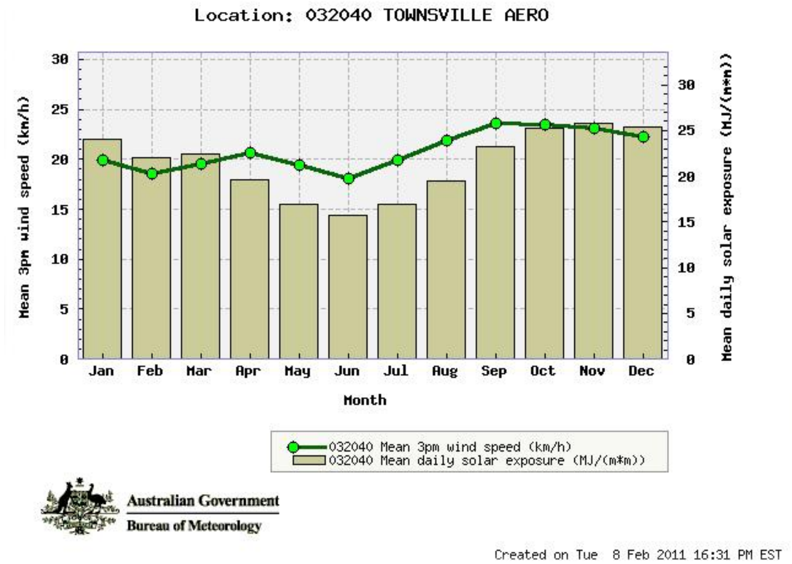


Figure 9 - Mean Monthly Wind Speed (@ 3:00 PM) and Mean Daily Solar Exposure

7.5 Available Infrastructure

As discussed in Sections 7.2 - Accessibility to Properties and 7.3 - Local Resources, supporting infrastructure is available in Townsville about 40 kilometers to the north via the Flinders Highway located approximately 10 kilometers to the east. The Main Mt. Isa Railway parallels Flinders Highway heading north to Townsville. Also, a major power transmission line crosses the subject tenement's northwest corner (see Figure 6).

The support of the Queensland Government for the development of a Queensland-based iron and steel industry could result in a major new industry for the State as exploration develops over the next decade, and as supporting infrastructure continues to expand. This could potentially be based at one or both of the two main industrial centers of Gladstone and Townsville. Significant factors impacting the development of the industry will be road and rail transport and port infrastructure and capacity, and the availability of water for processing and associated mining needs.

Section 8.0 History

8.1 Previous Activities

Terra Search collected all previous aeromagnetics surveys as a guide to subsequently conducting a series of ground-magnetics surveys over the central portions of the Iron Glen tenement. These new data were modeled to develop a series of maps, which in turn were used to design soil and rock-chip sampling programs. All known work to date performed by Terra Search on the Iron Glen area have been cited in Section 23.0 - References.

Terra Search (2010) gathered the available information from QDEX, the online source of previous mining and exploration activities in Queensland since the 1960s and before, and presented the following exploration narrative for the previous activities in the Iron Glen area. This activity was associated with four previous EPMs that overlapped the area of the current EPM 15654, and which involves the collection of geological and exploration information relevant to the current geological evaluation of EPM 15654, the Iron Glen tenement.

These activities are listed in Table 2, are keyed to their respective reports, and begins with EPM 814, which reports on the exploration carried out by Trans Australian Explorations (TAE) in 1971 (see Perkin (1971) - Report CR3585); followed by other activities, including: EPM 4637 held by Battle Mountain (Cameron (1988) - Report CR17274).

EPM 4781 was held later by Newmont; and EPM 5647, which in its latter stages, was held by Solomon Pacific, who completed an exploration program for limestone in 1994 (Hamilton, 1994 - Report CR26173).

Most of the other tenements have only encroached marginally on the area of current interest and these reports contain limited geological information or do not offer new exploration data that would be of use in the exploration of the area of the current EPM 15654 held by Iron Glen.

Table 2

Company Reports: Pre-2007 Exploration Activities

EPM	Number Sub-blocks	Holder	Date Granted	Date Terminated	Company Reports
814	158	TAE – Reid Gap	12/10/1970	19/01/1971	CR3585
1682	54	Geopeko	3/11/1976	20/03/1978	CR6640
1704	60	Geopeko	9/12/1976	20/03/1978	CR6593
2504	103	Afmeco	16/07/1980	23/11/1981	CR8555
"	"	"	"	"	CR10096
3833	100	Afmeco	11/10/1984	25/03/1986	CR15052
"	"	"	"	"	CR15053
"	"	"	"	"	CR15054
"	"	"	"	"	CR15055
4637	65	Battle Mountain	12/3/1987	28/01/1987	CR17274
4781	103	Newmont	9/6/1987	9/5/1988	CR17770
"	"	"	"	"	CR18790
4788	87	Epithermal Gold	19/06/1987	9/5/1988	CR17770
"	"	"	"	"	CR18790
5647	96	Pacminex	29/11/1988	28/11/1994	CR21363
"	"	"	"	"	CR21732
"	"	"	"	"	CR23192
"	"	"	"	"	CR23403
"	"	"	"	"	CR24288
"	"	"	"	"	CR25399
5647	96	Solomon Pacific	29/11/1988	28/11/1994	CR26173
5784	103	Carpentaria	1/3/1989	31/08/1990	CR21365
"	"	"	"	"	CR21366
10275	52	BHP	23/03/1994	7/6/1995	CR27661
15654	8	AGH to W. Doyle To Iron Glen			

8.2 Previous Exploration Results

Of some note, however, is the field work by Perkin (1971), who reported on the exploration results in the general Iron Glen pit area discussed in Report CR3585 regarding EPM 814 in the area called Reid Gap. The target exploration was for skarn-related copper mineralization. He reported that outcropping copper mineralization was associated with magnetite over a strike length in excess of 200 m and up to 15 m wide. The magnetite and copper occurred within altered limestone, near the contact with or adjacent to intrusive granite (actually granodiorite). The copper mineralization consisted of malachite and sulfides (mainly pyrite, chalcopyrite and possible occasional bornite - with up to 1% copper, averaging 0.5% copper - occurring in hard, silicified hornfels). Of particular importance to the current exploration program is that Perkin indicated that he observed another magnetite show approximately 1.5 kms along the contact to the northwest of the current Iron Glen pit.

Later, Puce (2007) reported that the Iron Glen workings were held under mining lease ML5987 and Iron Glen East ML5994 from 1955 to 1969 by North Australian Cement Limited. The main commodity produced was iron as magnetite in hematite. The iron was used in the manufacture of cement. During the 14 years of operation, about 36,000 tonnes of ore were reportedly extracted.

This is confirmed by the Queensland Geological Record (QGR) for 2001/2002 (page 69) which also provides information on the Copper Creek workings, located nearby, which consisted of a shaft some 6 m deep. The main commodity produced was copper. No production records have been located. The relevant portion from the QGR is presented below:

> "About 15 kms west northwest of Calcium lies the Iron Glen (aka Eastern Lode) ironstone deposit composed of magnetite and hematite which is intermixed with limestone deposits. Saint-Smith (1920) reported a 6-meters deep shaft at this occurrence which contained traces of copper carbonates. The deposit was mined for use in cement manufacture by North Australian Cement Limited and between 1955-1969 produced more than 36,000 tonnes of iron from open cut workings (Levingston, 1971)."

In the older literature, the Iron Glen area was also referred to as the Woodstock prospect (after Levingston, 1962). Of particular interest are the comments made by Saint-Smith (1920) who confirmed that iron-rich rocks were also observed at "Cattle Creek", no more than one kilometer west of what is now known as the Iron Glen pit. Brooks (1970) has reviewed the iron-related occurrences known at the time in Queensland, which places the Iron Glen deposit in some context, which will be discussed later in this report, see Section 20.0 - Other Relevant Data and Information.

More recently, Puce (2007) also defined the principal zone of geological interest in the Iron Glen pit as a calcareous skarn developed in limestones in contact with granodiorite. The skarn is dominated by epidote and contains disseminations and lenses of magnetite with sulfide segregations, large and small. He collected 16 rock-chip samples of ironstone, magnetite and skarn from the Iron Glen pit area. Iron content was reported high but variable and confirmed the earlier findings by Perkin (1971) of magnetite-rich rock samples reporting in excess of 45% total iron, with copper and sulphur values moderate to high, commonly more than 0.5% copper and more than 0.5% sulphur, up to 3.1% copper and 3.6% sulphur.

Base metals such as lead, zinc and silver are also reported as moderate: respectively, lead (100 ppm to 750 ppm), zinc (100 ppm to 500 ppm), and silver (30 ppm to 178 ppm). Deleterious elements to iron ore quality, such as titanium, aluminum, and phosphorous all appear to be low. Gold is low – generally less than 0.01 ppm in surface samples; nearby, samples have been reported to contain low but significant values. Broadly, results are similar to the previous company sampling by Battle Mountain (Cameron, 1988 and Hamilton, 1987), and in more recent projects in the Iron Glen EPM and in other magnetite deposits of northeast Queensland, discussed later in this report, see Section 11.0 - Mineralization and Section 20.0 - Other Relevant Data and Information.

Bismuth was reported as being geochemically high and was confirmed in Holes IGRC002 and IGRC008, which is consistent with a Permo-Carboniferous intrusive (see Morrison and Beams, 1995) and with the mineralization at the Biggenden Mine located to the southeast near Marybourgh, Qld. (see Siemon, 1971). The deposit at Biggenden has remarkable similarities to what is currently known of the Iron Glen mineralization, and the geological information from that deposit would be useful as a potential analogy to guide exploration at the Iron Glen deposit, see Section 20.0 - Other Relevant Data and Information.

In terms of mineral exploration (not including limestone mining), the Iron Glen Prospect appears to have lain dormant from the early 1970's through 2007 when Walter Doyle was granted EPM 15654. Exploration in the district through the 1970's and early 1980's focused on uranium associated with felsic Permo-Carboniferous volcanics and intrusives similar to the hosts of uranium and precious metals in the Ben Lomond area due west of Townsville. In the 1980's and early 1990's exploration focus shifted to gold exploration that was also primarily associated with Permo-

Carboniferous intrusive-extrusive complexes and prospective structural settings such as the Ellenvale Graben to the south of the Iron Glen area where Battle Mountain (see Cameron, 1988: Report CR17274) and Newmont Australia Limited (Hamilton, 1987: Report CR17770) carried out regional exploration for gold. Base metals and silver were utilized as pathfinder elements in this exploration and both companies sampled the Iron Glen ironstone. Newmont returned some elevated gold (to 1.8 ppb) and copper values in stream-sediment sampling. Given their gold focus, the low gold values in the ironstone downgraded the area, although high copper and silver values were noted.

After reviewing the above company activities and associates reports, we have concluded that only superficial studies have been conducted in the general area of current interest over the past decades. If obvious outcrops did not show significant alteration and associated favorable sampling results, the tenements were relinquished. No systematic local mapping and little drilling have been conducted that would support the development of various models of mineralization until that recently conducted by Terra Search on the Iron Glen tenement.

With the addition of advanced ground magnetics surveying and associated data modeling, coupled with sophisticated software used by Terra Search, exploration of a higher level and sophistication than previous efforts has led to more effective targeting of sites for follow-up drilling and for working out the geological relationships, which together improves the chance of discovering a significant ore body. The results of recent activities on the Iron Glen tenement are discussed later in this report, see Section 12.0 - Exploration.

Section 9.0 Geology

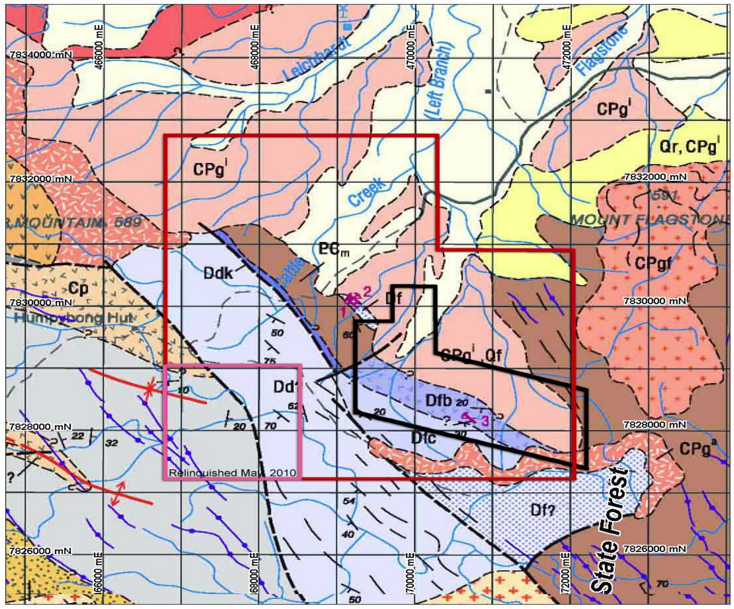
9.1 Regional Geology

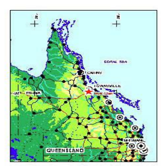
The Iron Glen EPM is located on the Townsville 1:250,000 geology sheet in a Paleozoic Terrain often referred to as the Coast Range Igneous Province (evident in Figures 1, 5 and 6). The regional geology tends to be complex in places, incorporating many geological events over the full span of the Paleozoic era, and based on recent observations by Terra Search (2010) may extend back into the NeoProterozoic with several geological events in evidence from the post-Paleozoic to Recent. Terra Search (2010) indicates that in spite of the proximity of EPM 15654 to Townsville, the geological relationships are not well known. Reconnaissance mapping was undertaken in the 1960s and 1970s to produce the Townsville 1:250,000 geology sheet. There has been follow up mapping by the Geological Survey of Queensland in the 1980's and 1990's with the publication of the Mingela 1:100,000 sheet (Reinks *et al.*, 1996). This is the same mapping that appears on the revised Townsville 1:250,000 sheet, Second Edition, (Draper *et al*., 1997), see Figure 10. However, we understand that only limited traverses were undertaken in the Iron Glen area, and most of the revisions on this map relate to reinterpretations utilizing more detailed aeromagnetic coverage, which does not cover the Iron Glen area.

On the Mingela sheet (see Figure 10), the Iron Glen iron deposit is shown to occur within the contact zone of a band of northwest trending Neo-Proterozoic and Middle Paleozoic rocks with a Permo-Carboniferous Granite. The NeoProterozoic band is represented by unassigned schists and metasediments. The Middle Paleozoic rocks by the Middle Devonian Fanning River Group including fossiliferous limestone of the Burdekin Formation (and unassigned calcareous and feldspathic sandstone with a band of Kukiandra Formation conglomerate), and an unassigned feldspathic sandstone/siltstone of the Dotswood Group.

The NeoProterozoic rocks also appear on the eastern side of the map. These older rocks are intruded by Permo-Carboniferous granite which includes a hornblende-biotite granodiorite and porphyrytic granodiorite. The Paleozoic units are overlain by Tertiary and Recent transported sediments.

Structurally, the area is complex with several major northwest faults defining the unit boundaries. Major unconformities are suggested by the variation in the dip of some of the rock units; for example, on the Mingela sheet: the western Devonian sequence is dipping 20 degrees to 70 degrees to the southwest. The NeoProterozoic units are generally uniformly dipping to the northeast, 50 to 70 degrees.





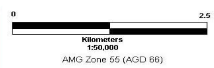


Figure 10
Early Geological Mapping

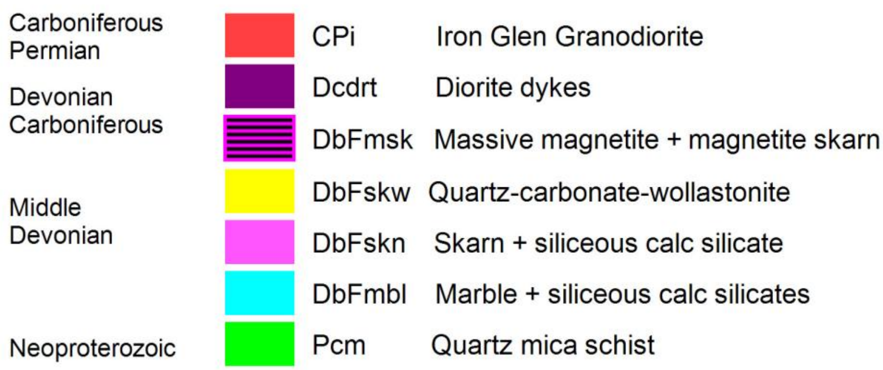
Townsville Sheet: 1:250,000
(Draper, et al., 1997)

9.2 Local Geology

The Iron Glen area is dominated by the Permo-Carboniferous Iron Glen Granodiorite, a coarse-grained, hornblende-biotite-magnetite granodiorite which intrudes a country rock sequence of Pre-Cambrian metamorphics on the western and southern sides and a coarse-grained quartz megacrystic biotite granite on its eastern side.

Based on similar lithologies and rock relationships in the Ravenswood-Charters Towers district to the south and east, the quartz megacrystic biotite granite is probably Ordovician in age. Terra Search (2011) indicates that observations and interpretations resulting from the drilling program have led to a revision of the geological interpretations made earlier (Terra Search, 2010). The main changes are that the original calcareous package is reinterpreted as being Devonian in age and assigned to the Burdekin Formation of the Fanning River Group. This assemblage of calcareous beds have been metasomatised and metamorphosed by the Iron Glen Granodiorite producing marble, skarn, siliceous calc-silicate, massive magnetite and magnetite skarn. These interpretations are based on the observations that the NeoProterozoic schist is not interlayered with the skarn sequence (see Figure 11).

Figure 11
Interpretative Geology by Terra Search (2011)



Where the Permo-Carboniferous Iron Glen granodirorite has intruded county rock, metasomatism of the calcareous sequences has resulted in the development of a complex of quartz-epidote, calc-silicate, magnetite-sulfide skarn, marble and silicified sandstone. Although the magnetite-sulfide skarn is the principal target in the Iron Glen exploration program, associated mineralization including copper, silver, and other metals have been reported by Terra Search (i.e., Terra Search, 2008) that may provide additional credits from mining magnetite and may provide other targets for exploration beyond that of iron. The recent drilling results also report elevated levels of various types metals; see Section 13.0 - Drilling Activities.

Section 10.0 Deposit Types

There are bedded and massive types of iron mineralization in Queensland. Brooks (1970) reviewed the iron ore resources in Queensland and concluded that the bedded variety of iron ore offers large tonnage but typically has inferior grade, poor beneficiation characteristics, and unfavorable geographical locations. The massive types of iron mineralization, such as the contact metasomatic replacements that occur at the Biggenden Mine and in the Iron Glen area, typically offer a superior grade of magnetite, favorable beneficiation characteristics (good separation and low phosphorous, aluminum, and titanium), and favorable geographic locations for shipping product, but have only offered reserves of a few million tonnes to date. The limited tonnage illustrates that perceived depth limitations of open pit mining have restricted the expectations of the potential size of these deposits developed in the past. With sustained higher prices, larger operations and deeper mines can be expected in the future. Therefore, available tonnages would be expected to increase regionally for this type of iron ore.

10.1 Contact Metasomatic Deposits

Contact metasomatic iron deposits, also known as pyrometasomatic deposits, are hydrothermal magnetite deposits formed by the replacement of country rock near the contact with intrusive igneous stocks, dikes or sills. Magnetite is often accompanied by hematite, carbonates, pyrite, chalcopyrite and pyrrhotite. The deposits vary in shape from tabular bodies to irregular to vein-like bodies. Some of the most important examples of this class are skarn deposits, developed where the intruded rock is limestone, as in the Iron Glen deposit, and characterized by calc-silicate minerals such as garnet, pyroxene and amphibole, all of which are present at the Iron Glen EPM. Typically, this type of deposit ranges in size from about 5 to 200 million tonnes and typically grades approximately 40% iron (Fe).

Meinert (1992) concluded that there are two main subtypes of iron skarns: calcic and magnesian. Calcic iron skarns are associated with intrusives of gabbro to syenite composition, whereas magnesian iron skarns are associated with granodiorite to granite intrusives. Examples of calcic iron skarns occur in Cornwall in Pennsylvania (USA), Sarbai in Kazahkstan (725 million tonnes at 46% Fe) and Marmoraton in Ontario (Canada). The largest magnesian iron skarn deposit is the Sherogesh deposit in the Commonwealth of Independent States (234 million tonnes at 35% Fe). Brooks (1970) also sites an example of pyrometasomatic replacement of non-carbonate rocks present in the El Romeral deposit in Chile, where a diorite stock intrudes andesite porphyry and metasediments.

10.2 Magnetite as Gangue Mineral

Magnetite has been considered a gangue mineral in many old mining districts in Queensland. The Biggenden Mine, located west of Marybourgh and northwest of Bribane produced gold and bismuth within a gangue including magnetite during the early 1900s (Craig, 1969), and only later in the 1960s was the deposit opened up to mine the associated metasomatic magnetite deposit for use in the cement industry. This occurrence of magnetite has a significant similarity to that of the magnetite and associated mineralization in the Iron Glen deposit, e.g. near vertical magnetite mineralization next to a granodiorite, metasomatism of carbonate intervals, and associated mineralization. For additional discussions regarding the Biggenden Mine and for additional discussions of other occurrences of iron deposits in Queensland, see Section 20.0 - Other Relevant Data and Information.

Section 11.0 Mineralization

The most significant mineralization within EPM 15654 is the magnetite-sulfide skarn deposit mined in the past at the Iron Glen pit. As indicated previously, the historic production was for use in cement manufactured by North Australian Cement Limited during 1955-1969 when the open pit produced more than 36,000 tonnes of iron ore. Calc silicate and skarn assemblages are developed along the contact of a calcareous sedimentary package and the Permo-Carboniferous Iron Glen Granodiorite, as discussed in Section 10.2 - Magnetite as a Gangue Mineral, above.

11.1 Type of Mineralization

The skarn assemblages are dominated by medium- to coarse-grained granular epidote, quartz and magnetite. Brown (andradite?) garnet is also present. Magnetite typically occurs as massive bands ranging 20 m wide to less than 1 meter. Sulfide intervals are often associated with the magnetite. Coarse pyrite and chalcopyrite are commonly present; these minerals alter to malachite where oxidized.

Recent float samples of massive magnetite from the Iron Glen pit (see Figures 12 and 13) also contain other minerals when viewed with a special photographic spectral enhancement. This setting emphasizes the more subtle saturation of lower-spectral colors with less effect on the highersaturated colors (*PhotoShop* vibrance setting at +75). Figure 12A is the original sample of massive magnetite with fresh and oxidized faces (top) and showing large, cubic crystal faces reflecting the flash light. Figure 12B shows the otherwise obscured copper oxide (green) and other oxides (yellow) on fresh surfaces. In the next sample, Figure 13A shows the massive, granular magnetite. Figure 13B shows a circular mass of yellow-gold, fine-grained pyrite in the left portion of fresh sample face.

In previously reported surficial drill and rock samples, analyses suggested that copper values of between 0.1% and 0.5% are associated with the magnetite, with selected rock chips of highly sulphidic material from the pit returning 2% -3% copper. Silver in selected rock-chips was found to be in the range of 10 gram/tonne to over 30 grams/tonne. Iron analyses from selected rock-chip sampling at the surface and pit floors and walls returned 40% to 50% iron, mostly magnetite.

Figure 12A - Original Magnetite

Figure 12B - Enhanced View

Figure 13A - Original Magnetite

Figure 13B - Enhanced View

11.2 Magnetics Modeling for Resource Estimates

The ground magnetic surveys completed by Terra Search (2010) and (2008), have modeled the dimensions of the magnetite mineralization in the Iron Glen area. They determined that the best fit is based on field observations and the current state of knowledge for a large magnetic body with moderate contents of magnetite (in the 10% to 20% magnetite range), within which exist pods and bands of high-grade to massive magnetite. The larger envelope of moderate magnetite can be modeled with the overall dimensions of 400 m x 50 m x 100 m to a depth of 200 m with a magnetic susceptibility of 200 x 10^{-3} SI units.

Using a Specific Gravity of 3.5, Terra Search modeled a maximum mineralization envelope of some 10 million tonnes although only a portion this may be a potential resource. Terra Search modeling suggests a higher grade body could be present in the order of 1 to 2 million tonnes with a magnetic susceptibility of 500 to 1,000 with iron grades of approx 30 to 50% plus 0.1% - 0.5% copper with some potential silver credits in the 10 grams/tonne to 30 grams/tonne range, based on earlier surface sampling at the Iron Glen pit.

If a lower magnetic susceptibility is used in the calculations, then more tonnes would be present but magnetite and the associated iron content would likely be lower. However, beneficiation of a larger iron resource base combined with credits from copper, zinc, silver and/or additional beneficiated products could drive the development of such a deposit, assuming it could support a reasonable economic mine life.

Such magnetic modeling requires additional information on the physical and mineralogical characteristics and on the extent of the known mineralized zone as well as any extensions laterally and at depth that may mask the magnetic signature. The magnetics may also be useful in identifying satellite zones located along the contact with the subject granodiorite or along the contact with the newly recognized granite with a carbonate or equally receptive unit that could include mineralization of economic interest. Other geophysical methods should also be considered in exploration for metals other than magnetite.

Section 12.0 Exploration

12.1 Previous Surveys and Investigations

For background, Puce (2007) also recommended a ground magnetic survey to prospect for magnetite masses around and along the Iron Glen granodiorite contact to the northwest. The survey was designed as a series of short east-west lines over the known outcropping areas from the southeast, traversing to the northwest. Terra Search carried out the survey in December, 2007. In total, 123 line kms were surveyed at generally 25 m spacing, line length was 2.5 kms (Terra Search, 2008).

12.1.1 Ground Magnetics Surveys

The Terra Search magnetics surveys conducted over the past few years have served as both a mapping tool to interpret the local geology as well as a technique for targeting magnetic mineralization such as the magnetite skarn for the purpose of selecting optimum drilling sites. By late 2008, Terra Search has conducted a 4-day field geological evaluation of selected areas of the Iron Glen EPM. This resulted in the generation of a Reduced-to-Pole (RTP) image of the combined ground-magnetic surveys, as illustrated in Figure 14. This clearly shows the magnetic body in the Iron Glen Pit with an apparent extension to the northwest.

Terra Search has developed a number of new exploration concepts that will be useful in future exploration programs on the Iron Glen EPM; only a few need to be summarized here:

- The details present in the ground magnetic data are on the scale useful for drilling target definition.
- Within the survey area, the contact with the Iron Glen Granodiorite and surrounding country rocks can be clearly seen as a large semi-circular intrusive embayment.
- The low magnetic country rock schists (magnetic susceptibility of approx 0.15 SI units) appear as a prominent low magnetic margin on the western and southern sides of the intrusion.

- On the eastern side of the intrusive aureole, the slightly magnetic Quartz Megacrystic Granite (the recently identified granite exhibiting a magnetic susceptibility of approx 15 x 10^{-3} SI units in fresh rock) is distinguished from the schists by its higher total magnetic intensity.

- Most other rock units such as Burdekin Formation Limestone, Permo-Carboniferous Felsic Porphyry (recently interpreted as a siliceous calc-silicate), Dotswood Formation feldspathic sandstone, and Kukiandra boulder conglomerate all have low measured magnetic susceptibilities (<1 x 10^{-3} SI units) and appear as magnetic low areas on the images.

- Some feldspar porphyry dykes of intermediate composition have low magnetic susceptibilities (1 to 2 x 10^{-3} SI units) and these form distinctive low magnetic linears where they cut the Iron Glen Granodiorite.

- Some of the weaker magnetic linears which are enhanced with advanced processing may correspond to structural dislocations, e.g., faults or shear zones. However, these are fairly subtle and detailed field mapping will be required to confirm these interpretations.

- The ground magnetic survey has clearly delineated the horizontal extent of the magnetite skarn mineralization, at the intrusive contact of the Iron Glen Granodiorite and calc silicate/schist/marble package.

- As defined by the Reduced-to-Pole (RTP) image, the magnetic anomaly is some 400 m long and over 50 m wide.

- There are small magnetic highs, along strike to the north and south, which have minor occurrences of magnetite at the surface.

- There are no other similar prominent magnetic high features along the contact of the Iron Glen Granodiorite within the survey area.

- The survey has effectively screened over 6 kms of prospective granodiorite/skarn contact. This strong anomaly is related to the presence of the major magnetite unit in the Iron Glen pit area, but the extent to which the magnetite unit has been masked by faulting is unclear at present.

- 3-D magnetic modeling of the Iron Glen ground magnetic survey has shown that the mapped geological units (with their associated magnetic parameters) explain almost all the major magnetic features.

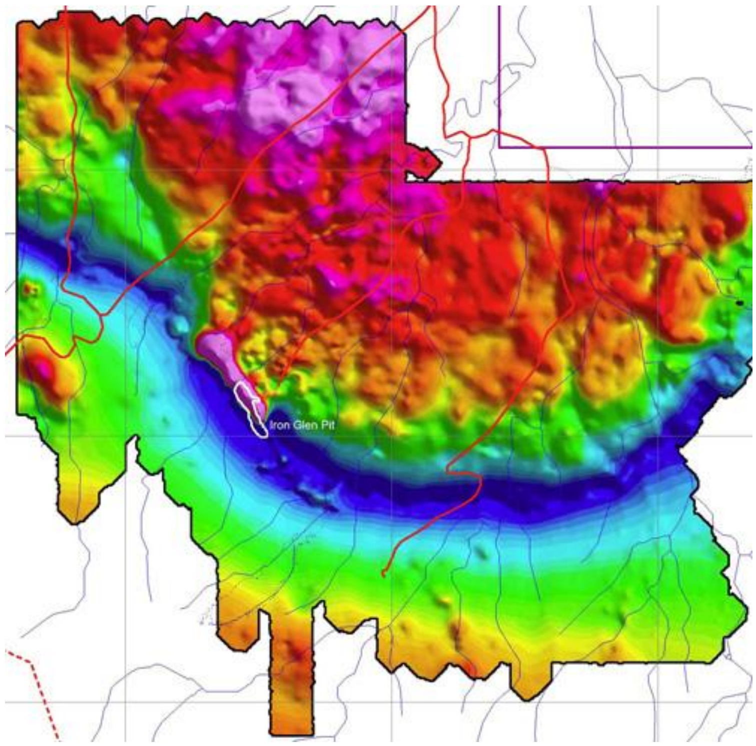


Figure 14 - A Reduced-to-Pole (RTP) Image of the Combined Ground Magnetic Surveys (Terra Search, 2010)

- A magnetic high has been located to the west of the Iron Glen trend. Ground follow up revealed an outcropping, strongly pyritic, highly fractured rhyolite porphyry. The magnetic susceptibility of the rhyolite is low (0.15×10^{-3} SI units). Because the anomaly is not explained by the surface geology, it is likely there is a deeper buried source.

- 3-D modeling of the Iron Glen ground magnetic survey shows that the large magnetic high and prominent trough-like aureole are caused by the Iron Glen Granodiorite body. This prominent trough results from the contrast between the moderately magnetic granodiorite and the non magnetic country rocks. A steep-sided contact is indicated.

- 3-D magnetic modeling shows that the strong magnetic high at the Iron Glen pit area can be modeled as a body of strongly magnetic skarn with conservative dimensions of 400 m along strike x 20 m across strike and 70 m to 100 m down dip. The dip of the body is consistent with surface structural measurements of 150° strike and 50° to 70° to the northeast.

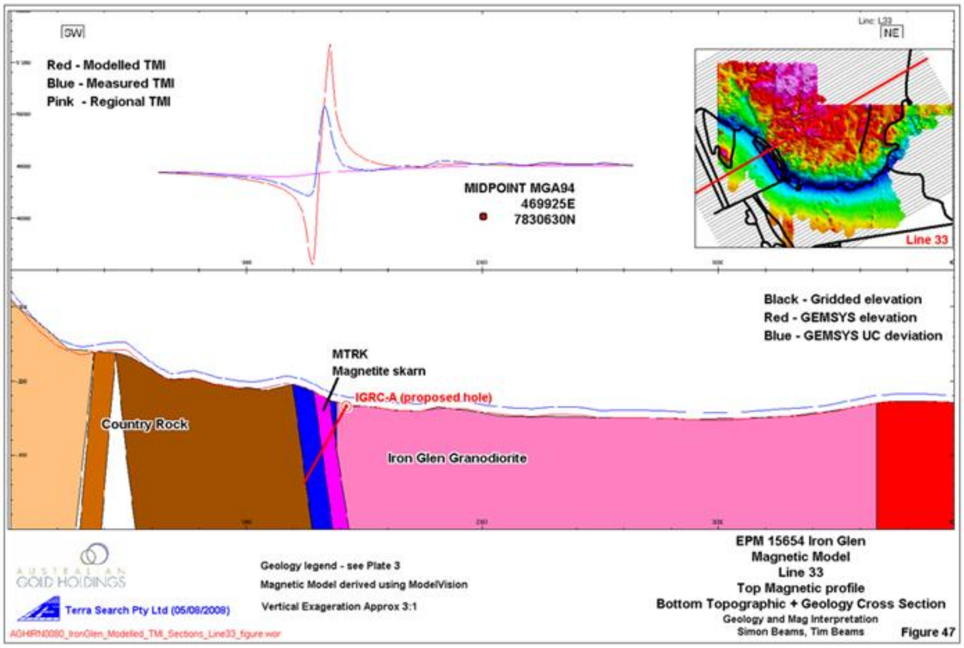


Figure 15 - Example Modeled Cross Section (from Terra Search, 2010)

Modeled cross sections were generated by Terra Search (2010) from the geophysical modeling of the magnetics data. One such cross section has been presented in Figure 15. This figure has been selected to illustrate some additional observations. The modeled magnetics suggest that the magnetite skarn continues to a substantial depth, as indicted by the high-low signature in the figure. This suggests that a significant tonnage of magnetite may be available in the Iron Glen pit area at depth with additional tonnage to the northwest along strike. Also, this modeled section has been confirmed during the 2010 drilling program (see Figure 23 and 24 in Section 13.0 - Drilling Activities).

12.1.2 Soil Geochemical Surveys

A soil sampling survey was carried out in 2009-2010 by Terra Search to assess the surface mineralization over the Iron Glen deposit and pyritic rhyolite plug to the west. A total of 110 minus 80 # mesh soil samples were collected. Terra Search concluded as follows:

- The skarn style mineralization at the Iron Glen pit area is clearly identified by elevated iron, base metals (copper, lead, zinc, silver), and calcium.

- The northern strike extent of the iron and base metal in the soil geochemical anomaly is at least 200 m longer than the Iron Glen pit. This is a similar relationship to that shown by the ground magnetic high discussed earlier.

- The southern strike extent of the iron and base metal in soil anomaly does not extend beyond the general area of the Iron Glen pit.

- Gold values are up to 69 ppb. The highest values are associated with the iron-copper skarn in the central to southern part of the pit area and in the hanging wall to the skarn.

- Base and precious metal values over the pyritic rhyolite plug area are all of a low values (e.g. all < 5 ppb gold). If this system carries metal it would have to be at a different level to current exposures. As the magnetic high near the plug is still unexplained there is a possibility of an intrusive source at depth that may be associated with mineralization. The pyritic rhyolite may represent the barren periphery of the hydrothermal system.

- The highest values of copper in soils occur in the central to southern parts of the Iron Glen pit area, higher values of tungsten, molybdenum also occur in this area. This relationship is interpreted by Terra Search as indicating the hotter parts of the hydrothermal system closest to a magmatic source.

- The highest values of lead and zinc in soils occur to the northeast of the pit area. This relationship is interpreted as indicating the lower temperature areas of the hydrothermal system and the direction of the cooling path of the mineralizing fluid as it moved away from a probable magmatic source.

- The soil lines over the Iron Glen deposit are all anomalous. Discriminant Analysis conducted by Terra Search indicates that the samples at the end of survey lines are still mineralized.

The geochemical soil maps generated by Terra Search resulting from the above surveys are particularly interesting, especially for gold and silver illustrated in

Figure 16; for copper, lead, and zinc in Figure 17, and for molybdenum, antimony, and tungsten in Figure 18, below:

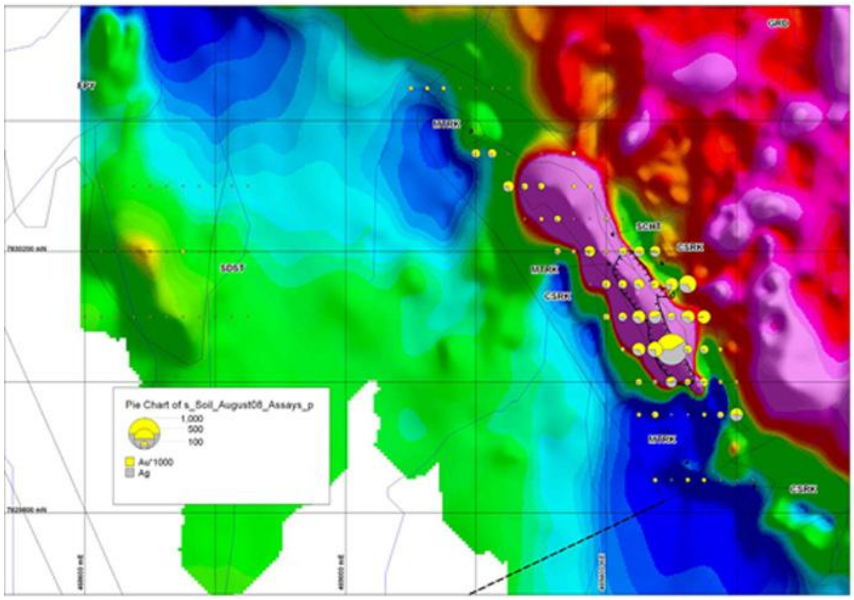


Figure 16 - Gold and Silver Soil Values (Terra Search, 2010)

When comparing the soil anomalies apparent in Figures 16, 17, and 18, with the corresponding hole logs (in Appendix II), the anomalies from the soil surveys have produced a guide to later drill-site selections. In general, however, the reported copper, lead, and zinc soil survey anomalies have been confirmed in the recent drilling, see Section 13.0 - Drilling Activities.

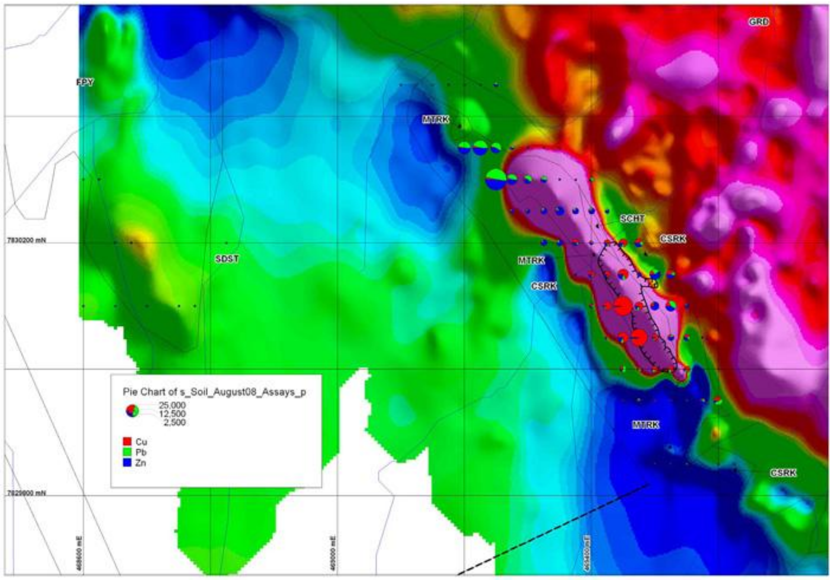


Figure 17 - Copper, Lead, and Zinc Values (Terra Search, 2010)

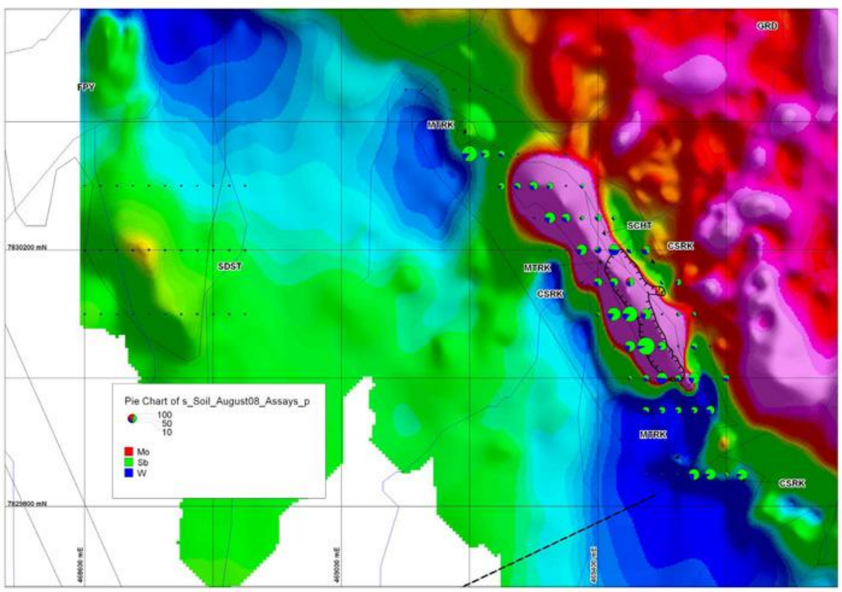


Figure 18 - Molybdenum, Antimony, and Tungsten Values (Terra Search, 2010)

12.2 Current Concepts

The descriptive model described by Cox (1986) of iron skarn deposits (Model 18d) is consistent with the methods employed by Terra Search in the exploration program conducted in the Iron Glen area over the past few years. This included site identification based on earlier reports, soil and rock-chip sampling and analyses, aeromagnetics followed by detailed ground magnetics, and then followed by a preliminary drilling program that included detailed geochemical and magnetic susceptibility logging, petrographic analysis of some 16 thin sections, 1 polished thin section and 3 polished blocks of surface samples and from the recent drilling completed in October, 2010 (see Price, 2010 and Terra Search, 2011). This petrographic analysis has begun the process of developing a clear paragenetic history of the pulses of mineralization that have intruded the subsurface in the Iron Glen area (see Price, 2010). This will aid exploration.

Section 13.0 Drilling Activities

Historical drilling within the Iron Glen tenement focused on determining the quality and tonnage available of limestone near the surface. Trans Australian Explorations (TAE) obtained access to percussion drill samples retained by North Australian Cement Limited (NACL) during the period of extraction of the ironstone held under lease during 1955-1969. These were geologically logged and selected samples were assayed. The base of oxidation is described as 20 m below the surface, but this is probably the base of partial oxidation because sulfides are near the surface in the existing Iron Glen pit. Historical shallow drilling in the magnetite lenses shows intermixed sulfides containing copper over an interval of 10 to 20 m with values ranging from 0.3 to 0.7% with even higher values reported nearby. Soil sampling confirmed that the magnetite skarn is significantly mineralized and deserved further study.

Following up on interpretations made by Terra Search's magnetic modeling and local geological investigations of 2008 and 2010, drilling and sampling were conducted in the area of the Iron Glen pit in October, 2010. Eleven holes were completed by reverse-circulation drilling for a total of 1,258 m drilled on the Iron Glen EPM using 3½ inch TBH hammer bits to a maximum depth of 148 m at inclines of 60 degrees.

This initial drilling program was designed to test the extent of magnetite mineralization associated with a strong magnetic anomaly identified earlier in and around the Iron Glen pit area (shown in Figures 14 to 18).

Figure 19 - Drill rig on site of IGRC002, looking south. Cyclone and sample splitter at left of photo (Terra Search, 2011).

The locations of the holes drilled are shown in Figure 20, and they are identified as IGRC001 through IGRC011. Drilled at angles of 60 degrees, all holes were designed to intercept the magnetite body identified by the earlier ground-magnetics program, the anomaly of which is illustrated in Figure 21 (and modeled in the cross-section in Figure 15). The hole locations and horizontal extent projected to the plan view are also presented.

Terra Search (2011) recently reported that significant magnetite intercepts were encountered during the October, 2010 Iron Glen drilling program, and based on their report, we conclude that the drilling results also have indicated the presence of other metals. These results are summarized in the tables below (see Tables 3, 4, and 5). The angle drilling intercepts are presented as down-hole widths and not true widths.

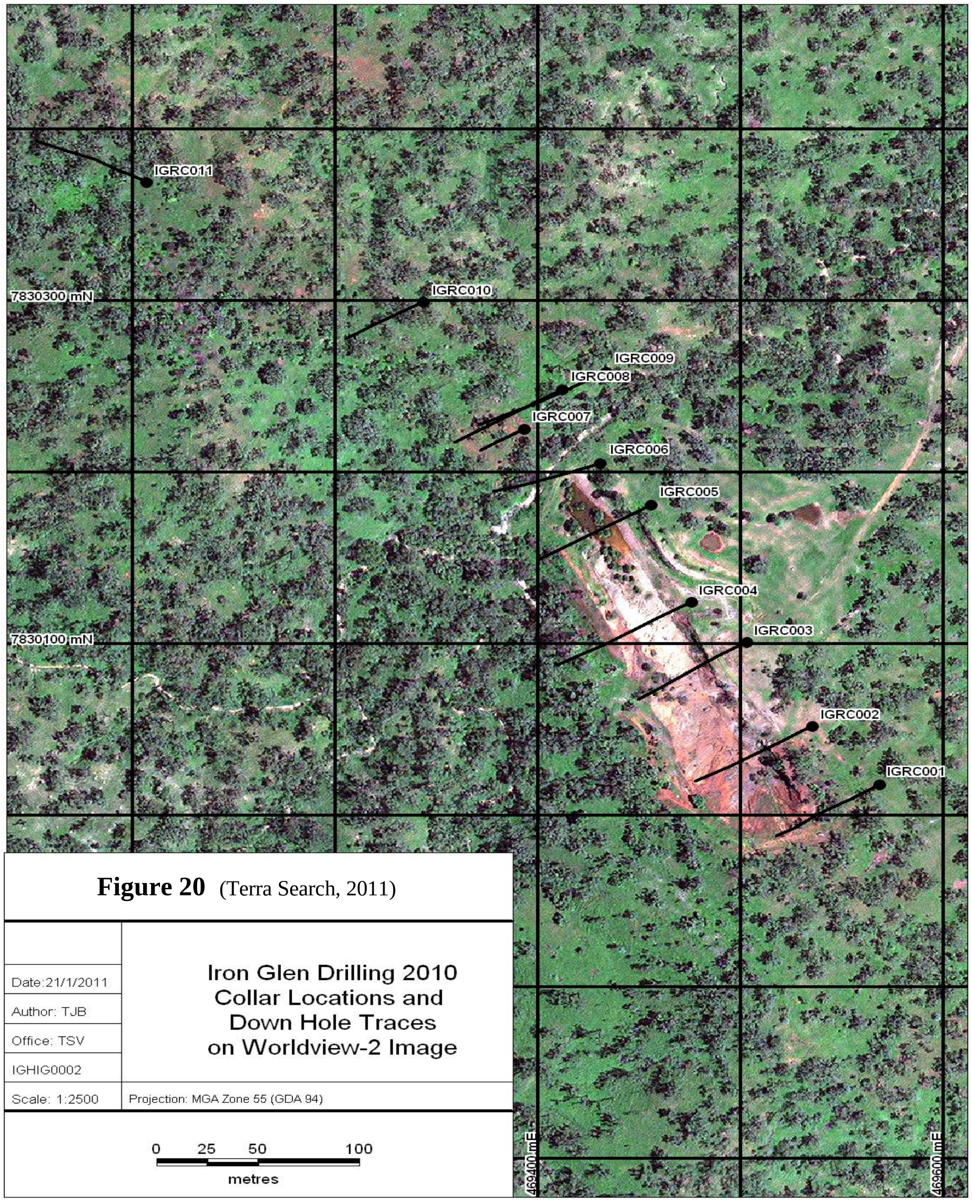


Figure 20 (Terra Search, 2011)

The geological logs indicate that all high-grade iron analyses are from zones of massive to semi-massive magnetite rock and associated magnetite skarn, (see Hole Logs in Appendix II). More than one massive magnetite zone containing copper and sulfide were encountered in the southern holes. Of particular note is that high zinc and silver analyses are from samples that occur outside of the zones of massive magnetite.

As in many similar iron skarns known elsewhere in the world, mineralization containing more than just iron is often present in nearby zones. At the Iron Glen EPM, based on the information available to date, the initial drilling program has revealed that the mineralization can be classified as an iron-copper-zinc-silver skarn. Terra Search (2011) reports that drilling has shown that both the granodiorite-skarn contact and skarn-marble sequence, including the enclosed magnetite skarn bodies, are steeply dipping. We have reviewed their observations (presented below) on the mineralization encountered as a result of the drilling program:

- In general, the massive magnetite zones are assigned to 40% plus iron or 60% plus magnetite. There is a good correlation between zones logged as massive magnetite, extremely high-magnetic susceptibilies, high-magnetite content and iron content.

- Within the skarn, other iron phases besides magnetite are present – such as epidote, clinopyroxene, garnet, biotite, amphibole, chlorite, pyrite, pyrrhotite. The massive magnetite appears to be enclosed in an envelope of magnetite skarn containing >20% Fe.

- In terms of the relative position of the massive magnetite, it appears that massive magnetite occupies a similar stratigraphic position in holes IGRC002 to IGRC006. The massive magnetite occurs in the lower third of the skarn-diorite zone, generally 30 m to 40 m above the marble contact. Terra Search (2011) suggests that there is good continuity of the massive magnetite lens over a lateral strike distance of some 250 m, with indications of thin zones of magnetite within other intervals.

- The massive magnetite intersected in the southernmost Hole IGRC001 is close to the bottom marble contact and therefore unlikely to be the same magnetite lens intersected in holes to the north. Structural complexities may increase to the south, and the main magnetite zone may have been disrupted by faulting.

- Similar structural complexities may also increase to the north, where the existing drilling is not of sufficient density or orientation to establish the continuity to the north. [In projecting toward the northwest,] only Hole IGRC008 contains a massive magnetite intercept and this is difficult to correlate to other holes to the north, [an indication that the unit has been disrupted by faulting].

- Diorite dikes cut the skarn sequence and are also altered and somewhat metamorphosed.

- The felsic granite and aplite intersected are assumed to be late differentiates of the Iron Glen granodiorite.

- The fine-grained siliceous rock in the western area of the EPM, previously reported by Terra Search (2010) as felsic porphyry, has been re-interpreted as siliceous calc-silicate, otherwise known as a siliceous skarn.

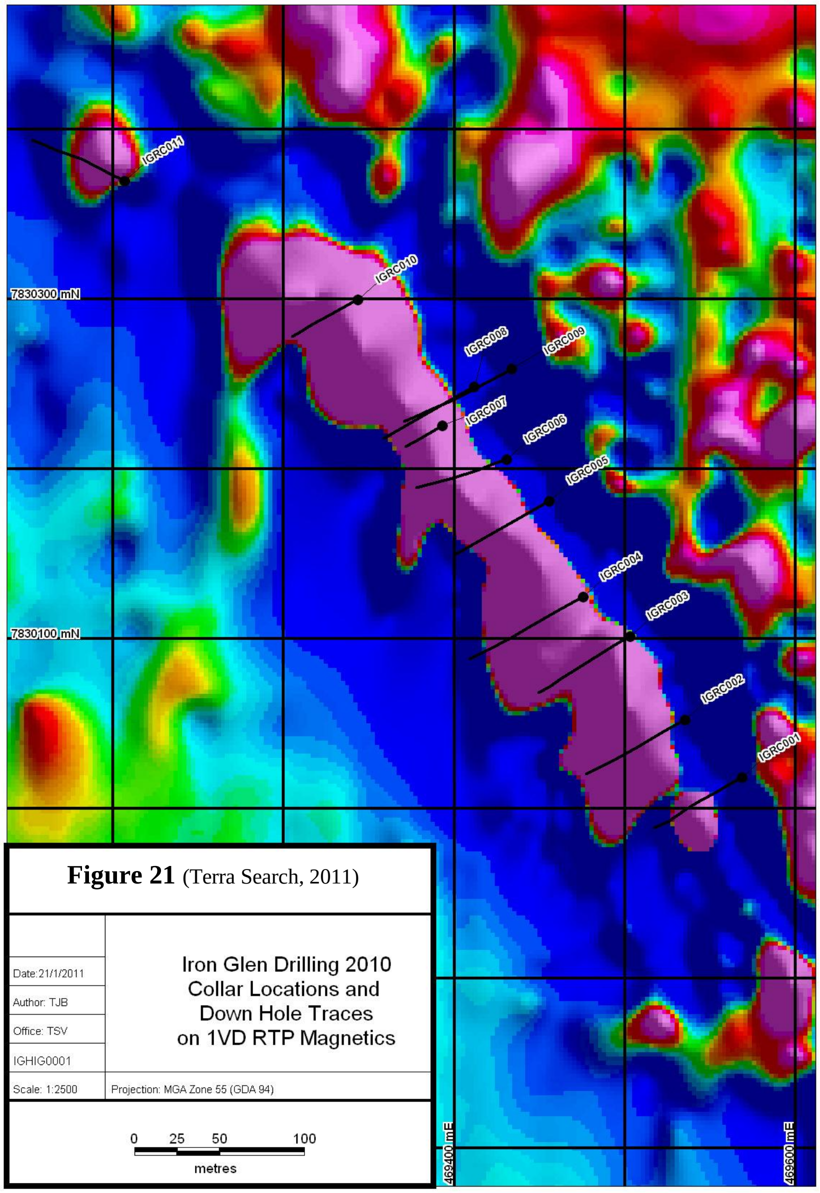


Figure 21 (Terra Search, 2011)

- There are several alternative interpretations as to why the northern drilling did not intersect massive magnetite: 1) holes may have drilled over the top or around the flanks of deeper magnetic features, 2) the sequence may be dipping away from the azimuth of the current drill holes, and 3) structural complications may exist. As is common in the early phases of drilling skarn deposits, such issues need to be resolved with additional drilling.

- There is a zoning evident along the strike length of the skarn and magnetite skarn. Copper mineralization is commonly associated with the magnetite bodies in the southern and central holes, around the pit area. Silver is also anomalous.

- There is less copper and silver evident in the northern holes, even in the massive magnetite zone. Zinc and lead are much more prominent here, often present in skarn intervals that are not particularly magnetite-rich. This is not unusual in such deposits.

- The high-grade magnetite averages 30 to 50% Fe over downhole widths of 2 m to 10 m. A lower grade (20% Fe) envelope occurs around the high grade zones.

- Sulphur (as S) in the high-grade magnetite ranges from 0.5% S in the north to over 2.5% S in the south (see Table 3).

Table 3
Iron, Copper, Silver & Sulphur Intercepts
(Terra Search, 2011)

Hole ID	From	To	Width	Fe	Cu	Ag	S
	m	m	m	%	%	g/t	%
IGRC001	100	110	10	31.8	0.20	16.5	2.8
IGRC002	64	68	4	26.5	0.28	23.0	2.2
IGRC003	62	68	6	47.1	0.22	22.0	1.5
IGRC004	30	42	12	49.7	0.21	11.5	2.5
IGRC005	82	88	6	50.9	0.06	4.4	1.4
IGRC006	68	72	4	44.6	0.02	1.8	0.6
IGRC007	24	26	2	39.6	0.05	5.6	1.6
IGRC008	74	86	12	40.8	0.03	2.8	0.7
IGRC010	50	52	2	21.8	0.01	0.4	0.3
IGRC010	62	64	2	20.1	0.02	1.3	0.4

- Copper in the high-grade magnetite ranges from 0.02% copper in the north to over 0.25% copper in the south.

- Silver in the high-grade magnetite ranges from 1 ppm silver in the north to over 23 ppm silver in the south (see Table 4).

- Of particular note, a few high zinc and silver analyses were reported in drilling samples outside of the massive magnetite zones. For example: Hole IGRC002 returned 28 m @

59.2 g/t silver from a downhole depth of 48 m to 76 m. Hole IGRC010 samples showed 14 m @ 0.74% zinc from 64 m to 78 m. Also, Hole IGRC011samples showed 76 m @ 0.35% zinc from 0 m to 76 m downhole.

Table 4
Zinc and Silver Intercepts
(Terra Search, 2011)

Hole ID	From	To	Width	Zn	Ag
	m	m	m	%	g/t
IGRC002	28	30	2	2.82	
IGRC002	48	76	28		59.2
IGRC003	68	74	6	0.14	
IGRC003	62	74	12		23
IGRC004	6	20	14	0.11	
IGRC005	100	110	10	0.8	
IGRC006	82	98	16	0.38	
IGRC007	22	28	8	0.69	
IGRC008	90	94	4	0.92	41
IGRC009	100	102	2	0.65	
IGRC010	64	78	14	0.74	
IGRC011	0	76	76	0.35	
Includes:					
IGRC011	0	26	26	0.48	
IGRC011	54	64	10	0.51	

- The high-grade magnetite contains on average 14% SiO_2, 2.7% Al_2O_3, 7.6% CaO, 0.02% P_2O_5 (see Table 5). As discussed later in this report, these values indicate the magnetite drilled to date is of high quality.

- Gold values were all low, [but conspicuous in Holes IGRC002, 3, 6, and especially in Hole IGRC007, (see Appendix II for Hole Logs of interest)].

- It is worth noting that iron not only occurs as magnetite, but some iron is present as siderite, pyrrhotite (which also has relatively high magnetic susceptibility) and in silicates, such as: clinopyroxene, epidote and garnet, etc.

Table 5
Major Element Oxide for High-Grade Magnetite Intercepts
(Terra Search, 2011)

Sample	Hole ID	From	To	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5
		m	m	%	%	%	%	%	%	%	%	%	%
6998168	IGRC00 3	62	64	15.00	0.13	2.57	69.32	0.41	1.46	7.14	0.13	0.12	0.03
6998169	IGRC00 3	64	66	13.80	0.11	1.78	72.44	0.38	1.66	6.27	0.13	0.09	0.03
6998215	IGRC00 4	32	34	16.20	0.14	2.81	67.93	0.37	0.83	7.28	0.12	0.11	0.02
6998216	IGRC00 4	34	36	11.05	0.21	2.83	76.69	0.36	1.08	5.04	0.13	0.16	0.03
6998217	IGRC00 4	36	38	14.20	0.18	3.22	70.40	0.45	1.30	6.52	0.14	0.12	0.02
6998218	IGRC00 4	38	40	11.30	0.09	2.05	77.88	0.45	1.18	4.99	0.12	0.10	0.02
6998219	IGRC00 4	40	42	13.40	0.11	2.90	71.02	0.47	1.11	7.74	0.09	0.08	0.01
6998311	IGRC00 5	82	84	12.15	0.06	1.70	72.96	0.47	1.20	6.95	0.09	0.07	0.01
6998312	IGRC00 5	84	86	12.05	0.05	1.71	73.33	0.45	1.08	7.55	0.09	0.07	0.01
6998313	IGRC00 5	86	88	16.85	0.09	2.55	64.72	0.47	1.54	9.51	0.07	0.06	0.01
6998374	IGRC00 6	68	70	19.05	0.15	3.94	61.32	0.52	1.78	10.40	0.11	0.07	0.02
6998375	IGRC00 6	70	72	18.90	0.11	3.64	61.94	0.61	2.02	10.00	0.17	0.11	0.02
6998467	IGRC00 8	74	76	17.00	0.14	3.30	63.99	0.46	2.07	9.79	0.12	0.08	0.01
6998468	IGRC00 8	76	78	13.15	0.14	2.58	68.62	0.49	1.88	7.65	0.11	0.08	0.02
6998469	IGRC00 8	78	80	11.90	0.10	2.20	75.75	0.49	1.26	5.95	0.12	0.08	0.01
6998470	IGRC00 8	80	82	15.35	0.10	3.28	67.19	0.53	1.41	8.27	0.10	0.08	0.01
6998494	IGRC00 8	74	76	16.90	0.14	3.33	63.63	0.47	2.04	9.94	0.11	0.08	0.01
6998495	IGRC00 8	76	78	13.20	0.14	2.59	68.62	0.49	1.88	7.67	0.10	0.08	0.02
6998496	IGRC00 8	78	80	11.65	0.10	2.15	76.16	0.49	1.22	5.90	0.11	0.08	0.01
6998497	IGRC00 8	80	82	14.55	0.11	3.05	69.50	0.52	1.37	7.83	0.11	0.08	0.01
AVE				14.38	0.12	2.71	69.67	0.47	1.47	7.62	0.11	0.09	0.02

The magnetite bodies remain open down dip, and along strike to the north and south, but faulting is evident in those areas. Anomalous copper, lead, zinc, and silver (and even vanadium) have been encountered, both within the magnetite zone and above and below the zone. These anomalies appear to extend north and south of the recent drilling based on Hole IGRC001 in the south and Hole IGRC011 in the north some 225 m northwest of the Iron Glen pit. Further interpretation of the northern drilling results is currently underway by Terra Search personnel.

The geological logs for the 11 holes drilled have been presented by Terra Search (2011) in the format shown in Figure 22-A through 22-C. As an example, we have included one such log, e.g., for Hole IGRC004. These logs represent the findings of the Terra Search October, 2010 drilling program, including the occurrence of the magnetite zones and other zones of mineralization.

Figure 22-A

Hole Log with Mineralogical and Magnetic Susceptibility (Terra Search, 2011)

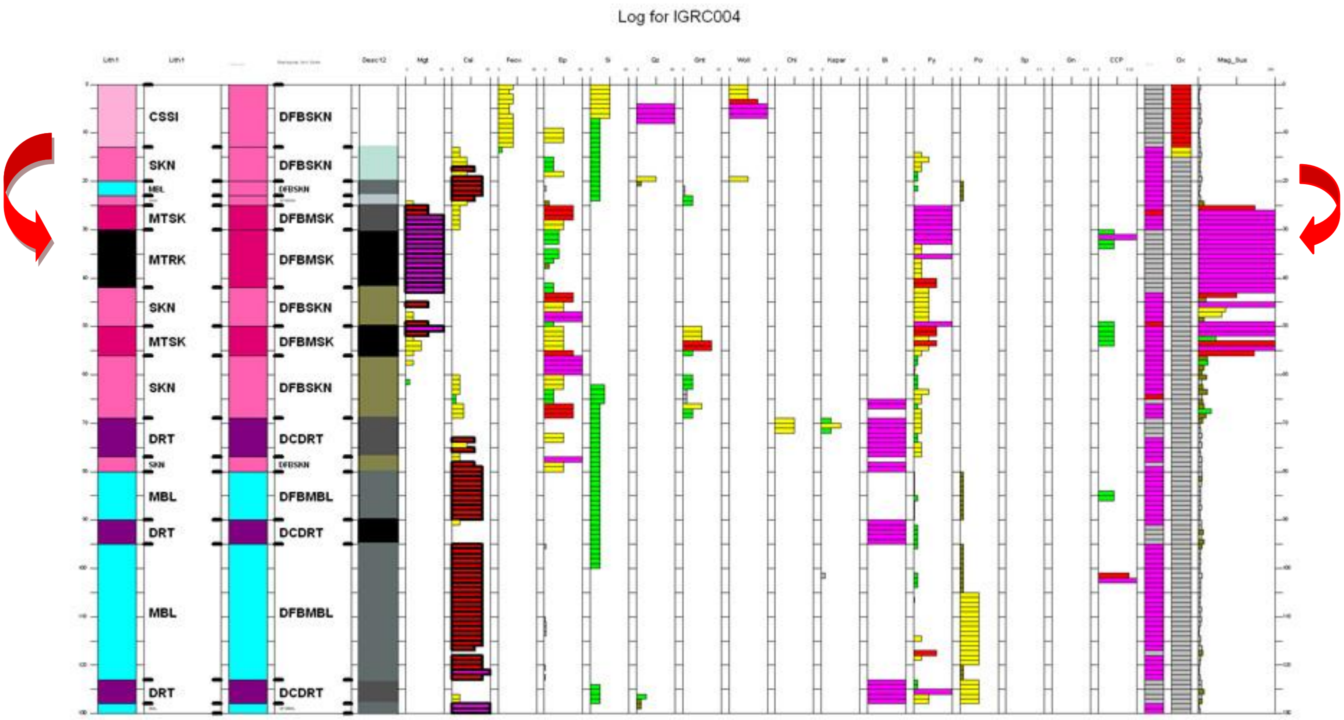


Figure 22-A presents the unit definitions (e.g., MTRK is the unit name for the massive magnetite zone), the geological descriptions, and other hole-related information, with magnetic susceptibility logging shown on the right margin of the figure above. This first log of each hole presents the geological information. The second log (Figure 22-B) presents the laboratory results for the major geochemistry, and the third log (Figure 22-C) presents the so-called minor geochemical data. Of particular note is that each log includes the Fe values (in the left margin), which infers the massive magnetite unit (MTRK) quite well.

In Figure 22-A, there is also a secondary magnetite zone a few meters below the main magnetite zone (unit name: MTSK). Pyrite was reported during logging within the main magnetite zone encountered in Hole IGRC004. Also, arsenic, magnesium, sulphur, and some copper and silver and other elements of interest are also present in the main zone. The logs for the other holes are available in Appendix II, and are presented in the same sequence for each hole in Appendix II, as in Figures 22-A to C above and below.

Figure 22-B

Hole Log with Major Oxides and Elemental Scans (Terra Search, 2011)

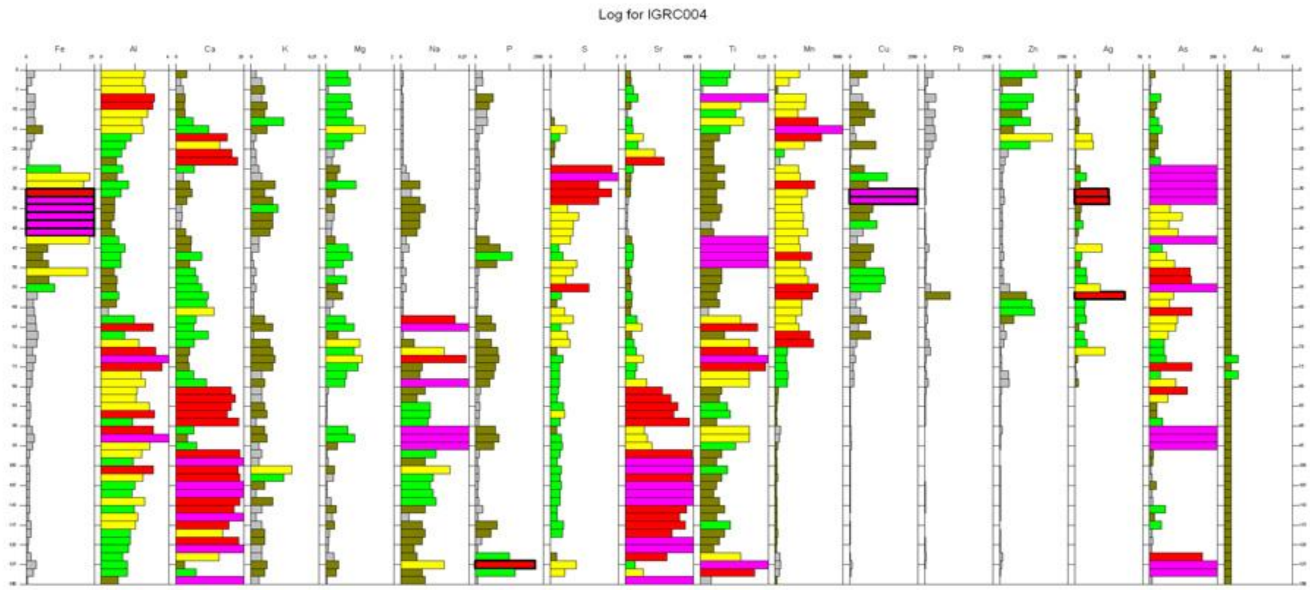
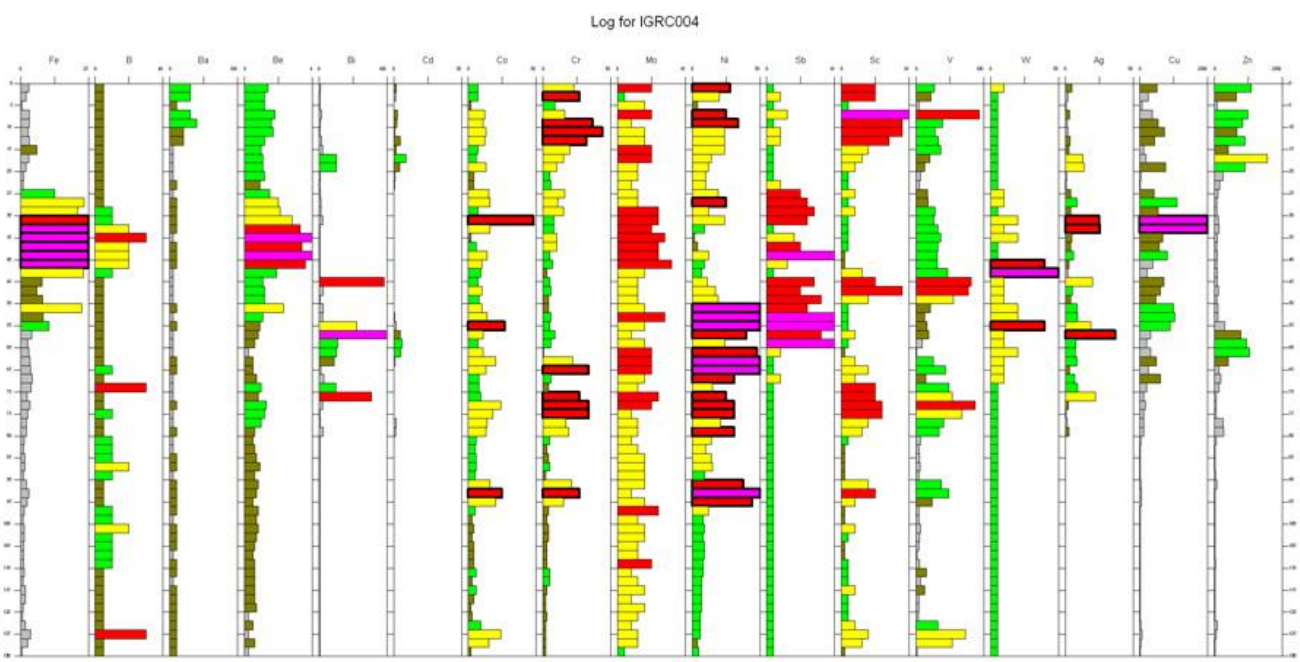


Figure 22-C

Hole Log with Elemental Scans and Metals (Terra Search, 2011)



Upon inspection of these hole logs, the magnetite zone is apparent, when present (see left margin of the three Hole Logs for reference). The other anomalies generally occurring in non-magnetite zones are indicated in Table 6:

Table 6
Magnetite Presence and Other Anomalous Metals in Drill Intercepts
(Data from Hole Logs - Terra Search, 2011)

Drilled Hole	Magnetite Present?	Other Anomalous Metals
Hole IGRC001	Yes	and for copper
Hole IGRC002	Yes	and for copper, silver, and gold
Hole IGRC003	Yes	and for copper and gold
Hole IGRC004	Yes	and copper and silver
Hole IGRC005	Yes	and for zinc
Hole IGRC006	Yes	and for zinc and gold
Hole IGRC007	Yes	and for copper, lead, zinc, silver, and gold
Hole IGRC008	Yes	and for lead and zinc
Hole IGRC009	No	and for zinc
Hole IGRC010	Yes	and for lead and zinc
Hole IGRC011	No	and for lead, zinc, and manganese

We have concluded that these geochemical anomalies form the basis for justifying further exploration and drilling for non-magnetite targets. This is combined with our review of existing economically significant deposits occurring elsewhere in the world that share certain similarities with these anomalies, see Section 20.0 - Other Relevant Data and Information and Section 21.0 - Interpretations and Conclusions.

Terra Search (2011) has included their geological interpretations in a series of geological cross sections. We have reviewed these cross sections and have selected two that represent the conditions encountered. First, the main magnetite zone is illustrated in Figure 23. The relationship of the zone to the granodiorite is also clear. This represents a classic iron skarn deposit, to be discussed in Section 20.0 - Other Relevant Data and Information, especially 20.3.4 - Biggenden Mine.

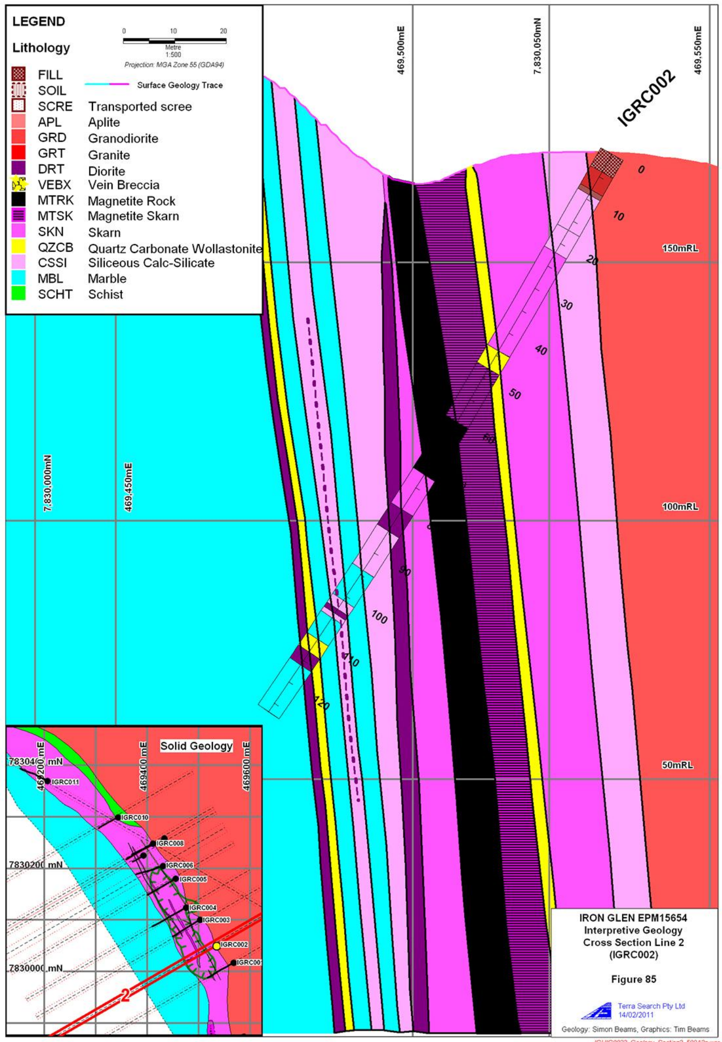


Figure 23 – The Main Magnetite Zone and Skarn Assemblage.
(Data from Hole Logs - Terra Search, 2011)

The other cross section shown in Figure 24 illustrates the lenticular characteristics of the magnetite zone and near the northern extension of the magnetite zone. A vein breccia has intruded most of the other units and is therefore the youngest involved in the section. Note that Hole IGRC009 did not encounter the magnetite zone (see the hole log in Appendix II). Of particular note is the increase in metals in the middle and lower zones of the hole.

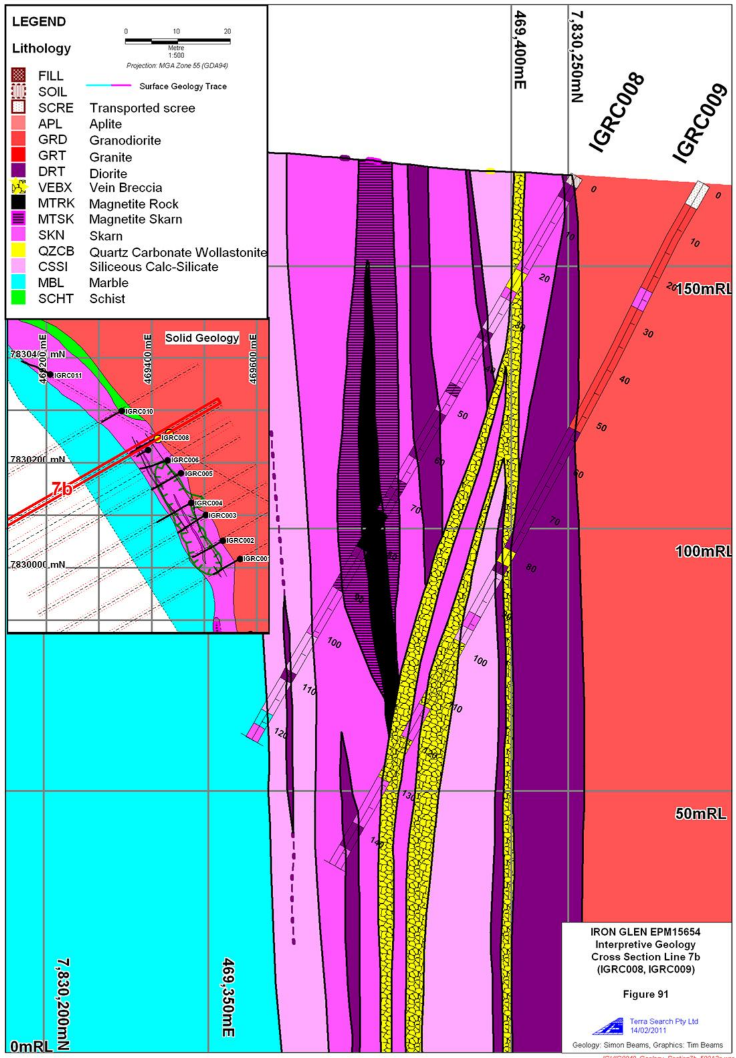


Figure 24 – The Northern Magnetite Lens and Appearance of Vein Breccia
(Data from Hole Logs - Terra Search, 2011)

Terra Search (2011) also prepared a series of hole logs that illustrate the important geophysical and analytical results encountered. In Figure 25, Hole IGRC004 shows the Fe% (left) and Magnetic Susceptibility (right) over the length of the hole. This figure also shows the main magnetite zone and the surface profile and ground magnetic anomaly associated with the drill site (above the hole log). Figure 26 shows Hole IGRC002, located at the southern end of drilling to date. This log-type illustrates the sample results for zinc and copper values down the hole. The square blocking shows maximum values of copper over an extensive interval that includes the main magnetite zone.

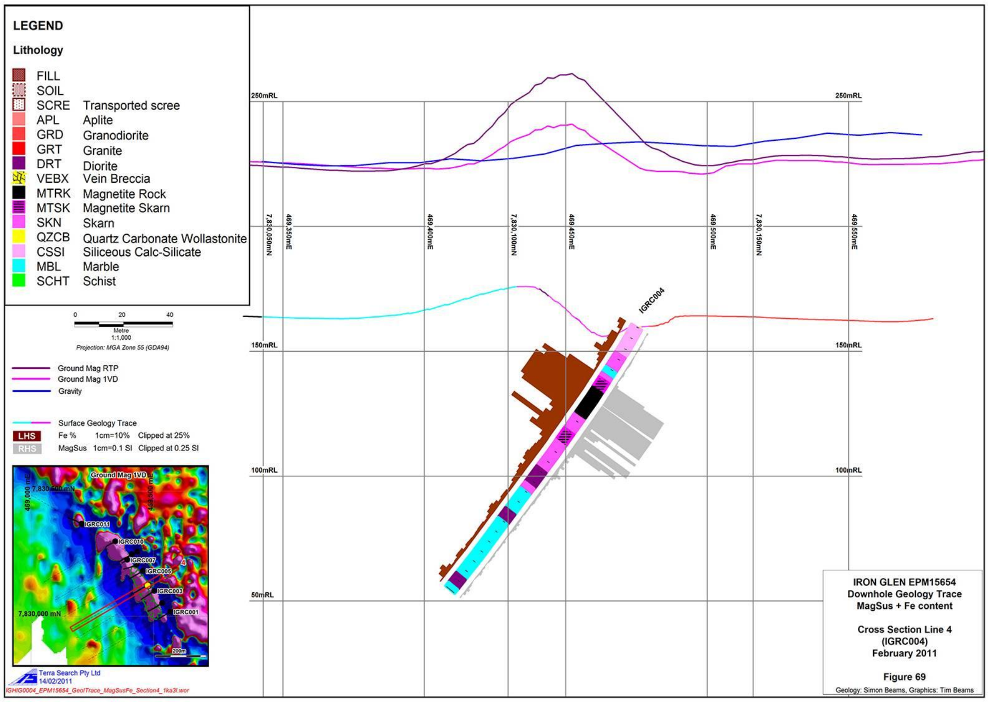


Figure 25 – Hole IGRC004 Showing Log of Fe% (left) and Magnetic Susceptibility (right)
(Data from Hole Logs - Terra Search, 2011)

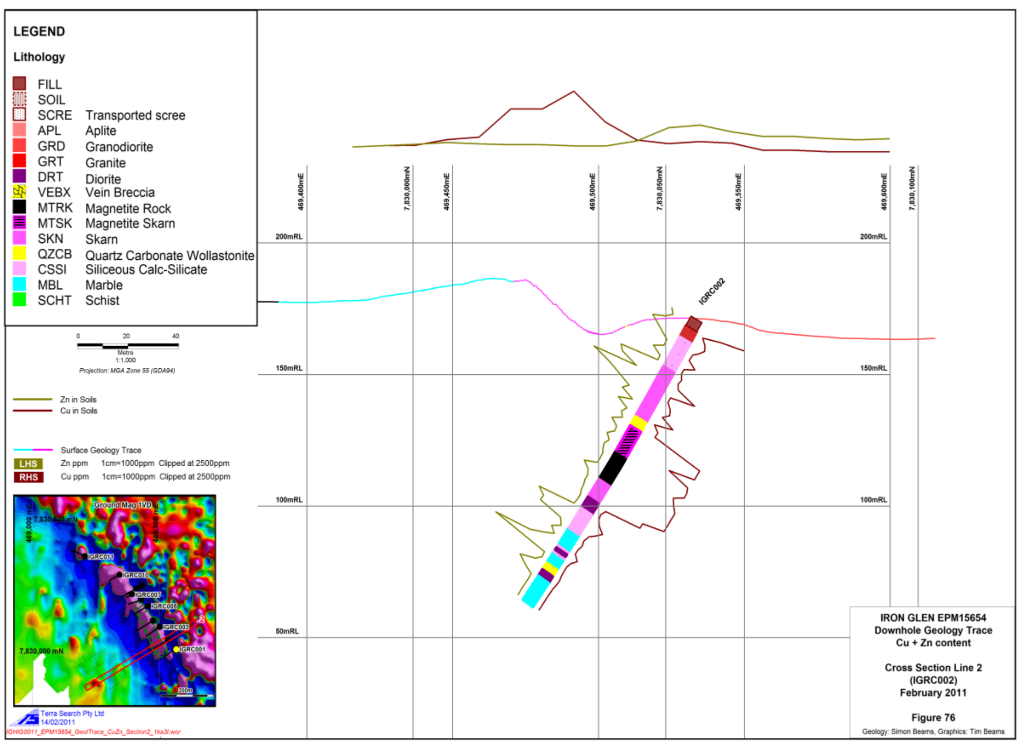


Figure 26 – Hole IGRC002 Showing Log of Zinc (left) and Copper (right)
(Data from Hole Logs - Terra Search, 2011)

Section 14.0 Sampling Method and Approach

14.1 Drilling Method

We have reviewed the information on the all-terrain drilling system employed by Terra Search utilizing a top-drive, reverse-circulation percussion rig for the Iron Glen drilling program. The drill string consisted of 3-meter rods and 3½-inch hammer bits. A high-pressure air flow collected percussion chip samples at the hammer face via a through-the-bit sampling hammer. The sample consists of chips up to 1.5 cm long and crushed powder that was forced by the air flow up the inner tubes within the drill rods. The sample would then flow from the top of the drill string via a high pressure sample hose ("bull hose") into a cyclone – a funnel shaped sample hopper that facilitates mixing of the sample. A seven eighth (7/8): one eighth (1/8) sample splitter sits below the cyclone. Bulk sample is released from the cyclone into the sample splitter at the end of every meter drilled. The 7/8th bulk sample weighs approximately 12 kg and was collected in a large plastic bag, marked with the Hole ID and meter interval.

A reference sample of the crushed sample was then taken from the bulk 1-meter sample by means of a sample spear, made from PVC tubing. This reference sample weighed approximately 1 kg. It was retained for archive purposes and stored in the Terra Search Townsville warehouse. The remainder of the 1-meter bulk sample was stored on the Iron Glen site, until after the geochemical assay results are received. In the case of the Iron Glen samples, high-grade magnetite iron ore was identified as the holes were drilled and the bulk sample from these intervals were transported to the Terra Search Townsville warehouse for dry storage to prevent any sample deterioration or weathering resulting from exposure to the elements.

Analytical samples were collected every 2 m from the 1/8th split, into a Calico bag, labeled with sample number. Sample details, such as Hole ID and "from to" meter, type of sample, were stored with the sample number recorded in a pre-numbered sample logbook. These details were recorded in a spreadsheet. The analytical sample weighed approximately 1.5 kg to 2 kg for the 2-meter intervals.

14.2 Geological Logging

Samples were geologically logged on a meter basis by a Professional Geologist. Clean-washed chips were obtained from the bulk 1-meter bags using a stainless steel kitchen sieve. Quantifiable geology logs were created that concentrated on the most significant information - which attached high levels of reliability, independent of which geologist is logging the sample. Attributes were chosen that are directly relevant to the understanding of the specific mineralization system. Key observations have been incorporated into the quantifiable geology hole logs, as follows:

- Lithology – each distinctive lithology was characterized and recorded.
- Geological Unit Code – recognizable geological units that are sufficiently significant to be mapped out at surface and in section.
- Color – important in relation to lithology changes, alteration, mineralization, and weathering features.
- Key minerals - important in relation to the understanding of the mineralizing system and will provide guides to mineralized zones. These are recorded as volume percentages, logged visually. They included minerals related to alteration and mineralization: magnetite, pyrite, chalcopyrite, pyrrhotite, sphalerite, galena, quartz (and its condition and color), epidote, garnet, chlorite, calcite, wollastonite, biotite, iron oxide, K feldspar, and silicification (fine grained).
- Oxidation status -, i.e., oxidized, partially oxidized, fresh (reduced or un-oxidized).
- Magnetic susceptibility (values in SI units x 10^{-3}) - determinations made using the *Exploranium* KT9 or KT10 instrument. Values recorded range from 0 to >100,000 SI units x 10^{-3} with high values in magnetite zones capped at 20,000.
- Acid Fizz Observation - dilute HCl to determine calcite presence: values recorded as Yes/No or Strong or Weak.

The above geological descriptions were recorded as text in a descriptive field geology logbook. This allowed both the recording of detailed descriptions (Data type = INT) and a brief summary geological and mineralization description (Data type = SUMM). These data were then entered into a project-specific *Explorer 3* database.

Section 15.0 Sample Preparation, Analyses, and Security

Geochemical assaying was carried out on the drilling samples at the Australian Laboratory Service (ALS) commercial mineral assay laboratory in Townsville. ALS is a well-known mineral sample analysis laboratory. The Townsville lab houses modern assay facilities. Some more advanced services were performed at ALS's Perth and Brisbane laboratories.

All drill-hole samples were submitted for routine multi-element analysis. The analytical method is fully documented on the ALS assay lab certificates in Terra Search's *Explorer 3* database assay analysis module contained in their report (Terra Search, 2011). Samples were routinely analyzed for a package of 35 elements by ICP emission spectroscopy (ICP41) utilizing an *aqua regia* acid digest, with gold in all samples by 50-gram fire assay with AAS finish (FA-AA26). Some samples were also analyzed by 50-gram fire assay for Platinum (Pt) and Palladium (Pd). Any elemental determinations that exceeded the range for the ICP AES method (ICM41) were re-analyzed by ore-grade techniques. For the Iron Glen samples, these elements included: copper; zinc - over range at 10,000 ppm; silver - over range at 25 ppm; and Fe - over range at 50%. All over-range iron (Fe) samples, >50 % Fe, were submitted for ALS's iron ore analytical package by XRF analysis, which included major elements (reported as oxides) and important trace elements. In addition, samples from Hole IGRC008 were re-analyzed as a total package for ICP Mass Spectrometry multi-element analysis including Rare Earth Elements (REE).

ALS method ICP-MS61 utilizes a "total digest" involving the four acids – HF, HCl, Nitric and Perchloric, and produces determinations for 48 elements. Silicates were dissolved under this digest, in comparison to the partial digest of silicates obtained utilizing ICP41. Details of the different analytical methods used, the associated detection limits and units were entered into the Iron Glen *Explorer 3* database, see Appendix I.

Section 16.0 Sample Data Verification

The complete drilling and surface geological and geochemical data sets from Iron Glen activities are stored in an *Explorer 3* relational database. The following sections provide the data fields and type of data housed within this database and are shown in Table 7.

A Quality Assurance (QA), Quality Control (QC) procedure was initiated by Terra Search from the outset of the Iron Glen drilling program. Standard 2-meter analytical samples are designated-interval geochemical samples in the database - data type INT for interval sampling. Collection of duplicate samples allowed review of the precision and accuracy of the on-site sampling procedure together with the assay laboratory analytical procedures. Terra Search personnel obtained duplicate samples at intervals of 50 m during drilling. These samples were collected by running 1-meter bulk samples through a 7/8 : 1/8 splitter and collecting the 1/8 sample for the duplicated 2-meter sample in a Calico bag with a different sample number than the original 2-meter analytical sample. These samples were designated for duplicate sampling. The duplicate samples were also linked by a duplicate flag with a key to the original sample number. This provided for an independent cross check of the analyses once produced by the laboratory.

The precision and accuracy of the assay laboratory analytical procedure is checked by submission of known sample standards into the assay batches. At least three known standards were inserted randomly into each laboratory batch. There are four categories of known standards:

- Standard Reference Material (SRM) - these were samples that have been certified by providers of assay analytical standards. They were crushed to powder to ensure representative and repeatable analyses which were carried out by a range of at least 10 commercial assay laboratories. Two standard SRM samples were used with Iron Glen samples at OREAS Labs as: OREAS52Pb - a copper-gold standard, and Rocklabs OXH55 - a gold standard that reports in the 2 g/t gold range.

- Blank samples made up internally by Terra Search of barren gravel which reports low values of gold and base metals designated as Terra Search gravel blanks.

- Known percussion sample materials with a similar magnetite matrix to Iron Glen EPM samples. These samples were previously collected by Terra Search from the Clermont region and designated as QCRC5.

- SRM material was placed into small packets of powder – these samples did not require preparation, so they did not test the assay lab sample preparation procedures. The known analyses have a high level of repeatability and they provide excellent checks on assay labs' accuracy and precision, particularly for gold and base metals.

Table 7
Inventory of the Iron Glen EPM Data Set Available @ January 26, 2011
(Terra Search, 2011)

Item	# Records	Data Type SUM	Data Type Internal	Data Type Duplicates	Data Type Re-assays
Reverse Circulation Holes	11				
M Reverse Circulation	1,258				
Hole Locations (all holes)	11				
Hole Text Details	11				
All Downhole Samples	724		631	24	69
Down hole Surveys	55				
Quantifiable Geology	1,258				
Coded Geology	186	186			
Descriptive Geology	383	186	197		
Hole Size Details	11				
Wholerock	20				
Wholerock Trace	20				
Soil Samples: Data Type = SOIL	112			2	
QA/QC/Standards	38				
Assay Jobs	28				
Assay Templates	14				
Geological Observations	70				
Structures	17				
Total Records	2,958	372	828	26	69

The Terra Search internal standards provided good checks on sample procedures including sample preparation and cross-sample contamination. The blanks were particularly useful in determining contamination or if samples were out of order or if there was an analytical issue in assay lab equipment or preparation procedures. The Terra Search percussion chip internal standard was similar to the magnetite matrix and similar in appearance to the unknown samples for those of Iron Glen. Those samples passed through the same analytical procedure. Even though there is a natural variability when dealing with coarse percussion sample material, the Terra Search Internal standards were an acceptable check on laboratory analytical procedures (including sample preparation) and geochemical results. The Terra Search QA/QC program is documented in the Terra Search report (2011).

One QA/QC area deserving future attention involves the wide variation that was identified with the internal laboratory standards, suggesting that cross-sample contamination has occurred from some other client's mineralized samples that impacted some batches of standard analyses on the order of 100 ppm to 200 ppm zinc, 0.5 ppm silver, 50 ppm lead, and 500 to 1,000 ppm sulphur. This problem illustrates the value of having QA/QC programs built into an exploration program. The problem was identified by Terra Search, announced it in their report, and they are dealing with the laboratory to ensure that issues with their internal standards do not emerge again. Other measures were determined to be acceptable and hence the laboratory data we have evaluated are usable for the purposes at hand, i.e., for use in evaluating an exploration prospect, although not for estimating reserves for metals other than iron.

In reviewing the re-run analyses, we have concluded from trend analysis that the correlations for: silver, arsenic, copper, iron, nickel, lead, and zinc are good (see Table 8 and example cross-check plots in Appendix I). However, the analyses for beryllium and vanadium are marginally acceptable, while the re-run correlations for aluminum, manganese, and tin show considerable scatter.

We also plotted the results of the duplicate re-run samples presented in the Terra Search report (2011). The results are also shown in Table 8 and in Appendix I. Again some are in reasonable agreement while others are not. Iron, copper, arsenic and beryllium analyses are good, while aluminum, manganese, nickel, and tin are in poor agreement with the duplicate analyses.

These issues may be a result of the sampling method where both fine-grained material and chips are recovered during drilling in dense rocks and where some segregation (or losses) would be expected, or it may indicate a problem with the laboratory. This is not an unusual problem because low concentrations of some elements often present analytical challenges, as well as preferential digestion of certain silicate, iron oxide, and other minerals that also can create analytical issues.

We suggest that these issues be further discussed within Terra Search and with the laboratory before the next drilling program.

Table 8 – QA/QC Analyses

(Data from Hole IGRC008 - Terra Search – 2011)

	Trend Analysis				Duplicate/Re-Run Analysis		
Analysis	Good	Fair	Poor		Good	Fair	Poor
Ag	X				X		
Al			X				X
As	X					X	
Be		X			X		
Cu	X				X		
Fe	X				X		
Mn			X				X
Ni	X						X
Pb	X					X	
Sn			X				X
V		X				X	
Zn	X					X	

Section 17.0 Adjacent Properties (Tenements)

On or about January 12, 2011, we reviewed the QDEX tenement database to identify holdings adjacent to or near the Iron Glen EPM 15654 (see Figure 2). To the west, EPM 18909 is in the application stage by Walsh River Mining Pty Ltd., while to the southwest and south, this company also holds EPM 16455 with a granted status, filed by Brian Cleaver, 5 Bowra Court, Leeming, WA 6149. To the south, the company also holds EPM 18911 in an application stage.

Within the eastern boundary of the Iron Glen EPM, ACN Mining Pty Ltd. holds a mining development license (MDL #161) that expires in 2013 (see Figures 6 and 10). ACN also has EPM 18869 (in the application stage) located to the southeast and east of the Iron Glen EPM. Their interest historically has focused on mining limestone for use in making cement for industry.

Section 18.0 Mineral Processing and Metallurgical Testing

18.1 Preliminary Characteristics

As a result of the preliminary drilling discussed above in Section 13.0 - Drilling Activities, some of the metallurgical features of the potential magnetite ore are evident, although more drilling and local mapping will be required to confirm any variability of the mineralization, the reserves available and the range in metallurgy of the minerals to be mined. It is clear that beneficiation will be required to concentrate the magnetic fraction to more than 90% and to a specific particle-size distribution, depending upon the needs of the end-user. The bulk ore would likely contain sulfides intermixed with the magnetite, as illustrated in Figures 12 and 13, and in Figure 21, where sulfides of iron, copper, and zinc appear to be associated with the magnetite mineralization in places.

After passing through a primary crusher, the mined material would typically travel through a magnetic separator to up-grade the mill feed. A second (fine) grinding may be required to liberate the magnetite and other metallic minerals that may be present. This would not only include magnetite but also some of the pyrrhotite present in the mined material. The non-magnetic fraction would be processed via other beneficiation circuits or stock-piled for later processing to recover any other economic constituents, such as copper, zinc, or silver. To achieve a high-grade product, the material may need to be ground to 325-mesh using a wet-process to produce a damp powder. The end product could be bagged or transported in bulk by road and/or rail.

18.2 Desirable Properties for Coal Processing

Magnetite is used as a heavy media in coal-washing plants as well as a source of iron in specialty steel production. Siemon (1971), in describing the magnetite at the Biggenden Mine summarized the coal-washing process and associated factors in producing a final product.

Run-of-mine or raw coal includes a host of constituents other than coal produced during the mining process, such as mineral masses (siderite), shale fragments, machine parts and construction materials. Coal also contains mercury, and when burned, releases mercury to the environment.

Magnetite has also been found to be of use in minimizing mercury in a range of coal types. For example, Choung, *et al*., (2008) evaluated its potential in removing mercury from sub-bituminous coal from Alberta, Canada with good results.

Coal can also have a large variability of moisture and maximum particle size. In coal washing, dense media gravity separation requires a material such as magnetite to form a medium denser than water to assist in separation. A cyclone vessel mixes coal and finely ground magnetite wherein separation takes place. The higher specific gravity fraction being subject to greater centrifugal forces will pull away from the central core of the cyclone vessel and passes out through piping as heavy rejects. The lighter particles are caught in an upward stream and passes out as “clean” coal. In recent designs, coal grinding and processing is a high-speed, multi-product operation.

Savage (1968), as presented in Siemon (1971), defined the following requirements in terms of magnetite’s specific gravity, its magnetic susceptibility, and its coercive force. The ideal magnetite has a specific gravity of about 5.2 gm/cc. If it is lower, this may indicate porosity within the mineral’s structure, or high concentrations of titanium dioxide, inclusions of other minerals, or may be due to the partial oxidation of the magnetite to other mineral forms of iron, such as hematite, limonite, etc., all of which would decrease the effectiveness of magnetite as a dense media for use in coal washing.

Magnetic susceptibility of the magnetite is a measure of the force that an iron particle will be attracted to a magnet, and is determined by the type and amount of magnetic mineral present and the grain shape. Susceptibility is reduced by the presence of non-magnetic inclusions and by any chemical departure from magnetite’s mineral structure of Fe_3O_4. This characteristic is important because it impacts how much magnetite can be recovered from the washing process circuit to be re-used at a later date.

The coercive force within the magnetite is a measure of the relative ease with which magnetite can be de-magnetized. After passing through magnetic separators in a coal-washing circuit, de-magnetization is required to return the magnetite to its original state before re-use in the washing plant. Therefore, the magnetite product produced in any Iron Glen operations for use in coal washing will likely need to meet the following general bulk specifications:

1) Specific Gravity Range: Greater than 4.7 gm/cc
2) Minimum Magnetic Content: Greater than 95%
3) Minimum Susceptibility: Greater than 0.05 emu/gm[1] @ 800 oersteds[1]
4) Coercive Force: Less than 50 oersteds

Note: [1] The older units of magnetization are used above (see Lakeshore Cryotronics in Section 23.0 – References).

Based on what is known to date of the Iron Glen magnetite, it is fine grained and has few impurities. If it is to meet the typical market requirements, the raw material should grind, separated, and segregated from unwanted minerals when being processed by either magnetic or gravity beneficiation methods in order to be considered a good quality magnetite product. Additional sampling will be required over the extent of the magnetite to determine its representative metallurgical properties to assess its marketability.

Section 19.0 Mineral Resource and Mineral Reserve Estimates

The exploration program at the Iron Glen EPM is still at a relatively early stage. Additional drilling will be required before an assessment of the magnetite reserves or other minerals resources can be made. The Iron Glen magnetite is part of an iron skarn, defined as being an iron ore and sulfide deposit that have replaced a limestone. Magnetite skarns have been studied by Cox (1986) for hundreds of deposits around the world. The deposits' tonnages and iron grades have been plotted in the following Figures 27 and 28. As illustrated in the former, 50% of the some 168 Fe skarn deposits studied by Cox contained reserves of about 7.2 million tonnes, while 90% of the deposits offered 330,000 tonnes.

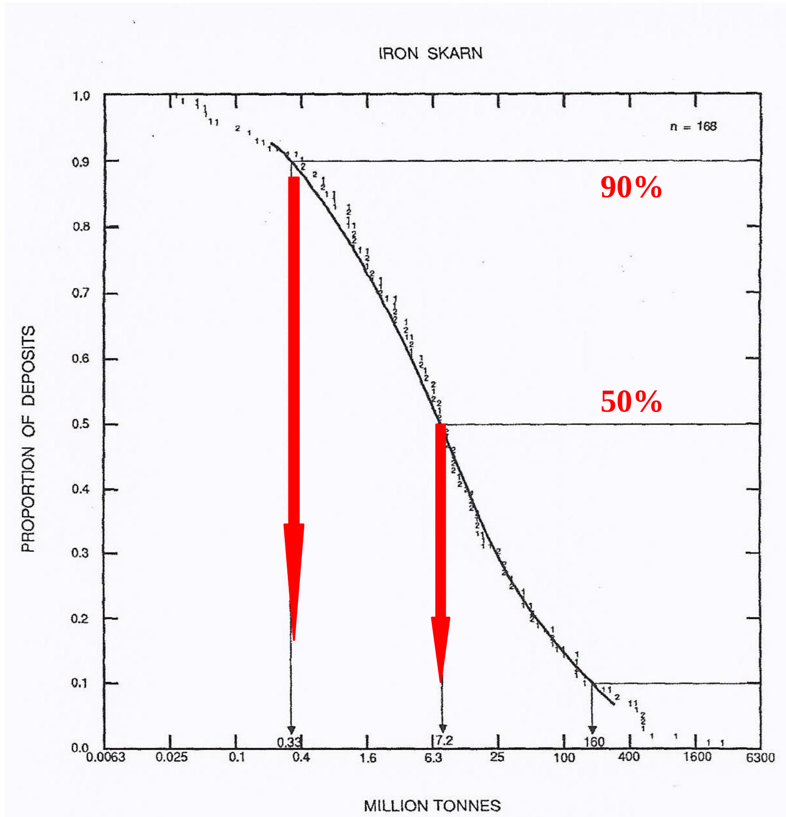


Figure 27 - Tonnages of Fe Skarn Deposits (from Cox, 1986)

(Individual numbers represent number of deposits)

Of these same deposits, the iron grade of about 50% Fe was present in 50% of the deposits, while an iron grade of about 36% Fe was present in 90% of the deposits studied. For the larger deposits, 10% of the deposits had reserves of about 160 million tonnes and iron grades of about 63% Fe were present in 10% of the deposits.

These plots provide an indication of the tonnage-grade characteristics of other iron skarn deposits around the world. Again, it is too early in the Iron Glenn exploration program to estimate the position that the Iron Glen magnetite deposit occupies along these trends. This remains to be established only by future drilling programs.

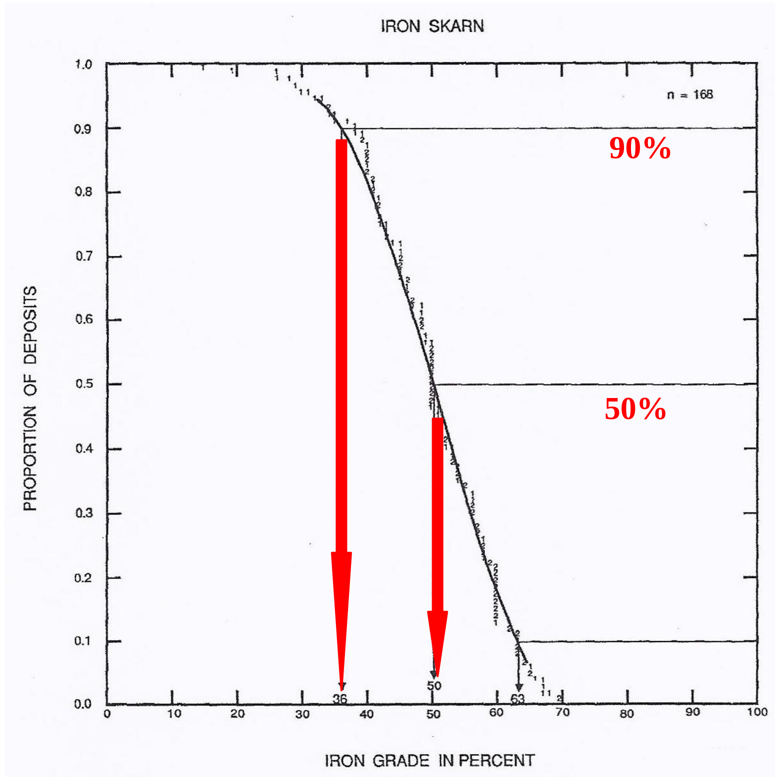


Figure 28 - Iron Grades in Fe Skarn Deposits (from Cox, 1986)

(Individual numbers represent number of deposits)

Section 20.0 Other Relevant Data and Information

20.1 Iron Occurrences in Queensland

Wallis (2008), in an article for the *Queensland Mining Journal*, summarized the relevant features of the magnetite mining industry in Australia, with an emphasis on Queensland. We have emphasized selected sections of his article for the purpose of placing the Iron Glen project in context with other deposits and associated current magnetite-related activities in Queensland.

Wallis indicates that magnetite ore currently constitutes 24% of Australia's economically demonstrated reserves (EDRs). Quality and available tonnage are the main factors affecting the viability of magnetite deposits. Magnetite-quality variation arises because a range of elements can substitute for iron in the magnetite crystal structure, thereby affecting its suitability for various industrial purposes.

Magnetite that is used to produce pig iron by direct reduction is the dominant mineral in low-grade iron ores that are beneficiated by wet-magnetic separation. Several magnetite projects are under development in Western Australia where the ore has to be ground to 50-60 microns before the impurities can be separated. Based on recent international market pressures, magnetite deposits are also likely to form a significant part of any future iron ore industry in Queensland.

As discussed in Section 18.0 - Mineral Processing and Metallurgical Testing, the main use of magnetite in Queensland and elsewhere is to provide a dense medium for coal washing. Coal is washed to improve its quality by removing impurities. The magnetic susceptibility of magnetite enables it to be readily recovered and much of the magnetite is recycled. However, magnetite losses in coal washing are generally of the order of 0.1 to 1 kg/t of raw coal feed. In 2006/2007, Queensland imported some 83,600 tonnes of magnetite through the port of Gladstone.

The demand for magnetite as an iron ore source has risen in the last few years because of the increased demand and price of iron ore; the larger number is undeveloped magnetite deposits as compared to the main source of iron, which are from hematite deposits. The magnetite deposits in Queensland, however, are of a lesser size than the Constance Range ironstone deposits and others in western Queensland.

20.2 Northwest Queensland

Constance Range

The main area of bedded ironstone mineralization in Queensland is in the Constance Range area some 250 kms northwest of Mount Isa in northwest Queensland. Up to ten lenticular beds of iron formation have been located with interbedded shale, siltstone and sandstone, present in the Train Range Ironstone Member of the South Nicholson Group in the South Nicholson Basin. Outcropping ironstones consist of a variable mixture of ochrous red hematite, finely crystalline blue-black hematite, limonite, quartz grains and cement, clay and relict siderite, and vary in appearance from oolitic forms to quartz sandstone with hematite matrix. Below the zone of oxidation, the ironstones consist of oolites of hematite, siderite and/or chamosite and silica grains in a matrix of siderite, hematite, quartz, and carbon.

Broken Hill Proprietary Company Ltd. conducted a preliminary resource estimate in the early 1960s and delineated approximately 250 M tonnes @ 52% iron. Subsequently, the Pilbara iron province in Western Australia was discovered and developed because of the large reserves and high quality of the iron ore and its proximity to ports for shipping the ore.

Interest in the Constance Range has been recently revived by public and private interests although the area lies partly within a Wild Rivers Preservation Area. CBH Resources Ltd is currently earning a 50% interest in the main resource area by completing a bankable feasibility study in joint venture with WRF Securities Ltd for an open-cut mine and beneficiation plant producing at least 5 M tonnes per annum of hematitic iron ore concentrates.

Although Queensland iron ore has been eclipsed for the time being by the deposits in Western Australia, as additional sources of magnetite are brought into production in Queensland, magnetite may become a vital commodity for use in washing plants in Australia, China, and elsewhere, The future importance of magnetite to the Queensland economy has been emphasized in a promotional report just released by the Queensland Government (2011),

Mt. Isa - Cloncurry Area

Although some of the primary iron resources in the Mt. Isa region are suggested to be economically commercial, magnetite resources are widely available, either as a byproduct of mining metals or contained within iron deposits that could be beneficiated to produce a high-quality magnetite product by incorporating new smelting processes using natural gas or coal as reductants, both of which are locally available.

Resources in tailings dams also are known to occur at the Ernest Henry copper-gold mine, 38 kms northeast of Cloncurry, east of Mt. Isa, and at the Osborne underground copper-gold mine located 195 kms southeast of Mt. Isa (Coe and Evans, 2008).

The Ernest Henry Mine ore contains about 20% magnetite and the Osborne Mine ore between 30-55% magnetite. The magnetite is potentially available either from the tailings dams or as a direct by-product of future copper-gold mining. Currently, Osborne, reported by Wallis (2008), has 16 million tonnes of tailings ready for reprocessing to extract the magnetite.

The recent report by the Queensland Government (2011) indicates that the Ernest Henry mine is being converted to an underground mine at a cost of US$542 million, and that the mine is based on a probable ore reserve of 72 Mt at a grade of 1 per cent copper, 0.5 g/t gold and 22 per cent magnetite (measured resource 5 Mt at 1.3 per cent copper, 0.7 g/t gold and 30 per cent magnetite, indicated resource 72 Mt at 1.3 per cent copper, 0.7 g/t gold and 26 per cent magnetite and inferred resource 13 Mt at 1.2 per cent copper, 0.6 g/t gold and 24 per cent magnetite). When considering only the potential magnetite production, the available magnetite is considered in the following ore classifications:

Magnetite Availability at Ernest Henry Mine

Ore Classification	Million Tonnes	Per Cent in Ore
Probable Reserves	15.8	22
Measured Resources	1.7	30
Indicated Resources	18.7	26
Inferred Resources	3.1	24

A separate extraction circuit has been installed to produce the magnetite concentrates. The magnetite processing operation is expected to produce approximately 1.2 Mtpa of magnetite for export to Asia. Commissioning of the magnetite plant was completed in early 2011. The planned mine life is to operate to the year 2024. The final product is a premium grade iron ore concentrate containing around 90-98% magnetite.

The Ernest Henry Mine is moving forward (Xstrata Copper, 2011). Magnetite was recently transported by rail to Xstrata's Port facilities in Townsville and shipped to the markets in Asia.

Other Magnetite Resources

The remote location and lack of current infrastructure in Northwest Queensland of many other deposits in the area calls into question their actual commercial viability, especially railroad facilities to transport the magnetite product to Townsville for shipment to Asia. Undeveloped iron-oxide copper-gold deposits with associated magnetite also occur north and south of Cloncurry, and include the exploration areas held by Exco Resources Ltd and Ivanhoe Cloncurry Mines Pty Ltd. The main project of Exco Resources Ltd is a copper-gold resource at E1 North near the Ernest Henry Mine, while the Monakoff project to the south is rich in magnetite. In a pre-feasibility study, Exco projected a by-product production of about 500,000 tonnes per annum of magnetite. Subsequent studies by Exco reported by Queensland Government (2011) confirm that the project economics have the potential to be improved by the recovery of by–product magnetite.

The Ivanhoe Cloncurry Mines Pty Ltd. holds several prospects located near the abandoned Mount Elliott and Selwyn mines, the largest and most advanced of which is Swan prospect. The magnetite in the tailings dam from the abandoned Selwyn mine is understood to be potentially as high as 33% of the tailings.

There are also numerous zones of magnetite-hematite bearing rocks that outcrop in northwest Queensland, although they do not apparently carry any significant copper-gold mineralization. The most abundant are the banded ironstones that occur throughout the region south of Cloncurry and have yet to be explored for their iron potential. In addition, small, fault zone-hosted magnetite-hematite deposits with surficial enrichment occur elsewhere in northwest Queensland, for example, in the areas of Mount Philipp, Mount Leviathan, and Fort Roger.

Because of the increased demand and because magnetite is produced as a waste product of other mining projects in northwest Queensland, interest has increased in the commercial development of these resources. In these deposits, a considerable proportion of the mining costs are sunk against the copper and gold production and the capital costs associated with the introduction of magnetic-separation processing are relatively low. Transportation and infrastructure costs remain a significant operational expense and are likely to be a key factor in retarding the development of production from some of these remote localities, price notwithstanding, in determining the future viability of these deposits.

20.3 Northeast Queensland

Small deposits of hematite-magnetite manganese quartzite, some with surficial enrichment, also occur in the Iron Range area of Cape York Peninsula. In the remote Tablelands Region and vicinity, deposits include the Whispering Ridge deposit south of Ravenshoe, the Paddy and Mount Ruby deposits near Mount Garnet, and the Mount Lucy deposit near Almaden. The Paddy and Mount Ruby prospects in addition to the Blacks Creek and Jessie prospects have been investigated over the past few years but no results or development plans have been announced to date.

20.3.1 Red Dome Mines

The Red Dome copper-gold deposit is 15 kms west-northwest of Chillagoe, Qld., and 150 kms west of Cairns. The deposit is a type of gold-skarn related to the intrusion of fault/shear-controlled Permian-Carboniferous porphyritic rhyolite dykes within the Silurian-Devonian Chillagoe Formation. The upper parts of the ore body are hosted by breccia. The deposit was discovered in 1978 and mining started in 1986. Mining ceased from open cut in mid-1996, but processing of stockpiles continued for another two years. Total recorded production was 12.2 Mt of ore for 22.716 tonnes of gold, 105.855 tonnes of silver and 36.059 tonnes of copper from an open pit, which was developed to a depth of 350 m. The average grade was 2.7g/tonne gold and 0.4% copper developed to a depth of 350 m. The remaining resource, which was still open at depth, was quoted at 4.7 Mt at 2.1g/tonne gold and 0.6% copper. Theodore, *et al.*, (1990) studied gold-bearing skarns that could be useful in future exploration at the Iron Glen EPM, although gold values are low in the samples analyzed to date and conspicuously present in mineralized intervals encountered during recent drilling.

The relevance of these skarn and epithermal deposits is that strong analogies exist to guide the exploration at the Iron Glen EPM that have not been applied to the area in the past. Their histories of development, especially at Red Dome, also have been relatively long and expensive, but rewarding (Lam, 2010). Torrey, (1986) and Torrey, *et al.*, (1986) provide accounts of the mineralization and its geological context at Red Dome.

20.3.2 Mount Garnet Area

Walles (2008) reported on a Mount Garnet prospect in northern Queensland that contains substantial iron mineralization, mostly magnetite, at the so-called Paddy Lease. This prospect is located approximately 125 kms west of Innisfail, Qld., and is covered by Mining License #3945 and EPM 15481. Some sampling has been undertaken and metallurgical testing of approximately 400 kg of iron from the Paddy Mining Lease indicated that the iron grade ranged between 65.2 to 66.3% Fe. He indicated that the interpreted zone of iron mineralization is in the Chilligoe Formation (Silurian) and is about 1 km long and 0.5 km wide. A 300 kg bulk sample submitted for metallurgical testing of a sample of Paddy magnetite ore indicated good recoveries at a coarse grind size, high grades (65.46 to 66.29% Fe) and extremely low levels of impurities (<0.01% phosphorous). Drilling on the Paddy prospect produced intersections of 45 m of continuous iron mineralization, including 19 m @ 51.28% Fe from a depth of 19 m and 5 m @ 48.48% Fe from a depth of 34 m below the surface.

Also in the general area, the Queensland Government (2011) recently reported that Consolidated Tin Mines Limited is developing the Mount Garnet tin project, which is focused on the Gillian, Pinnacles and Deadmans Gully/Windermere tin and fluorine-bearing magnetite skarns. A bankable feasibility study was to be completed by late 2010. The aim is to develop an open-pit mining operation with a throughput of 700,000 tonnes of tin ore per year over an initial life of seven and a half years. This is expected to produce about 3,000 tonnes of tin metal in concentrate and 236,000 tonnes of magnetite concentrate grading greater than 65 per cent iron per year. The area apparently has substantial additional magnetite resources in the Mt. Garnet area.

20.3.3 Mount Moss Mine

Located south of the deposits discussed above, the skarn-related Mount Moss deposit is claimed to be the largest known magnetite deposit in Queensland to date. It is located 105 kms west-northwest of Townsville. The deposit is held by Curtain Bros (Qld) Pty Ltd., and the company has conducted a feasibility study for a mine exporting one million tonnes/year of high-grade iron ore through the Townsville Port.

The recent Queensland Government report (2011) indicated that the company outlined a JORC (Joint Ore Reserves Committee)-compliant mineral resource in February 2009 of 20 Mt at 41 per cent iron, 0.35 per cent copper and 0.35 per cent zinc. Mining commenced in 2007 and by the end of 2008 two stages of open-pit mining had been completed.

Around 1.2 Mt of predominantly oxidized magnetite ore was stockpiled on site with processing trials proceeding during the second half of 2008. By early 2009 small tonnages of commercial grade magnetite powder were being produced through a trial mill and processing plant. A plant upgrade capable of producing 80,000 tpa of coal washing magnetite powder was commissioned in December 2009.

An additional crushing, screening and processing plant capable of producing 500,000 tpa of export-quality oxidized magnetite lump product was constructed and commissioned in mid-2009. During the calendar year 2010, a total of 90,000 tonnes of export quality lump iron ore was shipped to China from Townsville (Raggatt, 2010: Figure 29). This is important because no magnetite has previously been produced in Queensland for export for more than 100 years. Also, 10,000 tonnes of magnetite were sold to coal washeries in the Bowen Basin.

The company was awarded a Queensland Government collaborative drilling grant to investigate the nearby Mount Podge deposit that is also known to be an iron-rich deposit.

Figure 29 - Mining Magnetite at Mount Moss, 2010 (from Raggatt, 2010)

20.3.4 Mount Biggenden

In south-central Queensland, west of Maryborough and northwest of Brisbane, magnetite was produced from the Biggenden Mine for coal washing and small amounts have been produced in the past for use as a flux in smelting operations and for cement manufacture. Mount Biggenden reportedly produced 741,000 tonnes of magnetite from 1942 to 1969. Siemon (1971) published a review of the geology, mining, and beneficiation conducted at the Biggenden Mine.

The geology of the Mount Biggenden Mine is similar to the general features of the Iron Glen mineralization as is presently known (Siemon, 1971 and Clarke, 1969). Although this mine produced bismuth and other minerals of value for many years, magnetite was not mined until a market developed in the coal-processing industry years after production of these mineral products ceased. In Figure 30, the relationship of magnetite to a marble and to the faulting nearby and its overall context may be a guide to exploration at the Iron Glen EPM, although every ore body has unique characteristics.

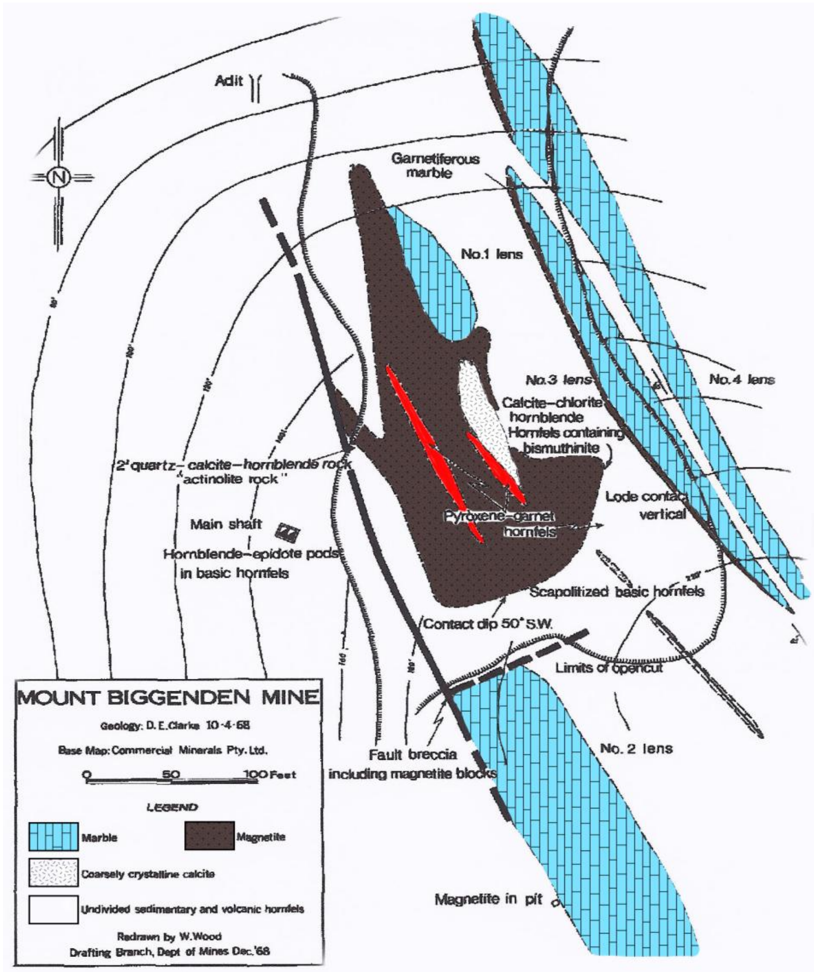


Figure 30 - General Geology Mount Biggenden Mine (After Siemon, 1971)

The paragenetic relationships in mineral formation are important in developing the detailed geologic history of mineralization and the sequence of mineral formation. This aids exploration in determining the proximal and distal parts of the mineral zoning in a hydrothermal system(s) and therefore provides a guide in selecting drill sites.

The minerals involved in such skarn systems are stable only in certain temperatures ranges, above or below which other minerals are formed. In the Mount Biggenden ore body, magnetite is formed in the early history of skarn formation and is generally found in proximity to the intrusive body, such as granodiorites or granites, the hotter parts of the mineralizing event (see Figure 31). Other metals have been introduced later and are found at some distance away from the magnetite, although faulting can bring the two zones together.

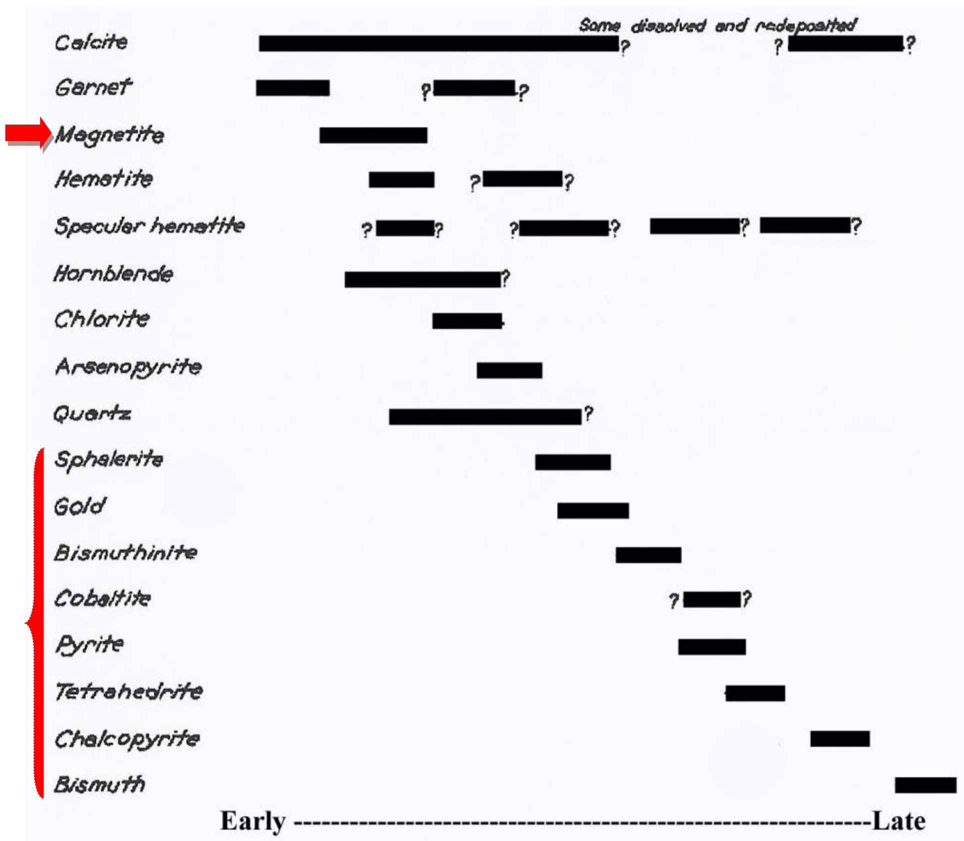


Figure 31 - Mineral Paragenesis at Biggenden Mine (after Clarke, 1969)

The paragenic sequence (or timing of mineralization) is worked out through detailed microscopic studies in polished ore mineral sections, petrologic thin sections, and fluid-inclusion studies, as well as in mapping field relations to resolve any dislocation or truncations of target mineralization and to predict where it may be located. Price (2010) has prepared a preliminary petrographic analyses of surface samples of various rock types and of samples obtained during the recent Iron Glen drilling program, which represents the beginning of the process to determine the characteristics of the mineralization and the boundaries and possible extensions of both the magnetite and the metal sulfides that are also present within the mineralized system at Iron Glen. The other mines mentioned above also appear to have similarities that may also be present in the Iron Glen tenement.

Section 21.0 Interpretations and Conclusions

21.1 Interpretations by Analogy

Based on the available historical information and on the ground magnetic and geochemical surveys conducted over the past few years by Terra Search, and on the preliminary results from the recent drilling, two types of mineralization are now targets at the Iron Glen EPM. The magnetite encountered is of sufficient thickness and quality to be of potential interest commercially. The available tonnage remains to be evaluated by additional drilling. Because of the high-angle dip of the magnetite zone and because of the faulting in the area, drilling will be challenging and will require effective geological oversight and planning for further evaluations of the magnetite zones as well as the associated types of mineralization involving other metals.

Other metals, such as copper, zinc, and silver have been reported from the 2010 Terra Search drilling program and are not uncommon in the skarn-type or metasomatic mineralization present at the Iron Glen EPM. The metal values reported are sufficiently anomalous to justify additional investigations, both drilling and coring, and field work to coordinate the development of a 3-dimensional view of the mineralizing zones at Iron Glen. In Figure 32, Price (2010) has tentatively identified the mineral carrollite, in association with pyrrhotite, chalcopyrite and tennantite-teterahedrite.

Carrollite is one of the minerals that provides insight into the temperature regimes of the mineralizing fluids that once operated within a hydrothermal system at depth. Craig, *et al.*, (1979) indicates that with deceasing temperature, at about 880°C, a solid-solution solution develops between carrollite and linnaeite, a copper-cobalt sulfide [Cu(Co, Ni)S], with nickel also substituting for cobalt.

With further cooling, copper becomes enriched until about 500°C, whereupon the mineral covellite, a more oxidized form of copper sulfide, is formed and becomes stable in a sulphur-rich environment with other copper minerals.

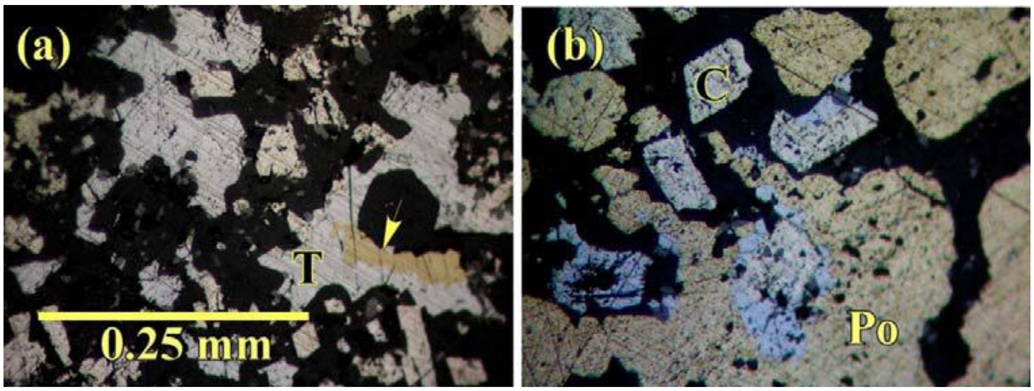


Figure 32 - Sample IGRC002 at 60-61 m depth (black areas are non-opaque minerals):
a) Chalcopyrite (arrow) with tennantite-tetrahedrite and carrollite (?)
b) Pyrrhotite (Po) with carrollite (C) (From Price, 2010)

Other associated minerals such as chalcopyrite and pyrrhotite indicate that the temperatures were near the lower end of the stable zone of carrollite. This assemblage of minerals are known to occur in a variety geological settings, ranging from "epithermal" vein deposits such as those in Norway to the possible "sygenetic" copper ores of Zaire and Zambia. Clark (1974) also includes deposits in the Atacama Desert of Chile containing the carrollite-linnaeite sulfides as analogies.

The presence of carrollite at Iron Glen needs to be confirmed by x-ray analyses and other work. If confirmed, this suggests that mineralization involving copper, zinc, and silver may be located further away from the high-temperature zones near the magnetite and nearby granodiorite at the Iron Glen EPM. This is also suggested in the paragenesis of the Biggenden mineralization; see Figure 31 (e.g., magnetite is formed early and metals late).

Meinert, (1992), however, indicates that magnetite is present in many types of skarns, especially copper skarns where they are associated with I-type calc-alkaline porphyritic plutons with a magnetite series and co-genetic volcanic units exhibiting stockwork, veining, brittle fracturing and brecciation, and intense hydrothermal alteration. Meinert also suggests that copper skarn mineralogy is dominated by andraditic garnet with other phases including diopsidic pyroxene, idocrase, wollastonite, actinolite, and epidote, most of which have been reported in Iron Glen samples.

Atkinson and Einaudi (1978) first noted that in most skarns there is a general zonation pattern of proximal garnet, distal pyroxene, and idocrase (or a pyroxenoid such as wollastonite, bustamite, or rhodonite) at the contact between skarn and marble. In addition, individual skarn minerals may display systematic color or compositional variations within the larger zonation pattern. For example, proximal garnet is commonly dark red-brown, becoming lighter brown and finally pale green near the marble front (e.g., the change in pyroxene color is less pronounced but typically reflects a progressive increase in iron and/or manganese towards the marble front (according to Harris and Einaudi, (1982)).

Einaudi (1982 and 1987) further confirmed that copper skarns commonly are zoned with massive garnetite near the pluton and increasing pyroxene with idocrase and/or wollastonite near the marble contact. In addition, garnet may be color-zoned from proximal dark reddish-brown to distal green and yellow varieties. Sulfide mineralogy and metal ratios may also be systematically zoned relative to the source pluton. In general, pyrite and chalcopyrite are most abundant near the pluton with increasing chalcopyrite, and finally bornite, in wollastonite zones near the marble contact.

In some zinc skarn deposits, the pyroxene:garnet ratio and the manganese content of pyroxene increase systematically along the fluid flow path (Meinert, 1987). This feature has been used to identify proximal and distal skarns and proximal and distal zones within individual skarn deposits. A typical zonation sequence from proximal to distal is: altered skarn near pluton, and the presence of garnet, pyroxene, pyroxenoid, and sulfide/oxide replacement bodies. This approach should be applied in the exploration at Iron Glen EPM.

The occurrence of zinc skarns in distal portions of major magmatic/hydrothermal systems may make even small deposits potentially useful as exploration guides in poorly exposed districts. Thus, reports of manganese-rich mineral occurrences may provide clues to districts that have not yet received significant exploration activity (Meinert, 1987).

For some skarn systems, these zonation patterns can be "stretched out" over a distance of several kilometers and can provide a significant exploration guide (e.g., Meinert, 1987). Details of skarn mineralogy and zonation can be used to construct deposit-specific exploration models as well as more general models useful in developing grass-roots exploration programs. Reasonably detailed zonation models are available for copper, gold, and zinc skarns. Other models can be constructed from individual deposits which have been well studied such as the Hedley gold skarn (Ettlinger, *et al*., 1992 and Ray, *et al.*, 1994) or the Groundhog zinc skarn (Meinert, 1987).

As implied above, anomalies of 10s to 100s of ppms for individual metals can extend for more than 1,000 m beyond proximal skarn zones. Comparison of geochemical signatures among different skarn classes suggests that each has a characteristic suite of anomalous elements and that background levels for a particular element in one skarn type may be highly anomalous in other skarns. For example, gold, tellurium, bismuth, and arsenic values of 1, 10, 100, and 500 ppm, respectively, are not unusual for gold skarns but are rare to absent for other skarn types (e.g., Myers, 1985 and Meinert, 1990).

In terms of the geological framework, Fe-Copper skarn deposits are virtually the only skarn type found in oceanic island-arc terrains. Many of these skarns are also enriched in cobalt, nickel, chromium, and gold. In addition, some economic gold skarns appear to have formed in back arc basins associated with oceanic volcanic arcs (Ray, *et al*., 1988).

Some of the key features that set these skarns apart from those associated with more evolved magmas and crust are their association with gabbroic and dioritic plutons, abundant endoskarn, widespread sodium metasomatism, and the absence of tin and lead. Collectively, these features reflect the primitive, oceanic nature of the crust, wall rocks, and plutons.

The vast majority of skarn deposits are associated with magmatic arcs related to subduction beneath continental crust. Plutons range in composition from diorite to granite although differences among the main base metal skarn types appear to reflect the local geologic environment (e.g., depth of formation, structural and fluid pathways) more than fundamental differences of petrogenesis (Nakano, *et al*., 1990). These interpretations provide a context for exploration on the Iron Glen tenement and should be incorporated in future activities.

21.2 Iron Glen Interpretations

As indicated above, the recent work by Price (December, 2010) has begun the detailed work of identifying the minerals present in the zones and their implications in determining if economic concentrations of the metals exist in the area at depth.

The two targets may be found in proximity to the new granite (the quartz megacrystic granite reported last year by Terra Search) or to the local granodiorite, or to targets that may occur at some distance away. This is illustrated in Figure 33, wherein both iron and metals are plotted against sulphur, showing that they are of separate regimes or are of proximal zones without much of a metamorphic aureole of metals decreasing away from their source.

Also of interest is the slope of the copper data with respect to the zinc data, and to the arsenic data in general. Although the data set needs to be much larger before any firm conclusions can be reached, the copper seems to be part of a different system than that of zinc and other metals. This suggests that copper-skarn models may be more appropriate to apply in the local exploration than other models. We recommend that this be considered before follow-up drilling is undertaken in the Iron Glen project.

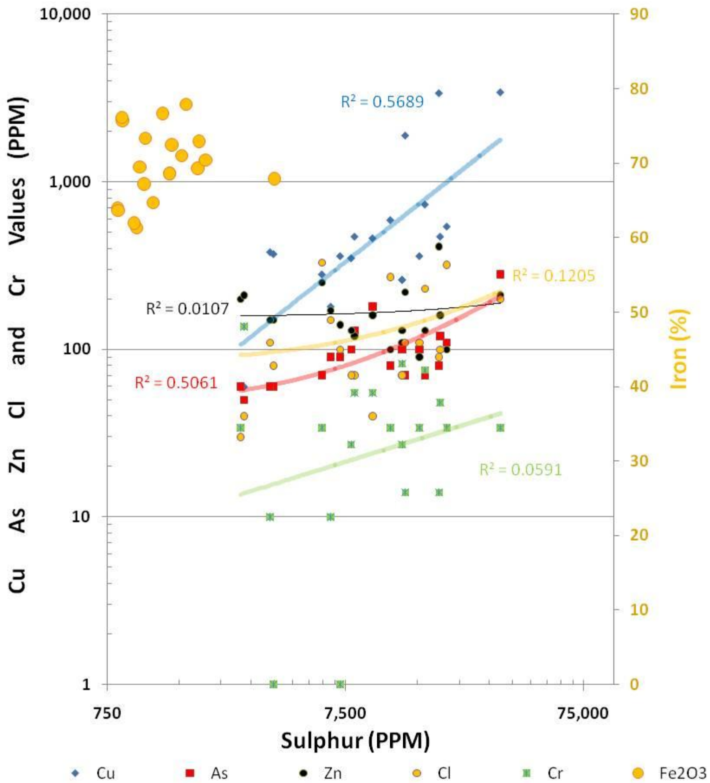


Figure 33 - Iron Distribution and Selected Elements Plotted Against Sulphur in the Mineralized Zones

21.3 Conclusions

Based on a review of the relevant historical and project documents, and of the technical literature, and on the basis of the discussions held with Iron Glen representatives, on discussions with the Queensland government personnel, and on discussions with Terra Search personnel, we conclude that:

1) The 2010 drilling program produced encouraging results, meriting additional work, both in the field and in technical considerations, followed up by additional drilling and coring.

2) Terra Search, the principal consultants to Iron Glen Holdings Limited, have conducted a comprehensive program in terms of managing of the project, handling the contractors, obtaining the drilling samples, conducting the appropriate QC/QA programs with regard to the handling of the laboratory and its reliability and security, and in presenting reports of the appropriate professional caliber.

3) Additional drilling will be required before an appropriate basis can be established to estimate either resources or reserves. The Iron Glen project is in an early stage of identifying and characterizing the magnetite zone encountered to date. If the follow-up drilling continues to encounter the magnetite zone with a sufficient number of intercepts, and possible extensions, the resource/reserve base will need to be estimated at that time.

4) If an appropriate reserve based can be established, the prospective mining project is located in a favorable geographic position to function under optimum mining operating conditions. This is based on the project's proximity to Townsville, and its location to the required infrastructure (electrical power, water, rail/roadways, and operational support provided by outlying towns to supply logistical support). Furthermore, any equipment needed during exploration and development of this project would be available in Townsville, a center of the mining industry in Queensland.

5) Based on the recent drilling program, the Iron Glen project now has two exploration targets: a) the magnetite zone, and 2) the copper, zinc, and silver zone(s). Each requires a slightly different exploration approach. The first target is apparent, the second is not, as of yet. Both the former and the latter will require further geologic assessment and drilling.

Section 22.0 Recommendations

22.1 Exploration Strategy

Based on the results to date, we recommend a detailed geological mapping and sampling program be conducted on the Iron Glen EPM before the follow-up stage drilling and coring is undertaken. There are sufficient outcrops at or just below the shallow soil to assemble a detailed interpretation of the surface geology. Together with the information gained from the recent drilling and sampling program, this new information will allow a more informed background for establishing the local faulting history of events, followed by determining the paragenetic relationships involved in the mineralization encountered to date. Together, this information will be useful in selecting drill sites for the next stage of drilling.

We recommend 20 reverse-circulation holes in the immediate area of the preliminary drilling conducted in October, 2010, plus five (5) holes along the main contact zone laterally well beyond the principal ground magnetic anomaly, both north and south of the Iron Glen Pit, and two (2) vertical and one (1) angled diamond core holes to depths of 300 m drilled to intercept the magnetite zone (2 diamond core holes) and to test the contact zone of the granodiorite (one diamond core hole), see Figure 34. Terra Search (2011) has recommended a similar drilling/diamond coring program.

We have concluded that the recommended field investigations and literature evaluations of other skarn deposits should be completed before drilling/diamond coring are initiated. Although the hole locations indicated in Figure 34 may be valid site selections, we encourage Terra Search to re-assess their selections <u>after</u> the field work and skarn study have been completed. Furthermore, we recommend three exploratory holes be drilled in the area between the main zone and the western area, especially since the western area rocks have been significantly altered and may contain mineralized skarn in the shallow subsurface.

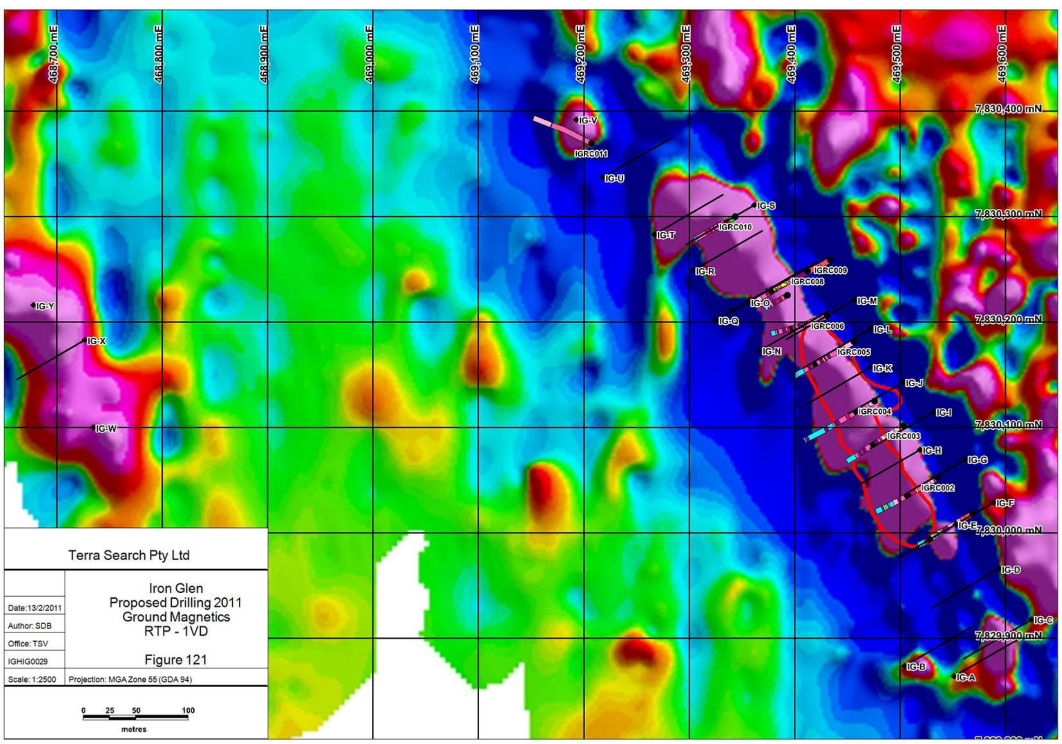


Figure 34 – Proposed Drilling Sites: Main Zone and the Western Area (Terra Search, 2011)

22.2 Development Strategy

We recommend that in the event favorable results are reported from the follow-up drilling and diamond coring program, the reserve base of available magnetite should be calculated. If sufficient tonnage is available, and the quality remains as indicated in the preliminary drilling program (i.e., no deleterious contaminants become obvious), the next step should be to conduct a feasibility study to include a metallurgical investigation using more than one bulk sample to determine the type of beneficiation system required to meet anticipated product specifications.

We also recommend that given certain estimates of a likely schedule (and assuming the magnetite reserve base allows for a mine life of a minimum of five (5) years for production and sales), magnetite mining operations could begin within the next three (3) to four (4) years, also assuming government permitting and other necessary agreements have been consummated in reasonable time. This does not allow for any unforeseen delays and, of course, any delays resulting from significant changes in the prevailing world economic conditions at the time, especially in Southeast Asia and China.

We have estimated the costs for the follow-up Phase II program (see Table 9). This involves a field-mapping program, plus a significant period to allow for a review of the deposit analogies available in the geoscience literature and to work out the likely geological associations and faulting within the Iron Glen EPM, all before the Phase II drilling and coring program is undertaken (described in Section 22.1 - Exploration Strategy, above). We have also included geological supervision and oversight and a Phase II report of findings in our estimate of Phase II costs.

Table 9
Estimated Phase II Costs: Iron Glen EPM Exploration

Function	Description	Estimated Cost (AUS$)
Stage 1	Geological Mapping & Deposit Analogy Assessment	$60,000.00
Stage 2	Pre-Drilling Planning	35,000.00
Stage 3	Drilling Contractor	300,000.00
	Diamond Coring Contractor	250,000.00
	Laboratory Analyses	200,000.00
	QA/QC Drilling & Lab	25,000.00
	Drilling Supplies	25,000.00

	Geological Sampling-Logging	35,000.00
	Backhoe & Road Repairs	15,000.00
	Geological Supervision	140,000.00
Stage 4	Post-Drilling Data Assessment	150,000.00
	Phase II Report	75,000.00
	Subtotal:	$1,310,000.00
	Contingency @ 10%	131,000.00
	Estimated Phase II:	$1,441,000.00

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Section 24.0 Certificates of Competent Persons

Michael D. Campbell, P.G., P.H.
Vice President and Chief Geologist/Hydrogeologist
I2M Associates, LLC

I, Michael D. Campbell, do hereby certify that:

1. I am Vice President and Chief Geologist/Hydrogeologist in the firm of I2M Associates, LLC, based in Seattle, Washington and residing at 1810 Elmen Street, Houston, Texas 77019.

2. I graduated with a Bachelor of Arts in Geology in 1966 from The Ohio State University in Columbus, Ohio, and with a Master of Arts in Geology from Rice University in Houston, Texas in 1976 and have practiced my profession continuously since 1966.

3. I have worked as a geologist and hydrogeologist for my full working career. After graduation, I worked for Continental Oil Company (Australia), Sydney, N.S.W., as Staff Geologist/Hydrogeologist, Minerals and Mining Division (from 1966 to 1969). I was responsible for conducting, coordinating, and implementing prospect evaluations, mapping and sampling programs, well-site operations, and ground-water supply investigations in various parts of Australia, Micronesia (Caroline Islands) and the South Pacific (Coral Sea) for exploration on: phosphate (NW Queensland, west of Mt. Isa, and Northern Territory, phosphate discovery was made in Alroy Station area), potash (Carnarvon Basin), sulfur, coal, base metals, and uranium. Joint-venture programs with Japanese and Korean companies required extensive travel between Australia and Japan and Southeast Asia. I also investigated uranium prospects on the Nullibar Plains of South Australia. I was granted Resident Status in Australia from 1966 to 1969 to work on phosphate and other minerals in Queensland, the Northern Territory and on potash in Western Australia and elsewhere in South East Asia.

   After completing the assignment, Conoco transferred me back to the U.S. to work on Conoco's uranium projects. In 1970, I joined Teton Exploration, Div. of United Nuclear Corporation in Casper, Wyoming and served as District Geologist for uranium exploration. From 1972 to the present I have worked for various engineering and environmental companies involved in natural resource development and mining and on managing and executing environmental projects for industry.

4. I am a licensed Professional Geologist in: Texas, Washington (and as a Professional Hydrogeologist), Alaska, Mississippi, and Wyoming, and I hold national certifications by the American Institute of Professional Geologists and American Institute of Hydrology. I am a member of the Society of Mining Engineers of AIME (1975-

Present), a founding member of the Energy Minerals Division (EMD) of American Association of Petroleum Geologists (AAPG) – currently serving as Chair of the EMD Uranium (Nuclear Minerals) Committee since 2004, and was elected EMD President (Term: 2010-2011). I have been active in numerous other professional associations and societies, as time permitted, such as the National Ground Water Association (AGWSE), and other professional societies. I have produced numerous presentations and publications and was elected a Fellow in the Geological Society of America (see Resume for additional details, Section 26.0 – Appendix III CVs of Authors).

5. I have read the definition of "Competent Person" as defined in the AIM Rules for Companies Guidance Notes for Mining, Oil & Gas Companies, and I certify that by reason of my education, affiliation with a number of relevant professional organizations, and by my past relevant work experience in Australia and elsewhere, I fulfil the requirements to be a "Competent Person" under the AIM Rules for Companies.

6. I made a personal inspection of the Iron Glen Project in Queensland during the week of December 12, 2010 in the company of I2M's Senior Geologists: Tom Sutton, Ph.D., P.G., and M. David Campbell, P.G.

7. I have not had any prior involvement with the Iron Glen Pty Ltd. or Iron Glen Holdings Limited, the company involved in this project. Therefore, I am independent of Iron Glen Holdings Limited and any and all of its predecessors.

8. As of the date of this certificate, to the best of my knowledge, information and understanding, this CPR contains all the scientific and technical information that is required to be disclosed to make this CPR not misleading.

9. I consent to the filing of this CPR with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files or on their websites accessible by the public of this CPR.

Mr. Jeffrey D. King, P.G.
President and Senior Project Manager
I2M Associates, LLC

I, Jeffrey D. King, do hereby certify that:

1. I am President and Senior Program Manager in the firm of I2M Associates, LLC, based in Seattle, Washington, and residing at 8424 E. Meadow Lake Drive, Seattle (Snohomish), WA 98290.

2. I graduated with a Bachelor of Arts in Geology in 1979 from Western Washington University in Bellingham, Washington and have practiced my profession continuously from that time (approximately 30 years).

3. I have worked as a geologist and/or project/operations manager for my full working career. In 1979, I joined Bethlehem Copper (later Cominco) of Vancouver, Canada as a Staff Geologist. I was responsible for conducting, and implementing prospect evaluations, mapping and sampling programs, and well-site operations in the North Cascades of Washington State and central/eastern Nevada. In 1980, I joined the consulting firm of Watts, Griffis and McQuat of Toronto (WGM), Canada as a Senior Exploration Geologist where I was responsible for field operations for WGM's national exploration program searching for rare-earth and other minerals. Also during that time I aided WGM's senior staff on large-scale property evaluations for multiple large clients. In 1982, I was engaged by MolyCorp to work on their regional exploration program for rare-earth minerals and in 1983 I was engaged by Campbell, Foss and Buchanan, Inc. to conduct gold exploration and mine development as well as gold-placer evaluations in the lower states and in Alaska. In 1984, I joined Norse Windfall Mines, Inc. as Mine Manager at a gold/silver mine in east/central Nevada. In 1986, I was promoted to Vice President of Operations. Since 1988, I have been affiliated with M. D. Campbell and Associates, L.P. as Senior Program Manager. In early 2010, I formed I2M Associates, and serve as President and Senior Program Manager. I have completed numerous mine evaluation and environmental projects over more than 25 years.

4. I am a licensed Professional Geologist in Washington State (see Resume for additional details, Section 26.0 – Appendix III CVs of Authors).

5. I have read the definition of "Competent Person" as defined in the AIM Rules for Companies Guidance Notes for Mining, Oil & Gas Companies, and I certify that by reason of my education, affiliation with a number of relevant professional organizations, and by my past relevant work experience in Australia and elsewhere, I fulfil the requirements to be a "Competent Person" under the AIM Rules for Companies.

6. I am involved in the preparation and review of the contents and coverage of this CPR and hence serving as co-author of this CPR.

7. I have not had any prior involvement with the Iron Glen Pty Ltd or Iron Glen Holdings Limited, the company involved in this project. Therefore, I am independent of Iron Glen Holdings Limited and any and all of its predecessors.

8. As of the date of this certificate, to the best of my knowledge, information and understanding, this CPR contains all the scientific and technical information that is required to be disclosed to make this CPR not misleading.

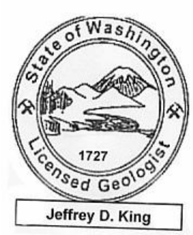
9. I consent to the filing of this CPR with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files or on their websites accessible by the public of the technical report.

Signed in Houston, Texas this 20th day of February, 2011. We reserve the right to revise this CPR in the future as new information becomes available or as we deem appropriate.

Sincerely,

I2M Associates, LLC

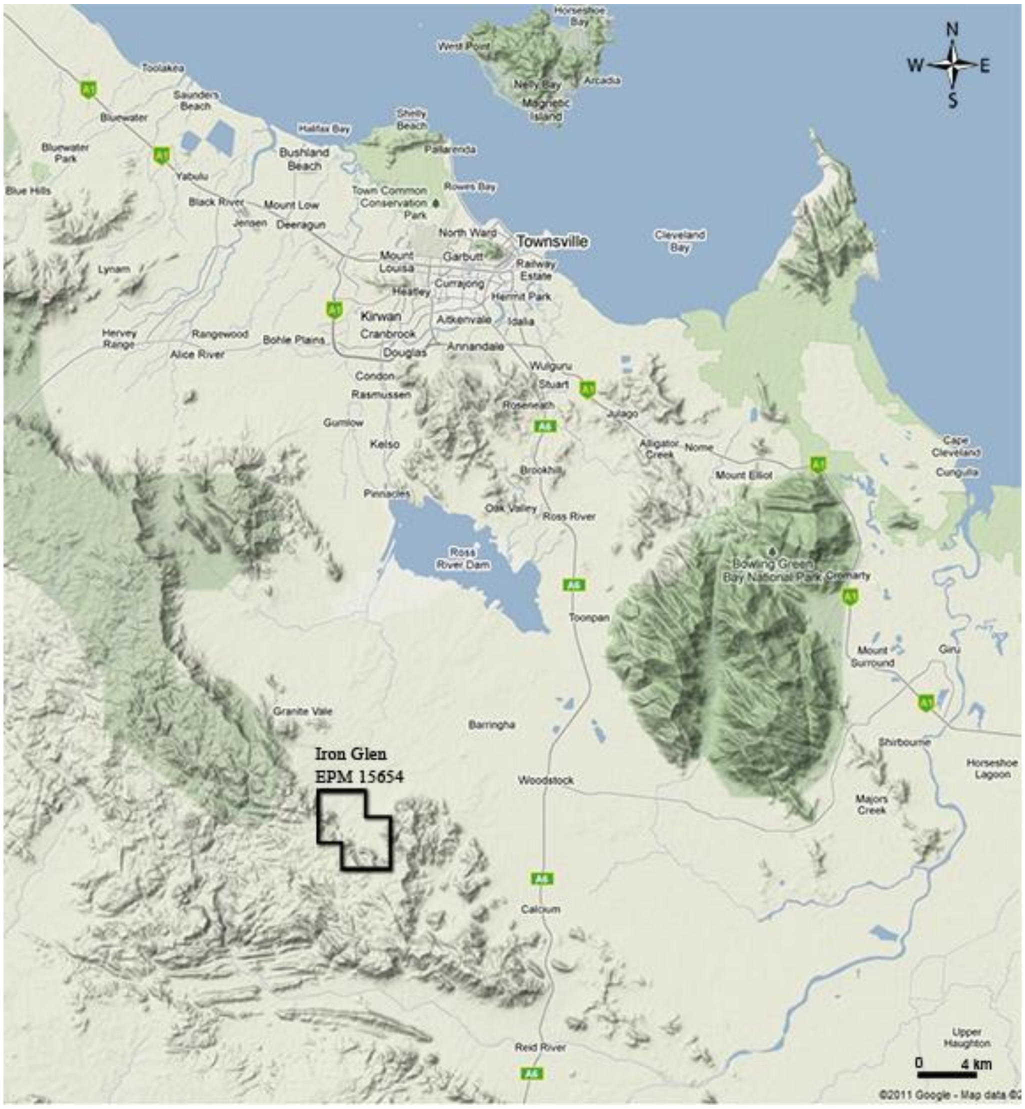
Michael D. Campbell, P.G., P.H.	Jeffrey D. King, P.G.
Vice President & Chief Geologist	President and Senior Program



Section 25.0 Illustrations (Expanded Views)

Figure 1

General Location of Iron Glen Tenement



Houston Seattle

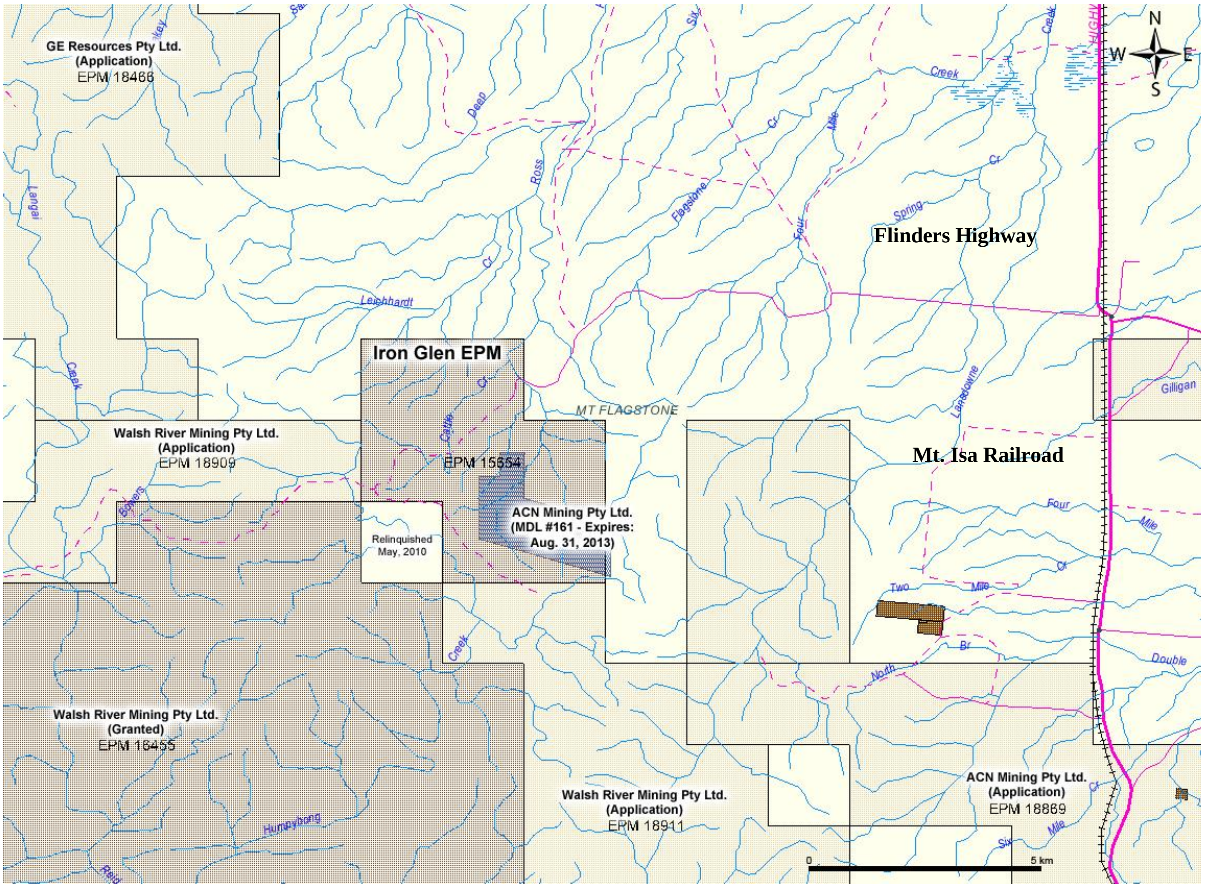


Figure 2 - Iron Glen & Surrounding Tenements (As of January 12, 2011)
Source: QDEX Tenement Database

Figure 3 - Aerial View of Iron Glen Pit within EPM 15654. Looking Southwest
(Photo Taken by M. David Campbell, 2010)

Figure 4 - Site Visit Personnel:
Michael D. Campbell, P.G., P.H., Qualified Person (Center), Kevin Doyle, Iron Glen Representative (Left), and Thomas C. Sutton, Ph.D., I2M Associate (Right), Visited Iron Glen Pit in EPM 15654 during Mid-December, 2010.
Photo Taken by M. David Campbell, P.G., (I2M Associate). Looking Northwest.

Figure 5 - Section of Topographic Sheet (100,000 topographic sheet (#8258)), showing Iron Glen Tenement and Infrastructure (roads, railroad, power line, creeks, and the Mingela State Forest)

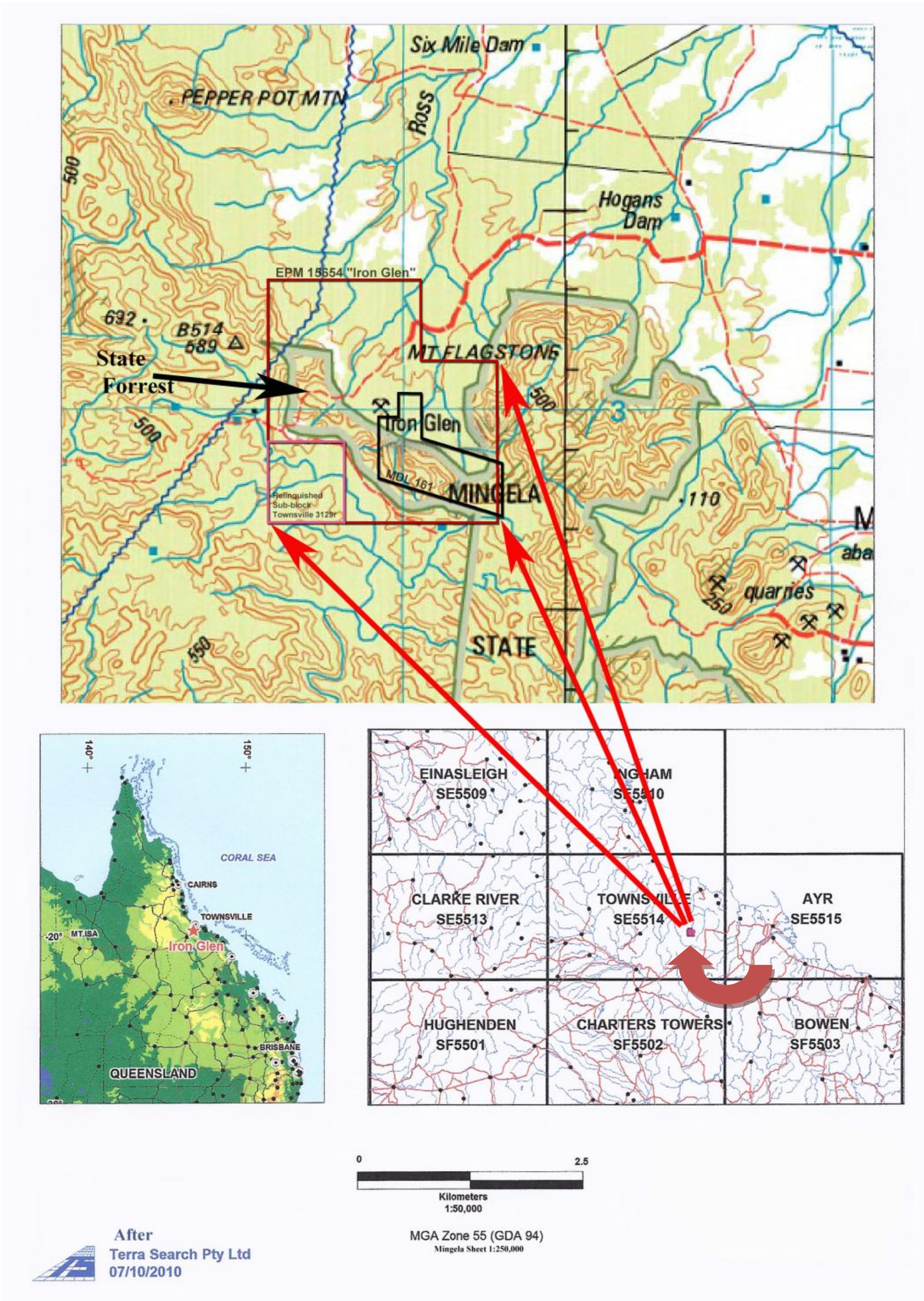


Figure 6 - Topography and Elevation, State Forest Boundaries, and Current Mining Development Lease in the Iron Glen EPM.

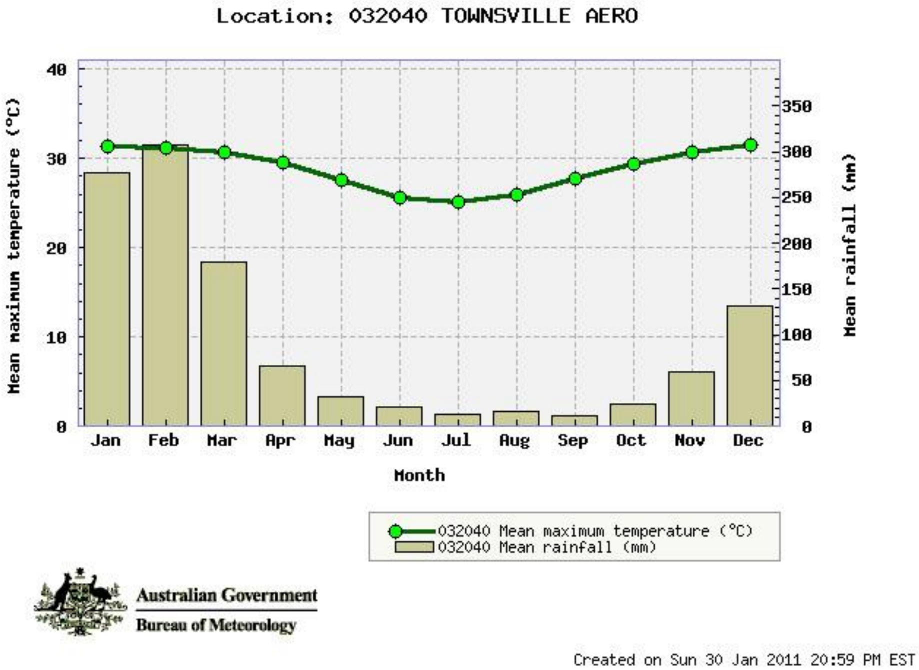


Figure 7 - Mean Maximum Monthly Temperatures and Rainfall

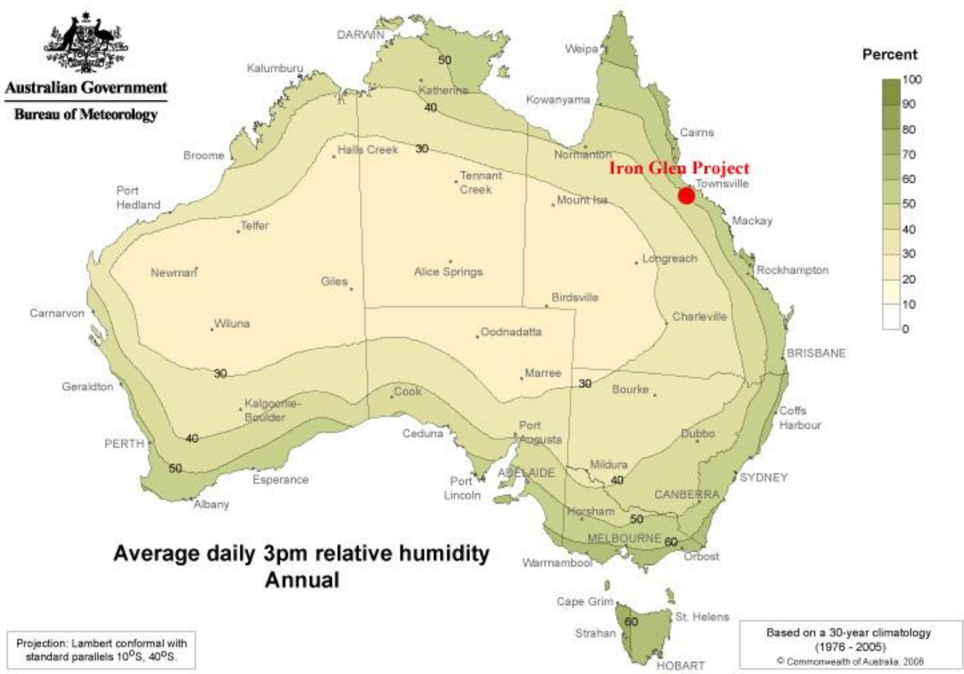


Figure 8 - Average Daily Relative Humidity (@ 3:00 PM)

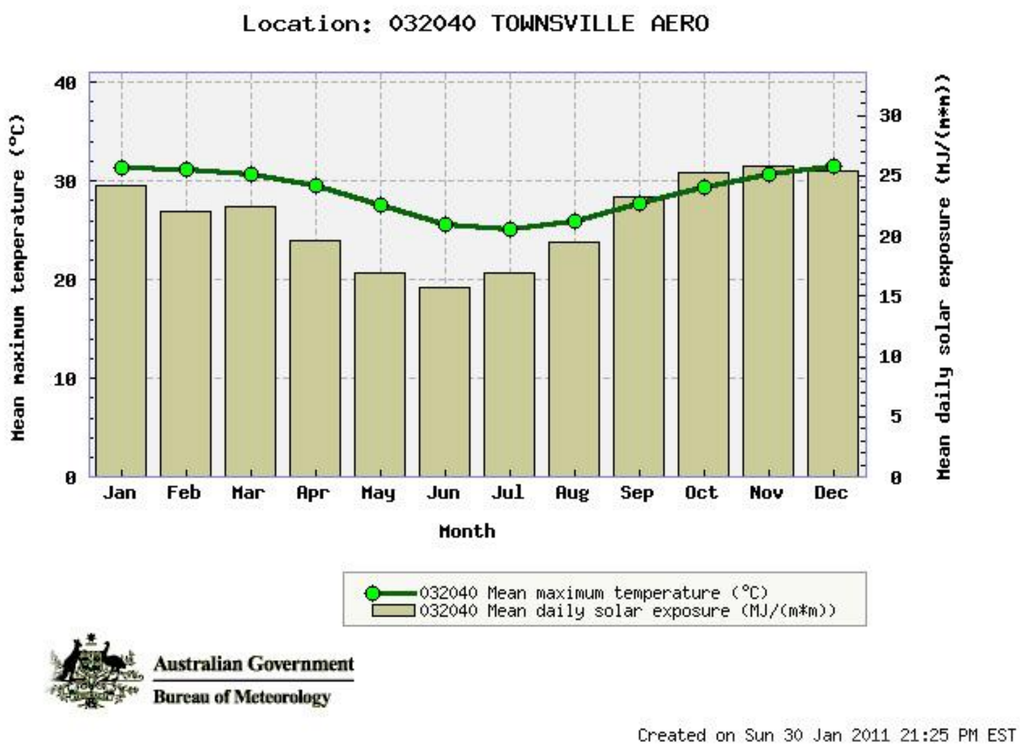
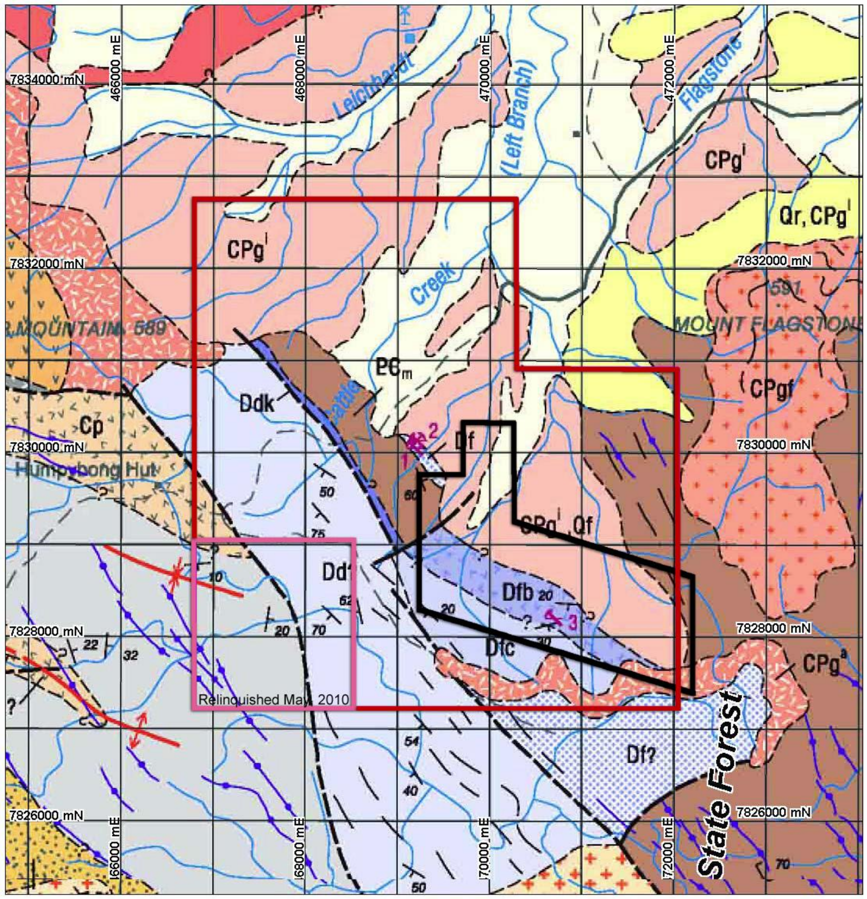
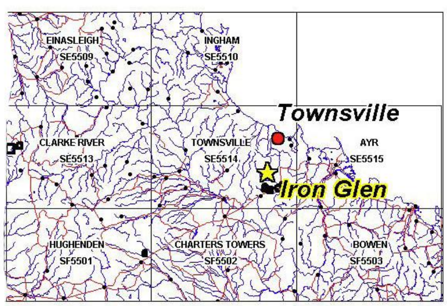
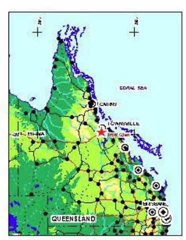


Figure 9 - Mean Monthly Wind Speed (@ 3:00 PM) and Mean Daily Solar Exposure







Kilometers
1:50,000
AMG Zone 55 (AGD 66)

Figure 10 - Early Geological Mapping

Townsville Sheet: 1:250,000
(Draper, et al., 1997)

Terra Search Pty Ltd
31/7/2008

Figure 11
Interpretative Geology by Terra Search (2010)

Carboniferous Permian	CPi	Iron Glen Granodiorite
Devonian Carboniferous	Dcdrt	Diorite dykes
Middle Devonian	DbFmsk	Massive magnetite + magnetite skarn
	DbFskw	Quartz-carbonate-wollastonite
	DbFskn	Skarn + siliceous calc silicate
	DbFmbl	Marble + siliceous calc silicates
Neoproterozoic	Pcm	Quartz mica schist

Figure 12A – Original

Figure 12B – W/ PS Vibrance +75

Figure 13A – Original

Figure 13B – w/ PS Vibrance +75

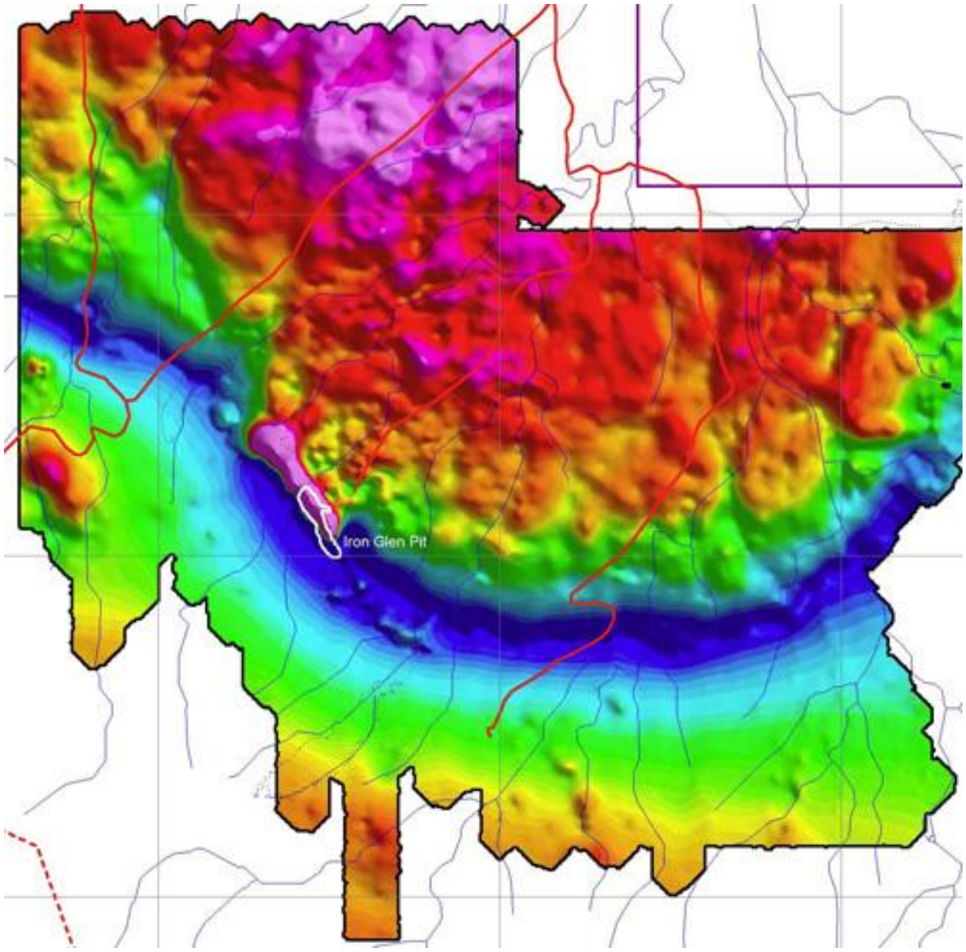


Figure 14
A Reduced-to-Pole (RTP) Image of the Combined Ground Magnetic Surveys
(Terra Search, 2010)

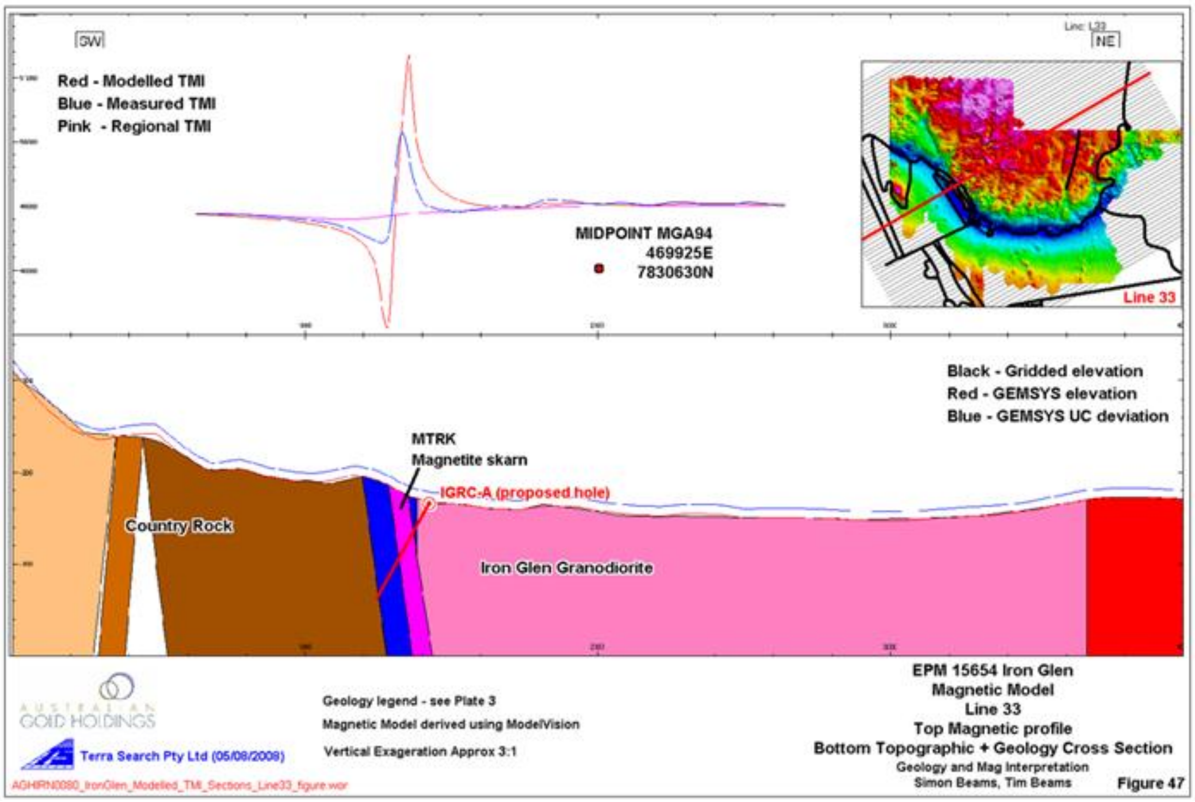


Figure 15 - Example Modeled Cross Section (Terra Search, 2010)

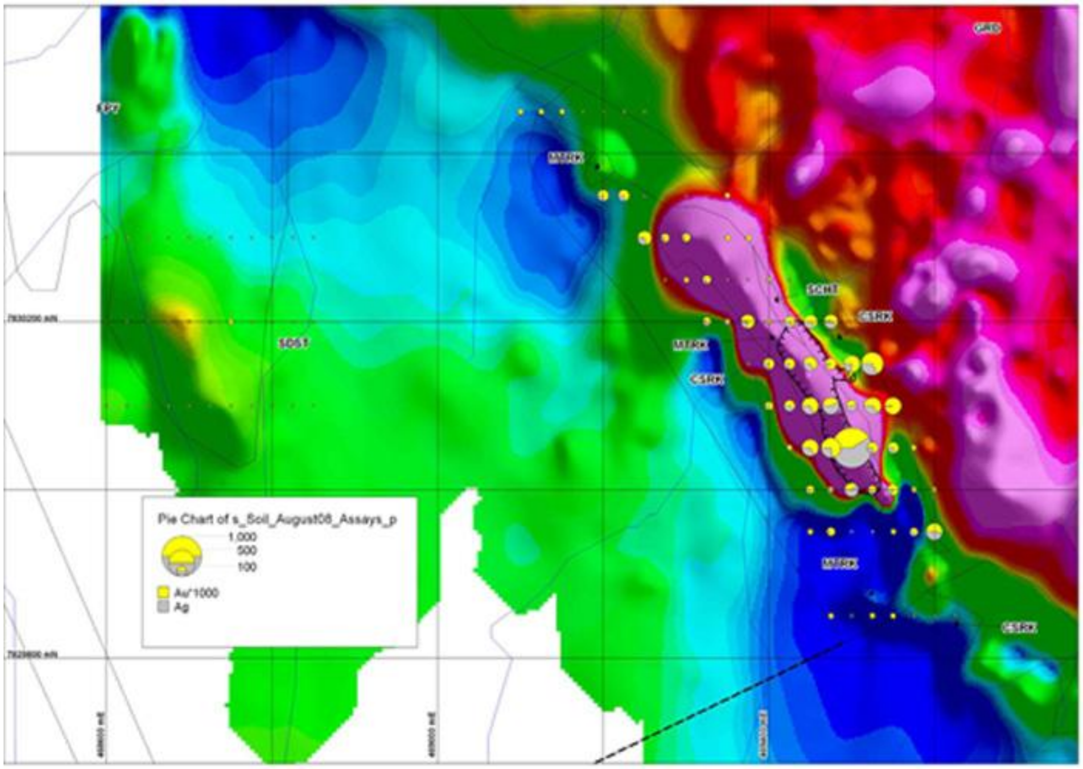


Figure 16 - Gold and Silver Soil Values (Terra Search, 2010)

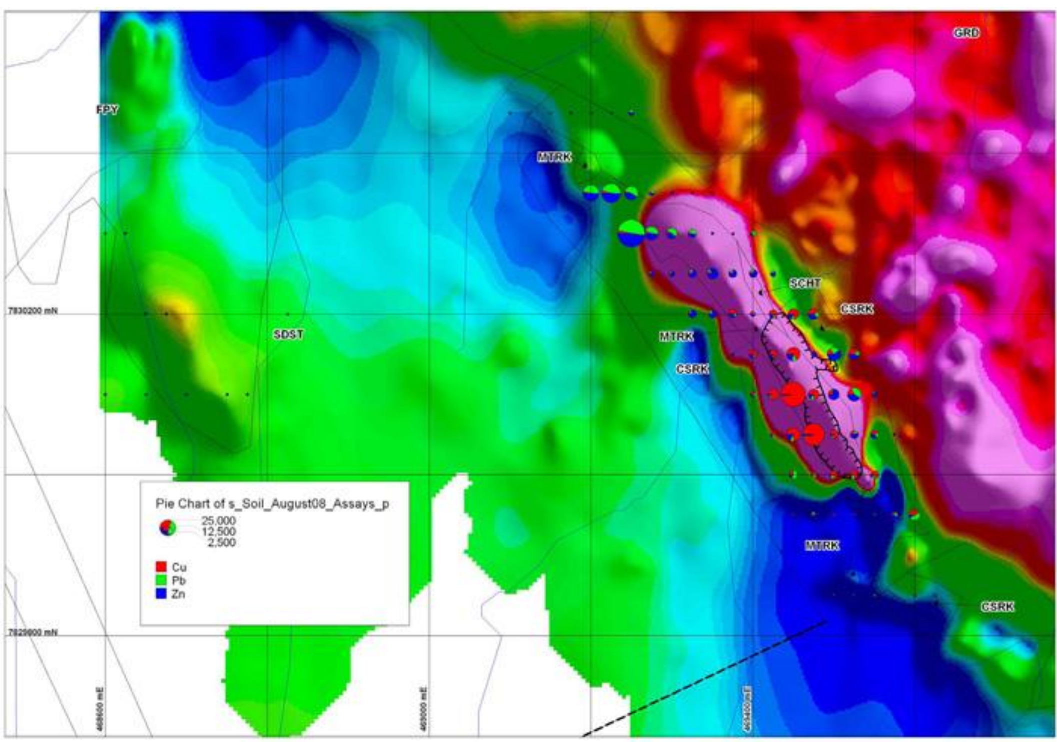


Figure 17 - Copper, Lead, and Zinc Values (Terra Search, 2010)

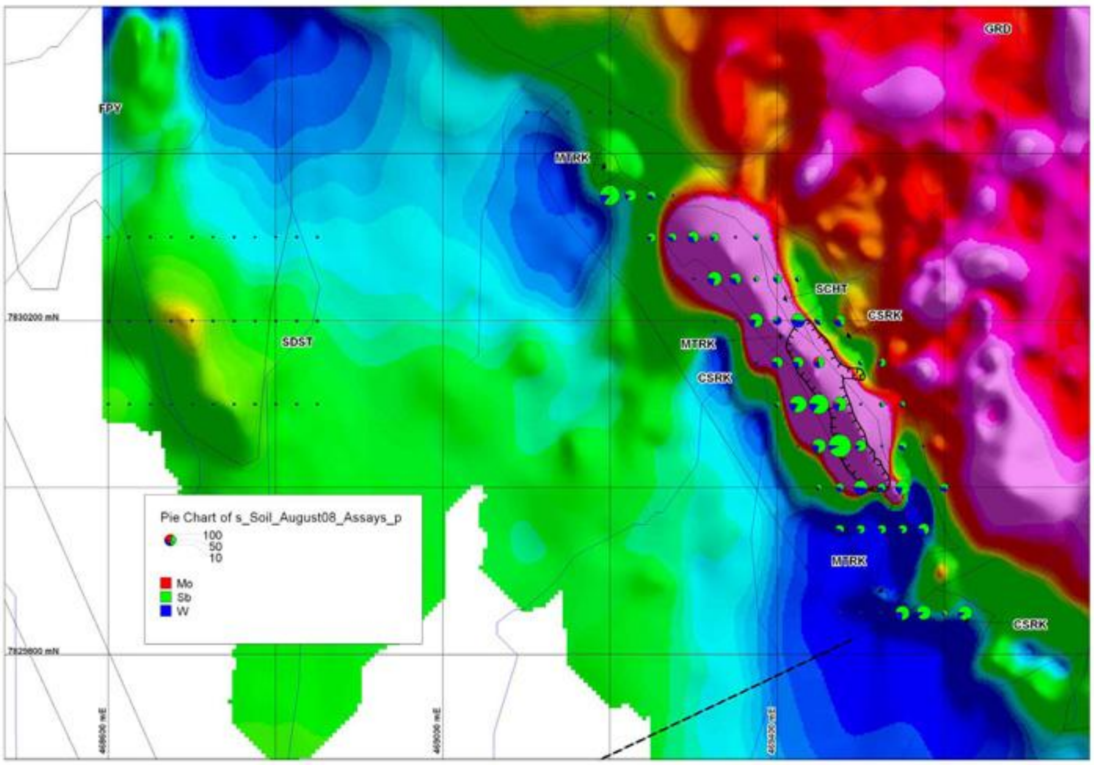


Figure 18 - Molybdenum, Antimony, and Tungsten Values (Terra Search, 2010)

Figure 19 - Drill rig on site of IGRC002, looking south. Cyclone and sample splitter in left of photo (Terra Search, 2011)

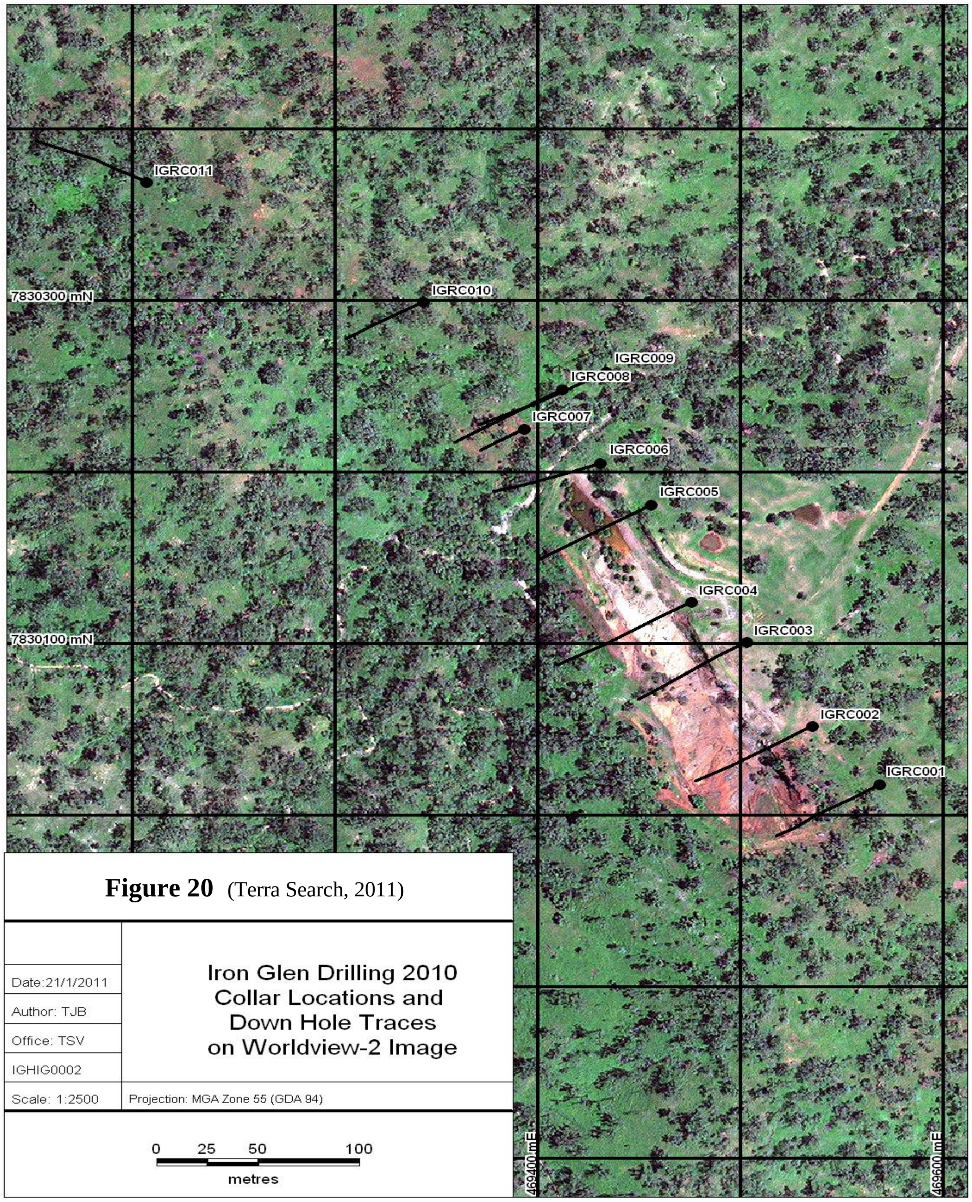


Figure 20 (Terra Search, 2011)

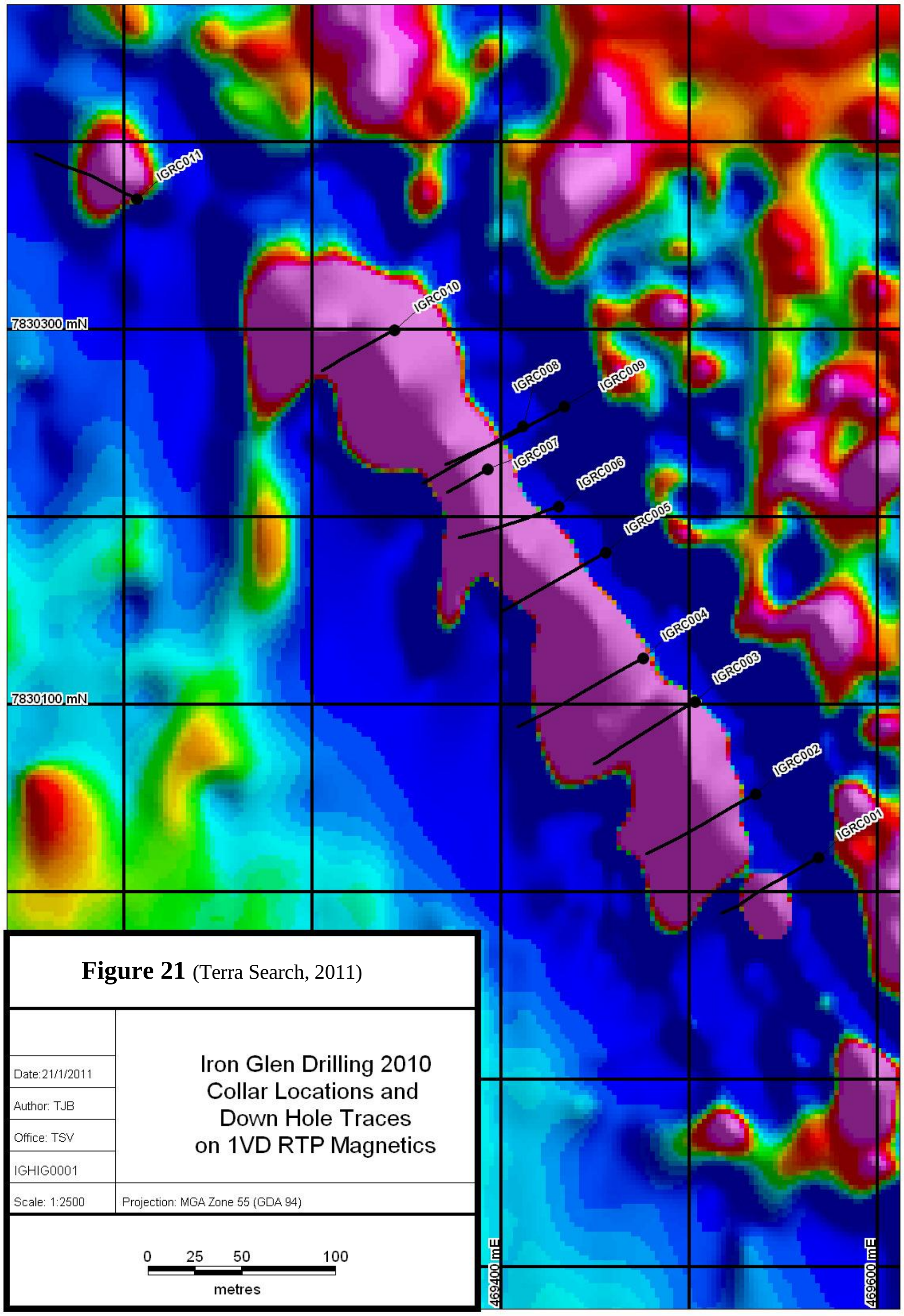


Figure 21 (Terra Search, 2011)

Figure 22 A, B, and C (See Appendix II)

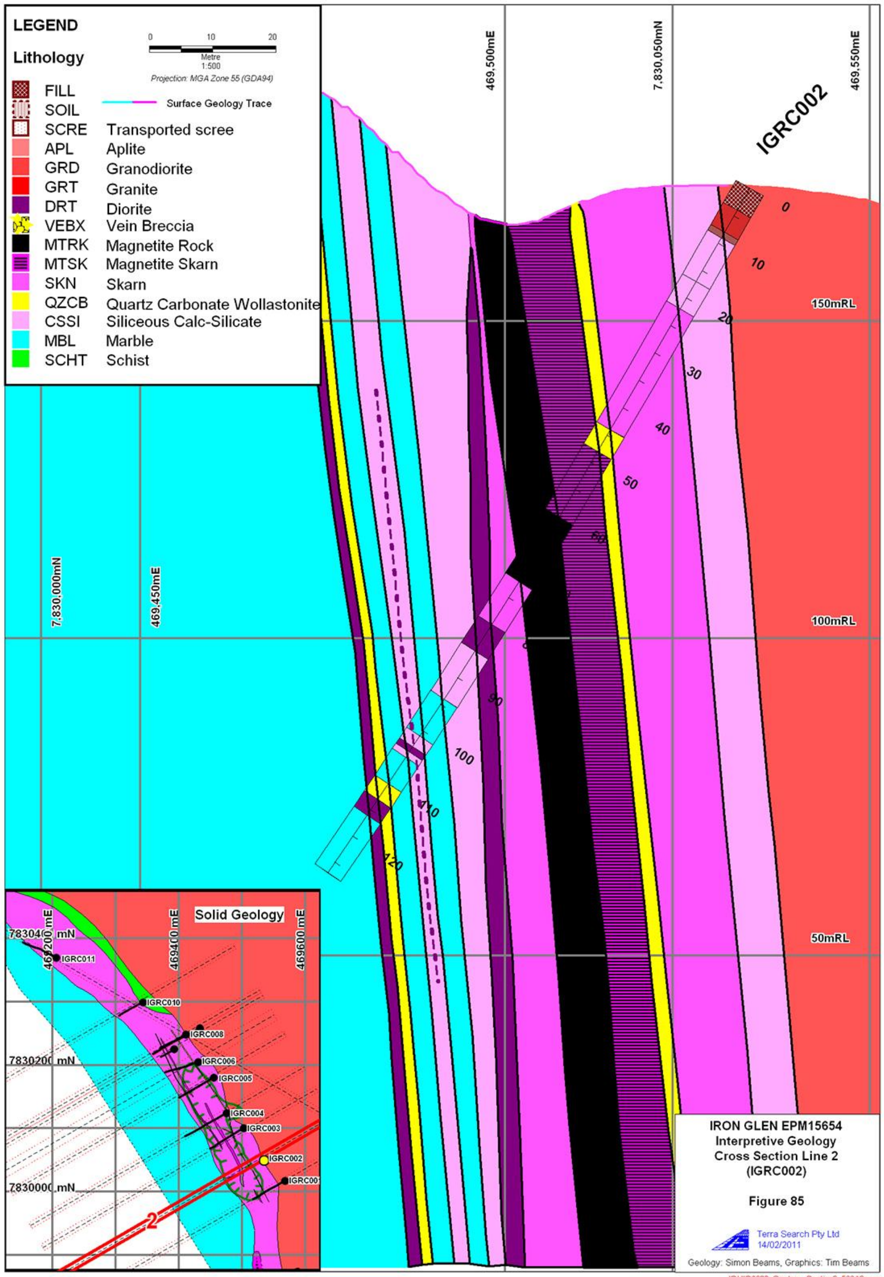


Figure 23 – The Main Magnetite Zone and Skarn Assemblage.
(Data from Hole Logs - Terra Search, 2011)

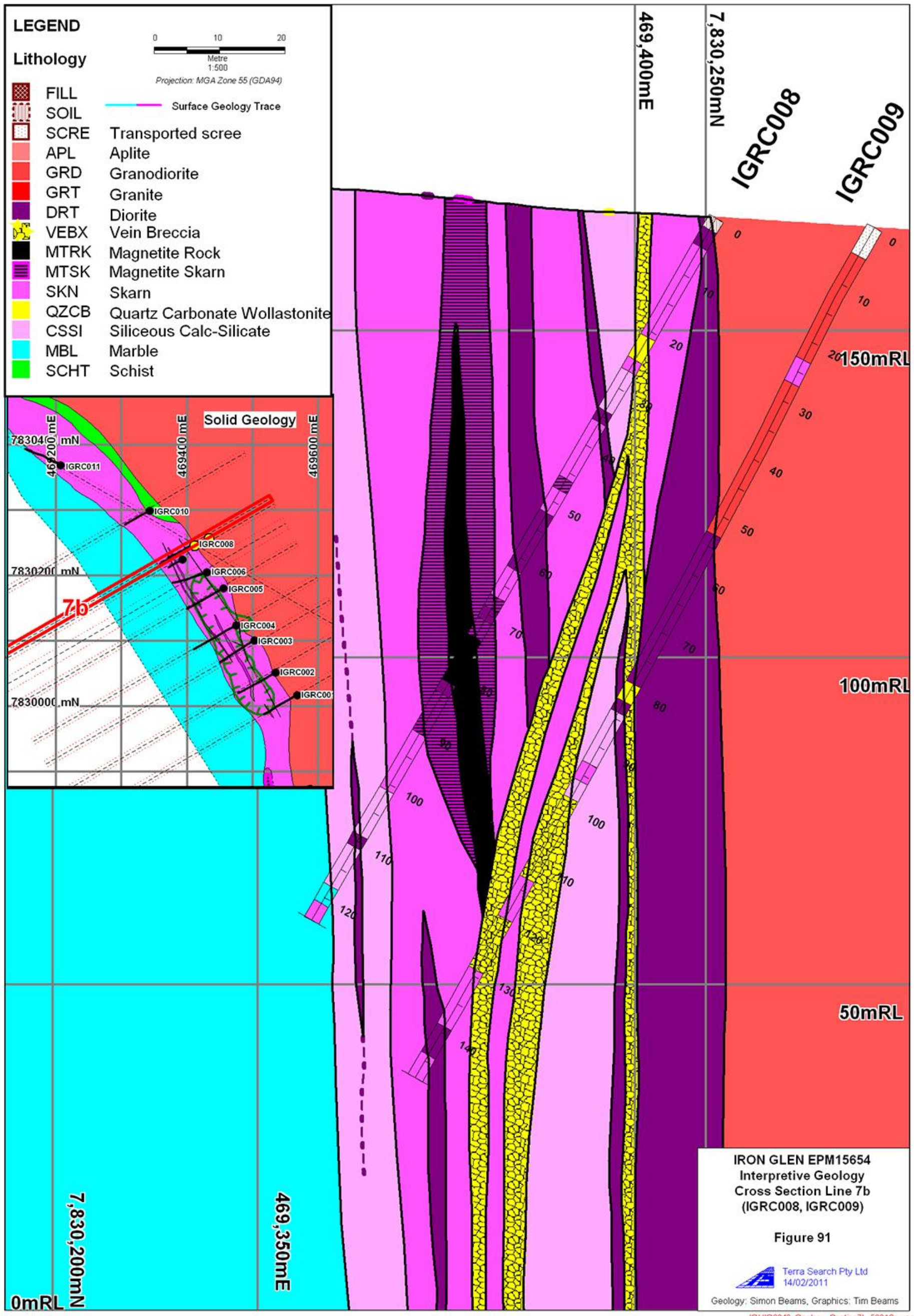


Figure 24 – The Northern Magnetite Lens and Appearance of Vein Breccia
(Data from Hole Logs - Terra Search, 2011)

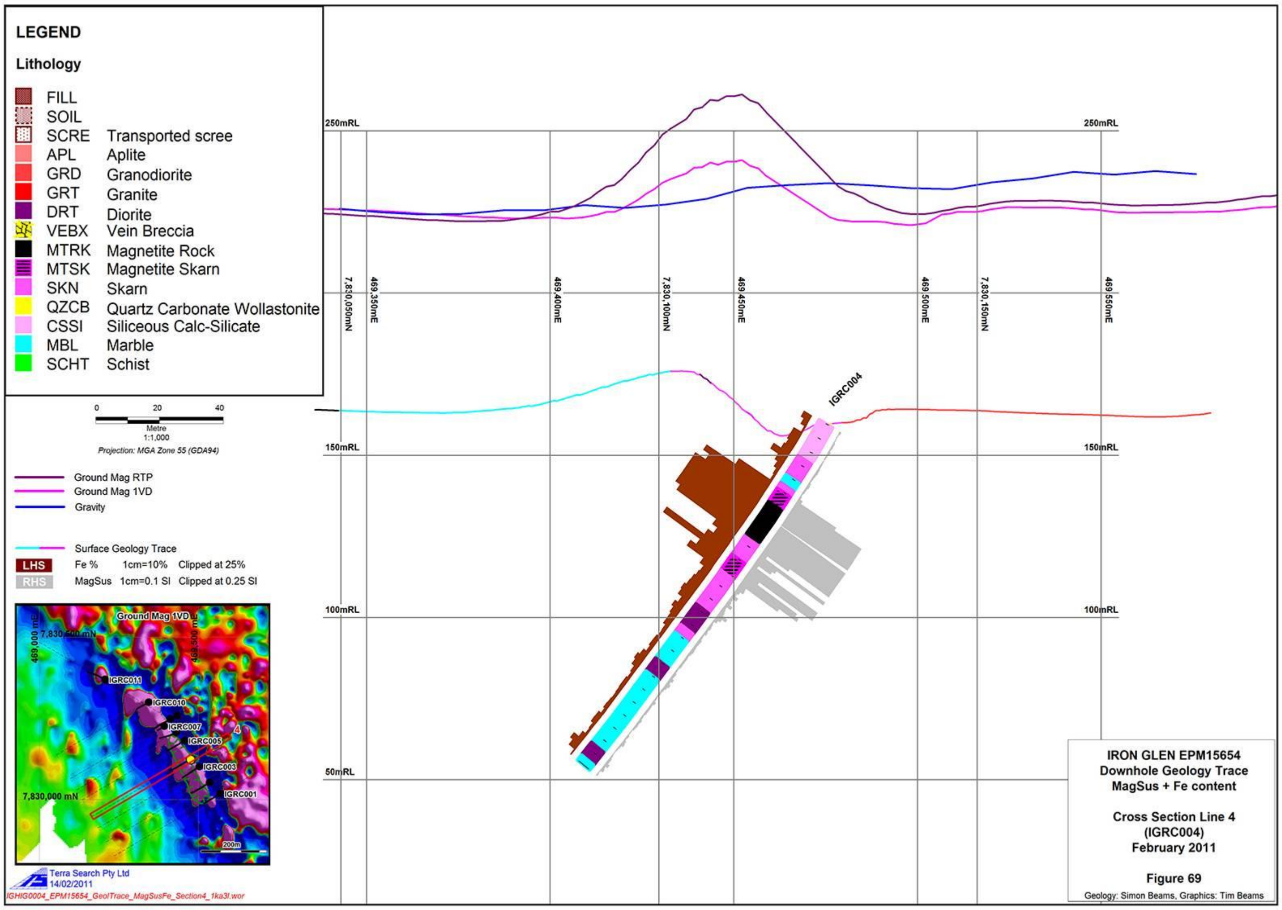


Figure 25 – Hole IGRC004 Showing Log of Fe% (left) and Magnetic Susceptibility (right)
(Data from Hole Logs - Terra Search, 2011)

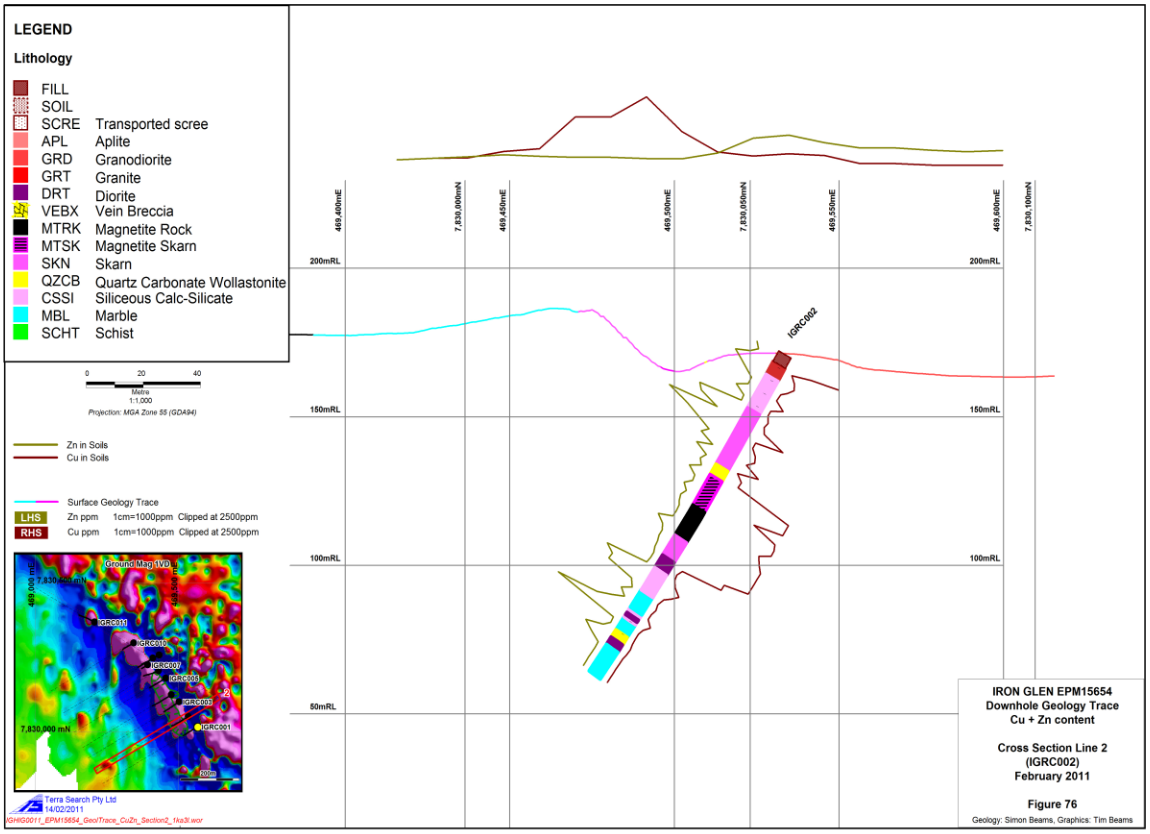


Figure 26 – Hole IGRC002 Showing Log of Zinc (left) and Copper (right)
(Data from Hole Logs - Terra Search, 2011)

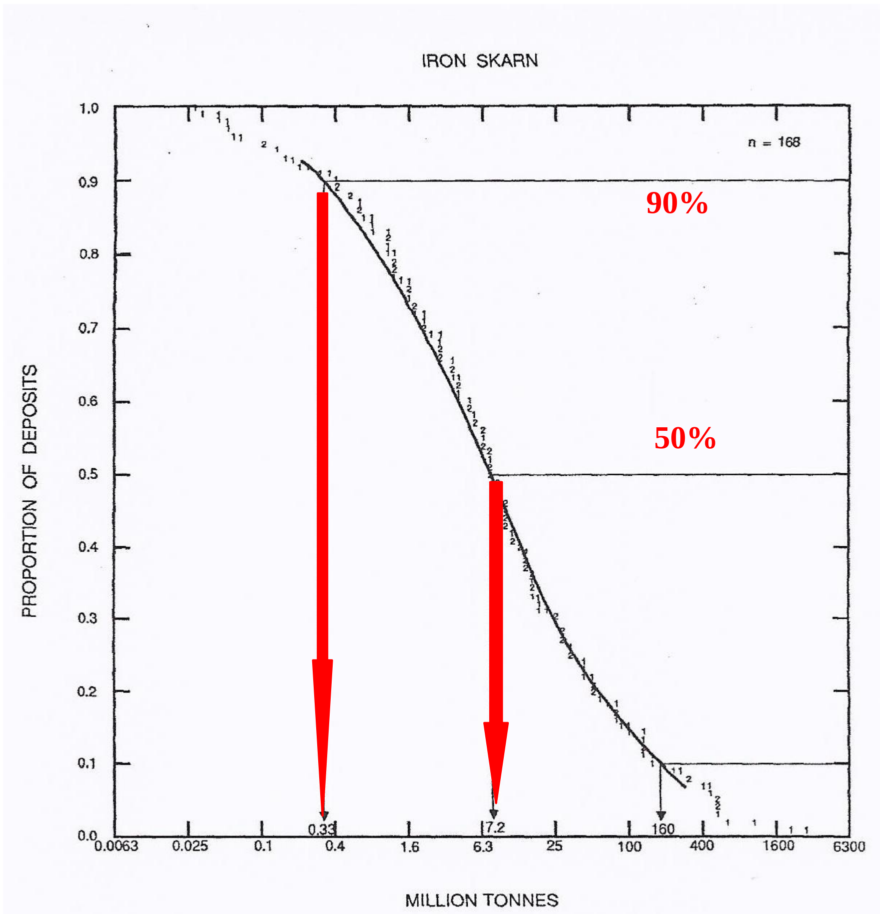


Figure 27 - Tonnages of Fe Skarn Deposits (from Cox, 1986)

(Individual numbers represent number of deposits)

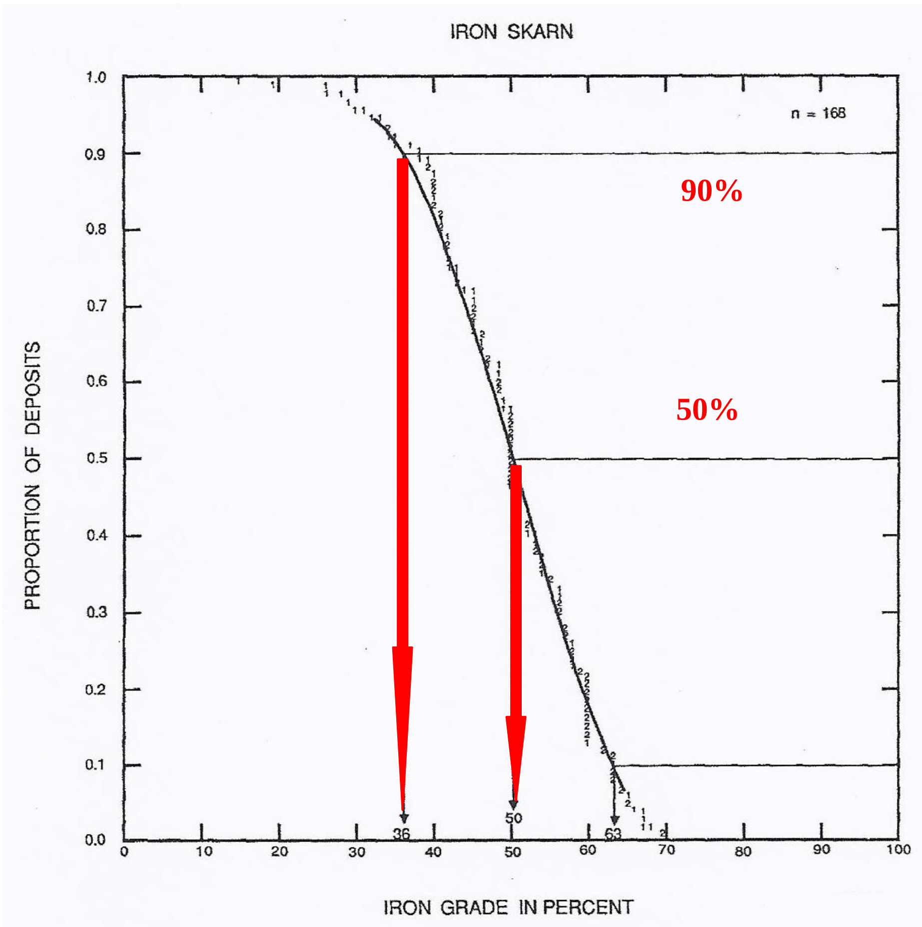


Figure 28 - Iron Grades in Fe Skarn Deposits (from Cox, 1986)

(Individual numbers represent number of deposits)

Figure 29 - Mining Magnetite at Mount Moss, 2010 (from Raggatt, 2010)

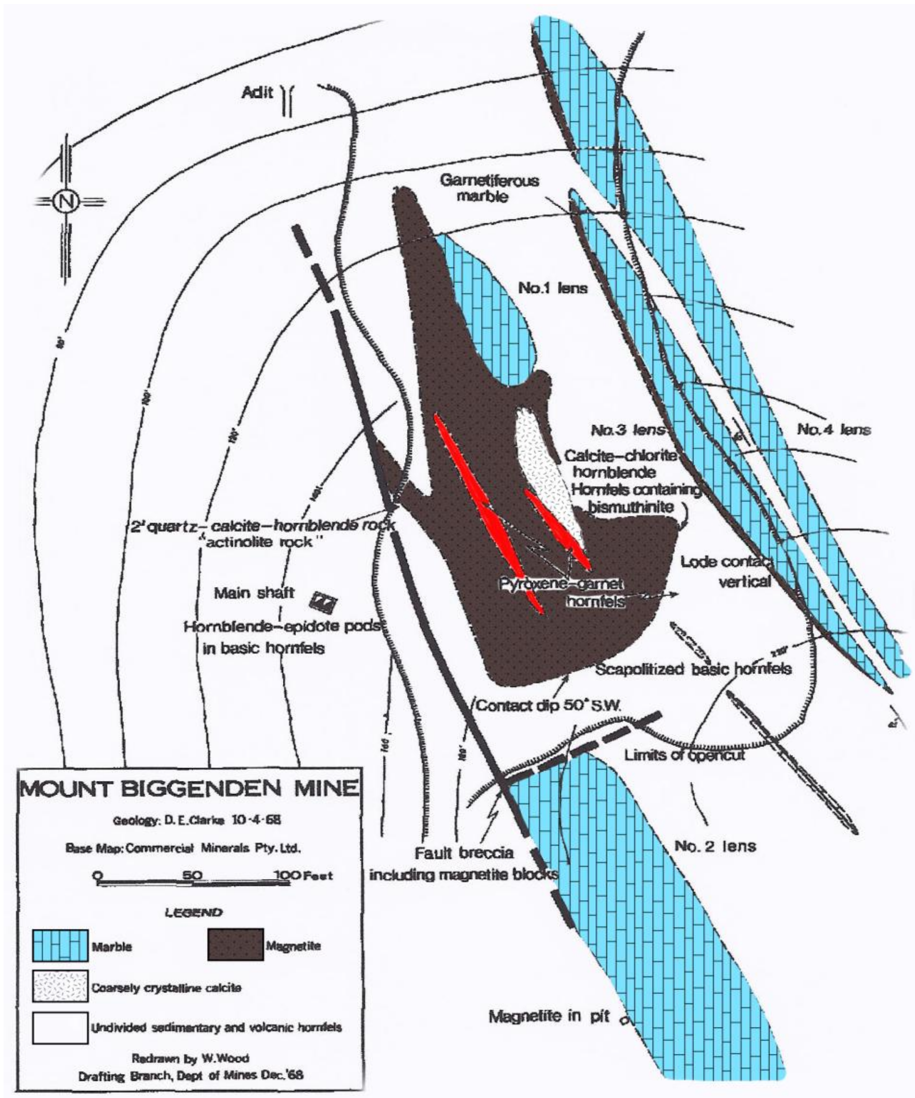


Figure 30 - General Geology Mount Biggenden Mine (After Siemon, 1971)

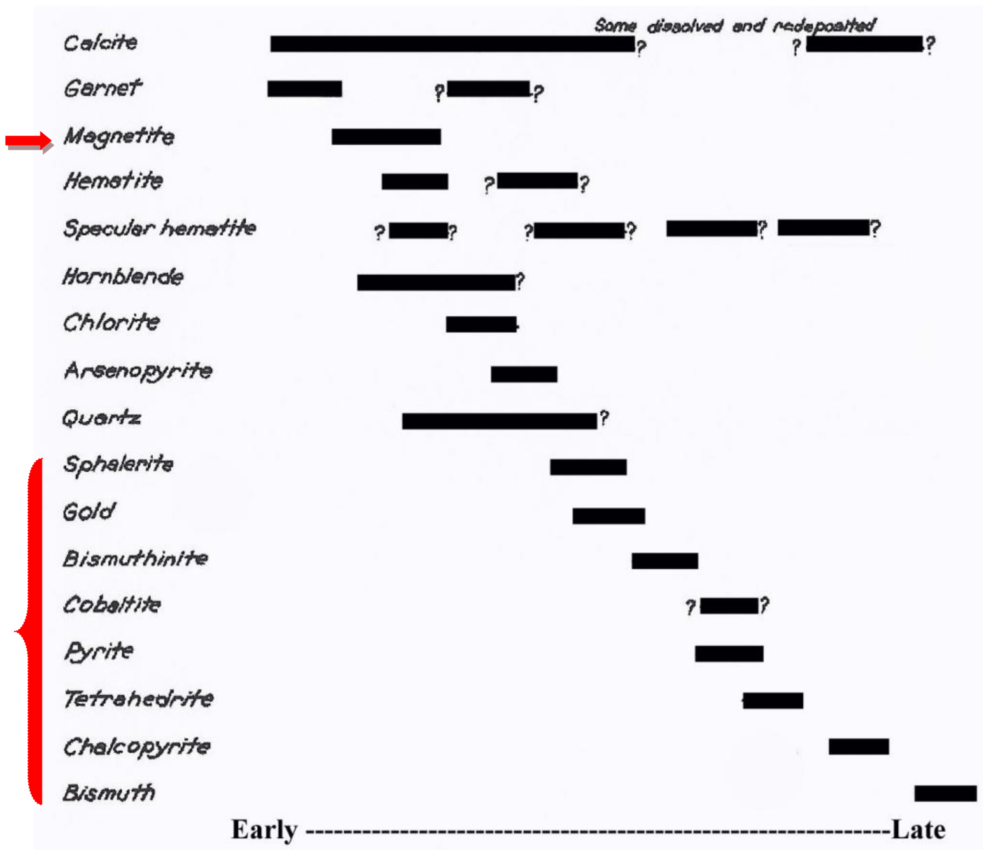


Figure 31 - Mineral Paragenesis at Biggenden Mine (after Clarke, 1969)

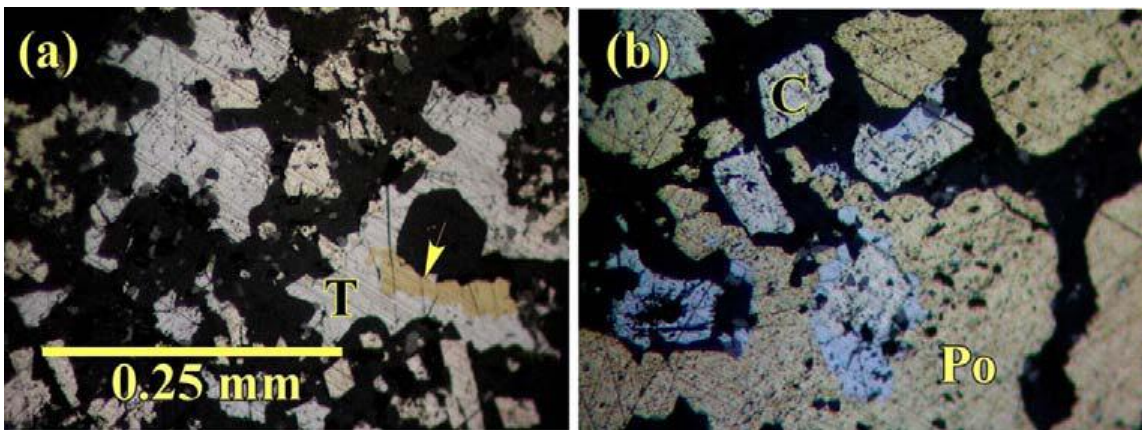


Figure 32 - Sample IGRC002 at 60-61 m depth (black areas are non-opaque minerals):
a) Chalcopyrite (arrow) with tennantite-tetrahedrite and carrollite (?)
b) Pyrrhotite (Po) with carrollite (C) (From Price, 2010)

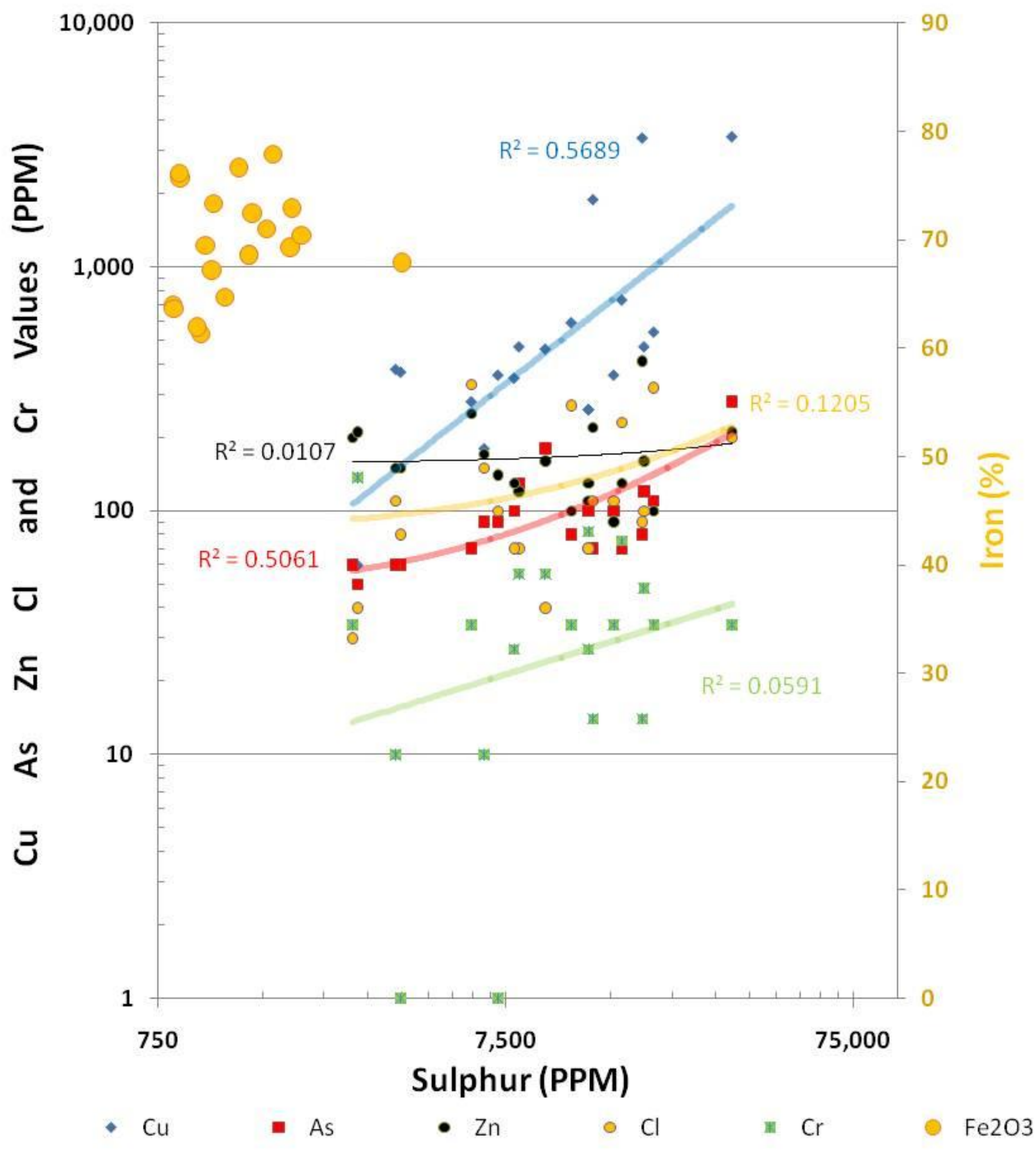


Figure 33 - Iron Distribution and Selected Elements Plotted Against Sulphur in the Mineralized Zones

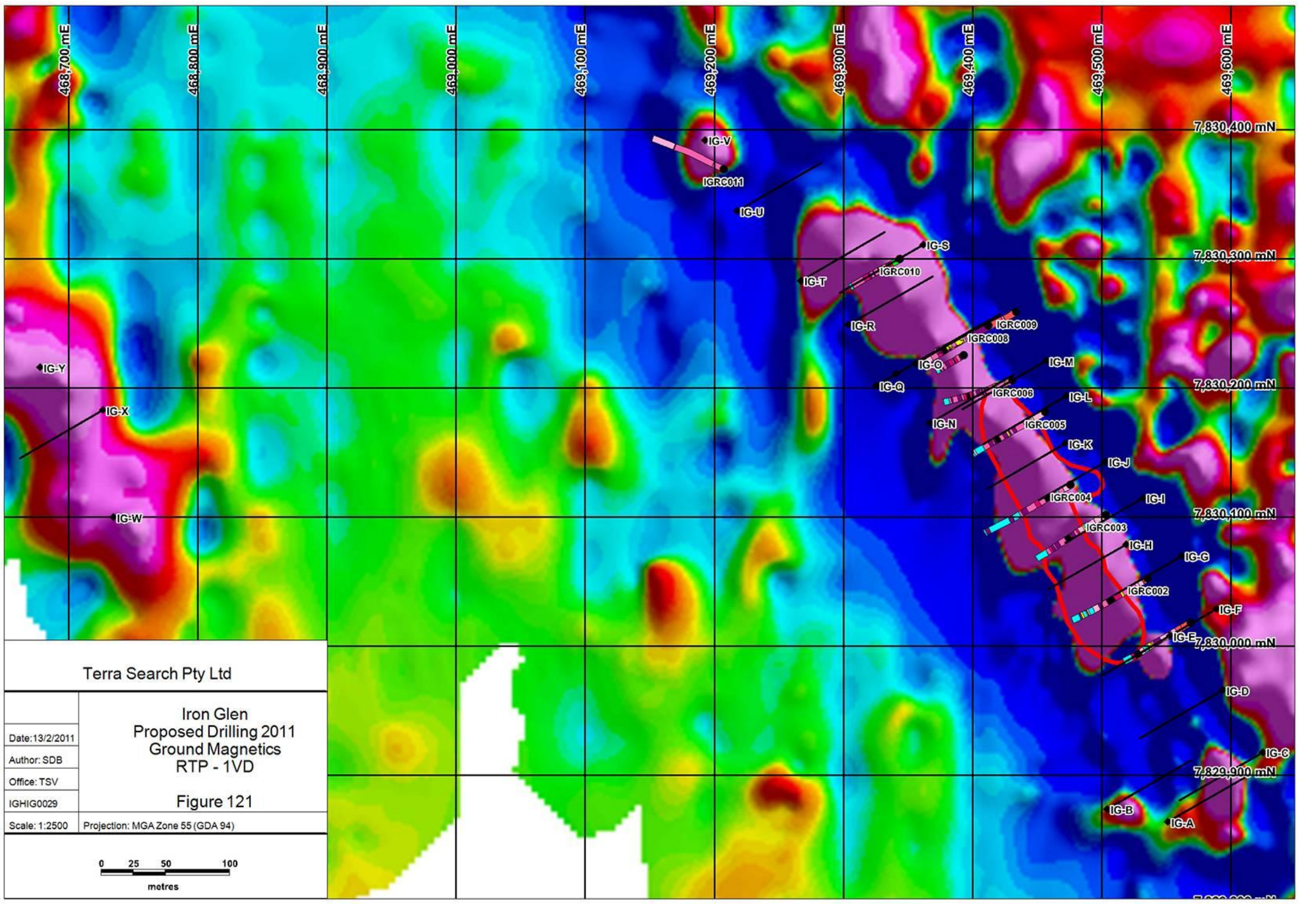


Figure 34 – Proposed Drilling Sites: Main Zone and the Western Area (Terra Search, 2011)

Section 26.0 Appendices

Appendix I – Laboratory Data

Houston Seattle

Elements Analyzed, Analytical Methods, and Detection Limits
Iron Glen Drilling Program, October, 2010

ICP AES 41

Element	Unit	Method	DL
Au	ppm	Au-AA26	0.01
Ag	ppm	ME-ICP41	0.2
Al	ppm	ME-ICP41	100
As	ppm	ME-ICP41	2
B	ppm	ME-ICP41	10
Ba	ppm	ME-ICP41	10
Be	ppm	ME-ICP41	0.5
Bi	ppm	ME-ICP41	2
Ca	ppm	ME-ICP41	100
Cd	ppm	ME-ICP41	0.5
Co	ppm	ME-ICP41	1
Cr	ppm	ME-ICP41	1
Cu	ppm	ME-ICP41	1
Fe	%	ME-ICP41	0.01
Ga	ppm	ME-ICP41	10
Hg	ppm	ME-ICP41	1
K	ppm	ME-ICP41	100
La	ppm	ME-ICP41	10
Mg	ppm	ME-ICP41	100
Mn	ppm	ME-ICP41	5
Mo	ppm	ME-ICP41	1
Na	ppm	ME-ICP41	100
Ni	ppm	ME-ICP41	1
P	ppm	ME-ICP41	10
Pb	ppm	ME-ICP41	2
S	ppm	ME-ICP41	100
Sb	ppm	ME-ICP41	2
Sc	ppm	ME-ICP41	1
Sr	ppm	ME-ICP41	1
Ti	ppm	ME-ICP41	100
Tl	ppm	ME-ICP41	10
U	ppm	ME-ICP41	10
V	ppm	ME-ICP41	1
W	ppm	ME-ICP41	10
Zn	ppm	ME-ICP41	2
Ag	ppm	Ag-OG46	1
Cu	ppm	Cu-OG46	10
Zn	ppm	Zn-OG46	10
Au	ppm	PGM-ICP24	0.00 1
Pt	ppm	PGM-ICP24	0.00 5

ICP MS 61

Element	Unit	Method	DL
Ag	ppm	ME-MS61r	0.01
Al	ppm	ME-MS61r	100
As	ppm	ME-MS61r	0.2
Ba	ppm	ME-MS61r	10
Be	ppm	ME-MS61r	0.05
Bi	ppm	ME-MS61r	0.01
Ca	ppm	ME-MS61r	100
Cd	ppm	ME-MS61r	0.02
Ce	ppm	ME-MS61r	0.01
Co	ppm	ME-MS61r	0.1
Cr	ppm	ME-MS61r	1
Cs	ppm	ME-MS61r	0.05
Cu	ppm	ME-MS61r	0.2
Fe	%	ME-MS61r	0.01
Ga	ppm	ME-MS61r	0.05
Ge	ppm	ME-MS61r	0.05
Hf	ppm	ME-MS61r	0.1
In	ppm	ME-MS61r	0.00 5
K	ppm	ME-MS61r	100
La	ppm	ME-MS61r	0.5
Li	ppm	ME-MS61r	0.2
Mg	ppm	ME-MS61r	100
Mn	ppm	ME-MS61r	5
Mo	ppm	ME-MS61r	0.05
Na	ppm	ME-MS61r	100
Nb	ppm	ME-MS61r	0.1
Ni	ppm	ME-MS61r	0.2
P	ppm	ME-MS61r	10
Pb	ppm	ME-MS61r	0.5
Rb	ppm	ME-MS61r	0.1
Re	ppm	ME-MS61r	0.00 2
S	ppm	ME-MS61r	100
Sb	ppm	ME-MS61r	0.05
Sc	ppm	ME-MS61r	0.1
Se	ppm	ME-MS61r	1
Sn	ppm	ME-MS61r	0.2
Sr	ppm	ME-MS61r	0.2
Ta	ppm	ME-MS61r	0.05
Te	ppm	ME-MS61r	0.05
Th	ppm	ME-MS61r	0.2

Wholerock XRF

Element	Unit	Method	DL
Al2O3	%	ME-XRF11b	0.01
As	ppm	ME-XRF11b	10
Ba	ppm	ME-XRF11b	10
CaO	%	ME-XRF11b	0.01
Cl	ppm	ME-XRF11b	10
Co	ppm	ME-XRF11b	10
Cr2O3	ppm	ME-XRF11b	10
Cr	ppm	ME-XRF11b	10
Cu	ppm	ME-XRF11b	10
Fe	%	ME-XRF11b	0.01
Fe2O3	%	ME-XRF11b	0.01
K2O	%	ME-XRF11b	0.01
MgO	%	ME-XRF11b	0.01
MnO	%	ME-XRF11b	0.001
Mn	ppm	ME-XRF11b	10
Na2O	%	ME-XRF11b	0.001
Ni	ppm	ME-XRF11b	10
P	ppm	ME-XRF11b	10
Pb	ppm	ME-XRF11b	10
S	ppm	ME-XRF11b	10
SiO2	%	ME-XRF11b	0.01
Sn	ppm	ME-XRF11b	10
Sr	ppm	ME-XRF11b	10
TiO2	%	ME-XRF11b	0.01
V	ppm	ME-XRF11b	10
Zn	ppm	ME-XRF11b	10
Zr	ppm	ME-XRF11b	10
Total %			
LOI %			

Pd	ppm	PGM-ICP24	0.00 1

Ti	ppm	ME-MS61r	50
Tl	ppm	ME-MS61r	0.02
U	ppm	ME-MS61r	0.1
V	ppm	ME-MS61r	1
W	ppm	ME-MS61r	0.1
Y	ppm	ME-MS61r	0.1
Zn	ppm	ME-MS61r	2
Zr	ppm	ME-MS61r	0.5
Dy	ppm	ME-MS61r	0.05
Er	ppm	ME-MS61r	0.03
Eu	ppm	ME-MS61r	0.03
Gd	ppm	ME-MS61r	0.05
Ho	ppm	ME-MS61r	0.01
Lu	ppm	ME-MS61r	0.01
Nd	ppm	ME-MS61r	0.1
Pr	ppm	ME-MS61r	0.03
Sm	ppm	ME-MS61r	0.03
Tb	ppm	ME-MS61r	0.01
Tm	ppm	ME-MS61r	0.01
Yb	ppm	ME-MS61r	0.03
Zn	ppm	Zn-OG62	10

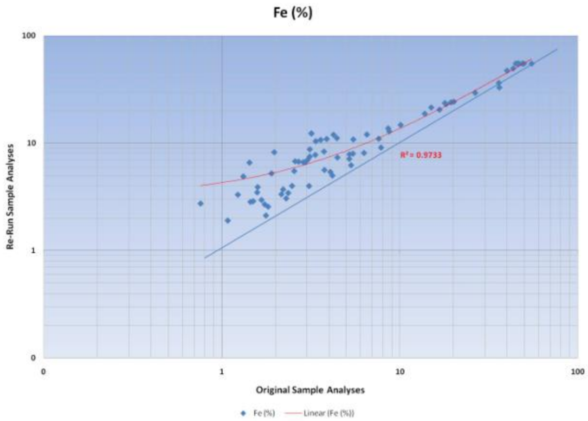
Houston Seattle

Cross-Plots for Fe, Silver, Zinc, and Manganese

(Original Analyses vs. Re-Run Analyses)

Hole IGRC008

(Click to Enlarge)



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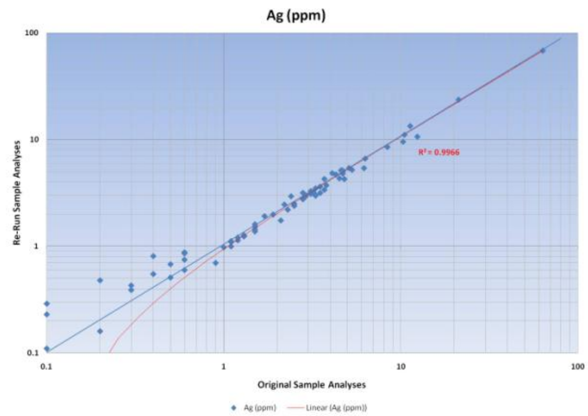

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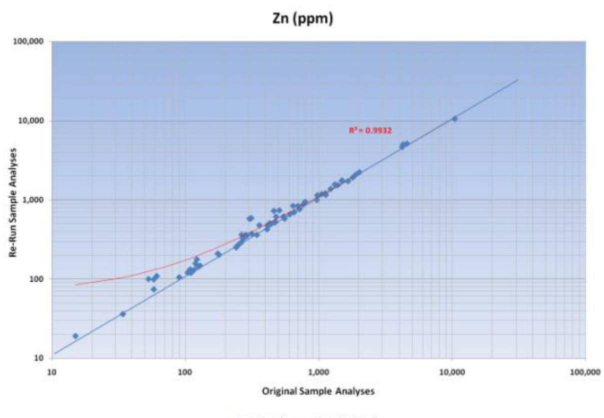

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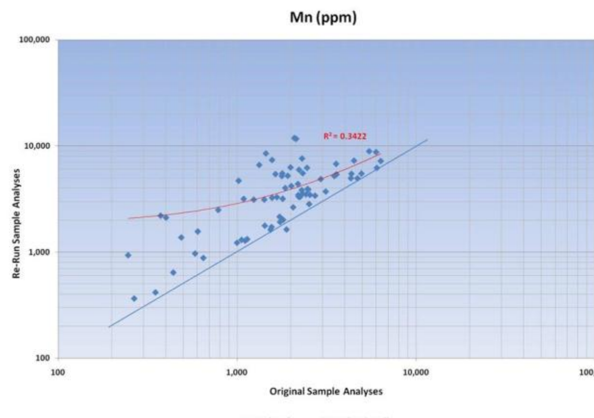

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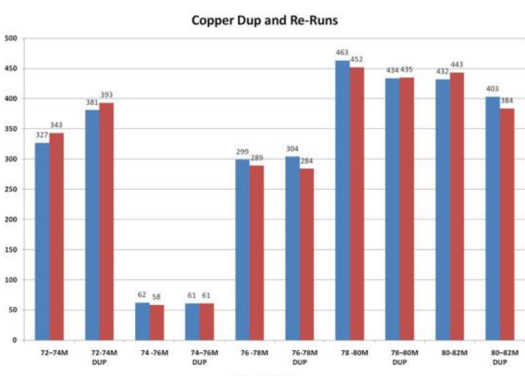

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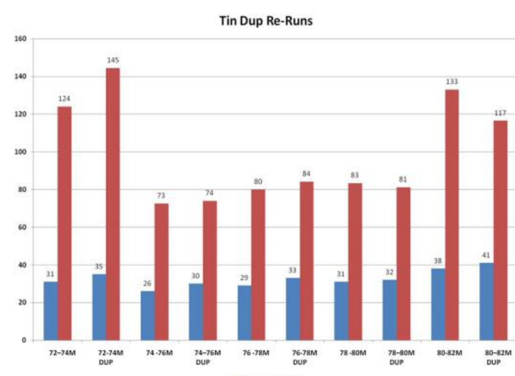


Click (Here)

Appendix II – Hole Logs

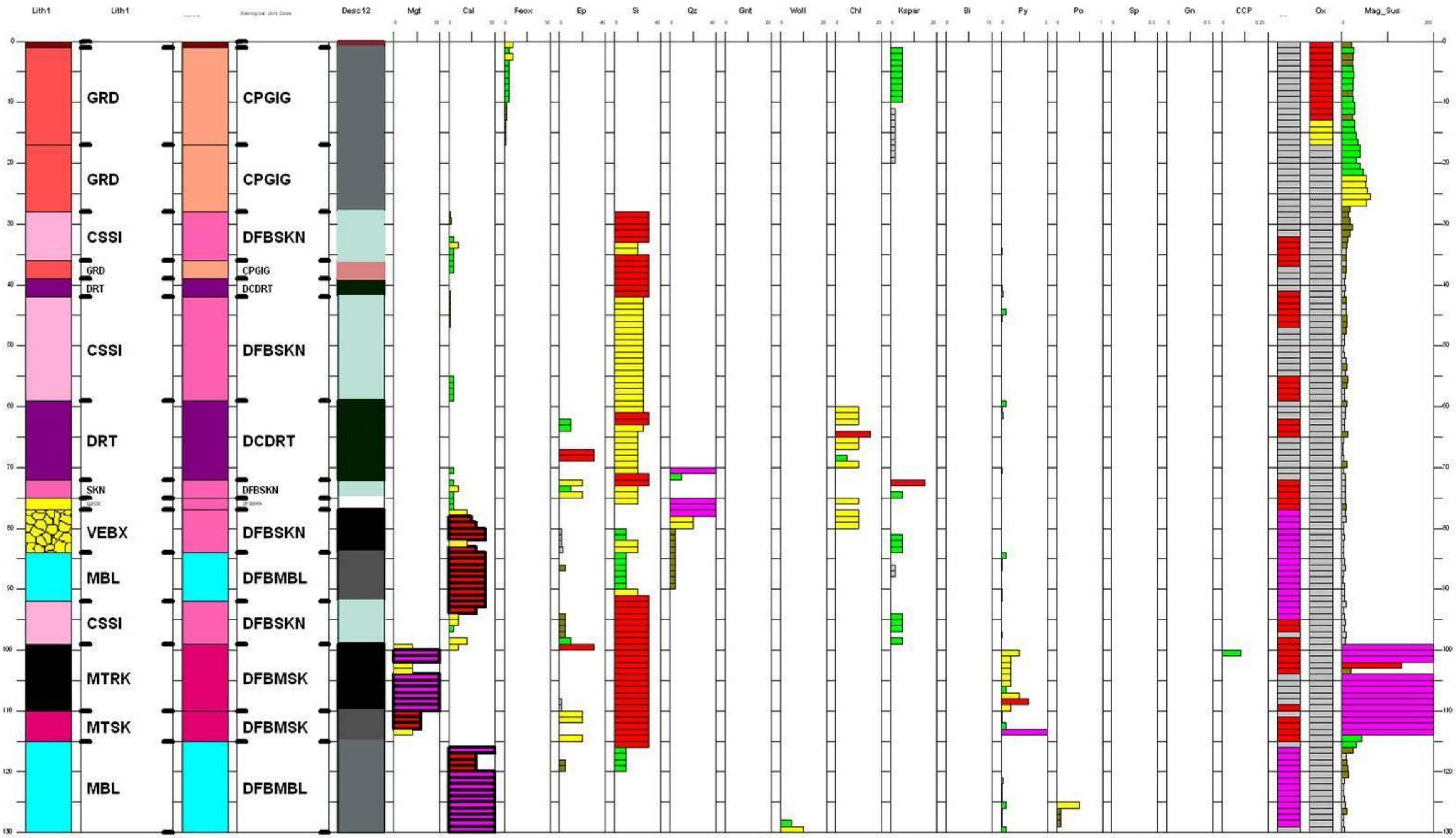
2010 Drilling Program

LEGEND

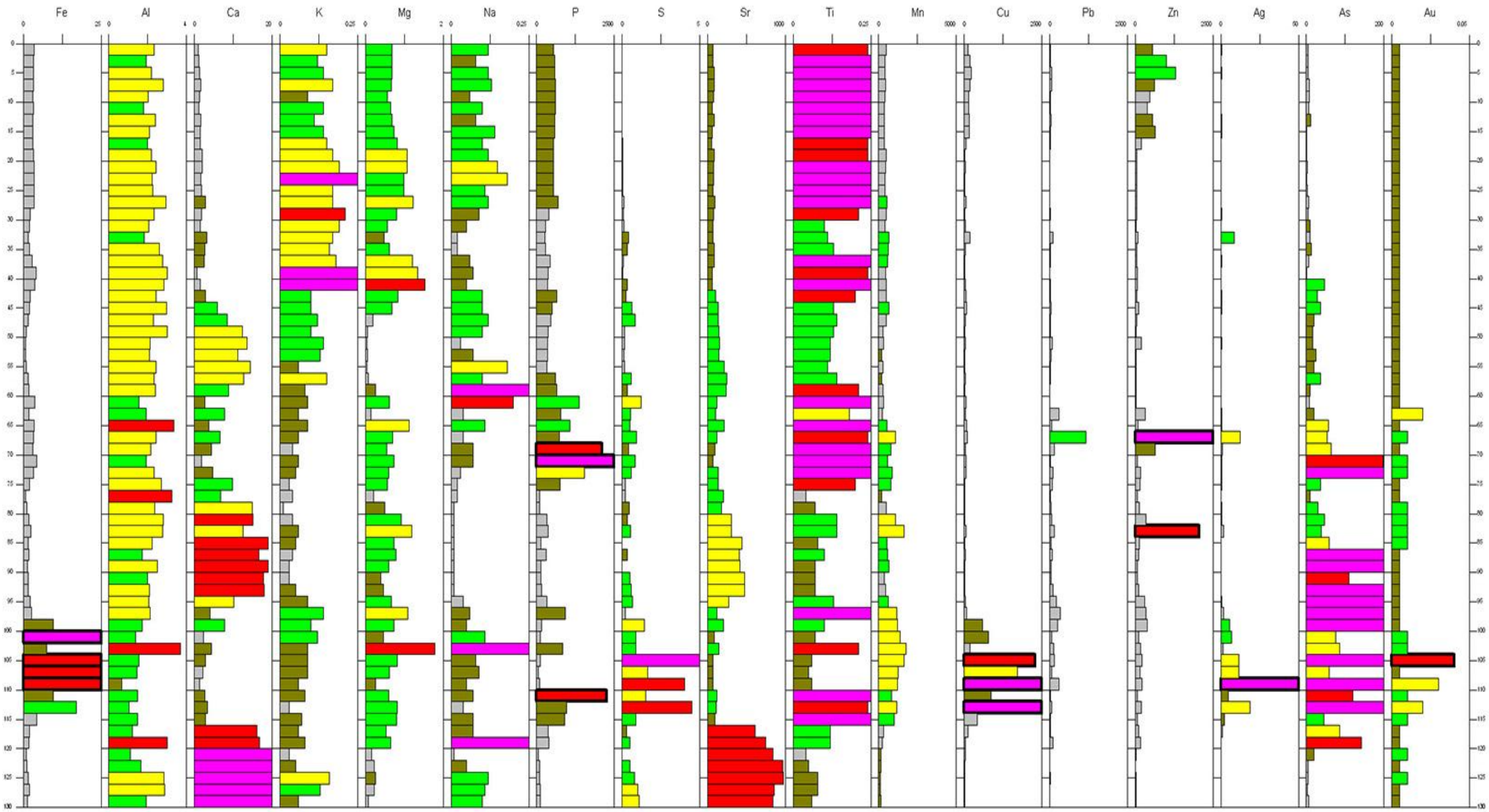
Lithology

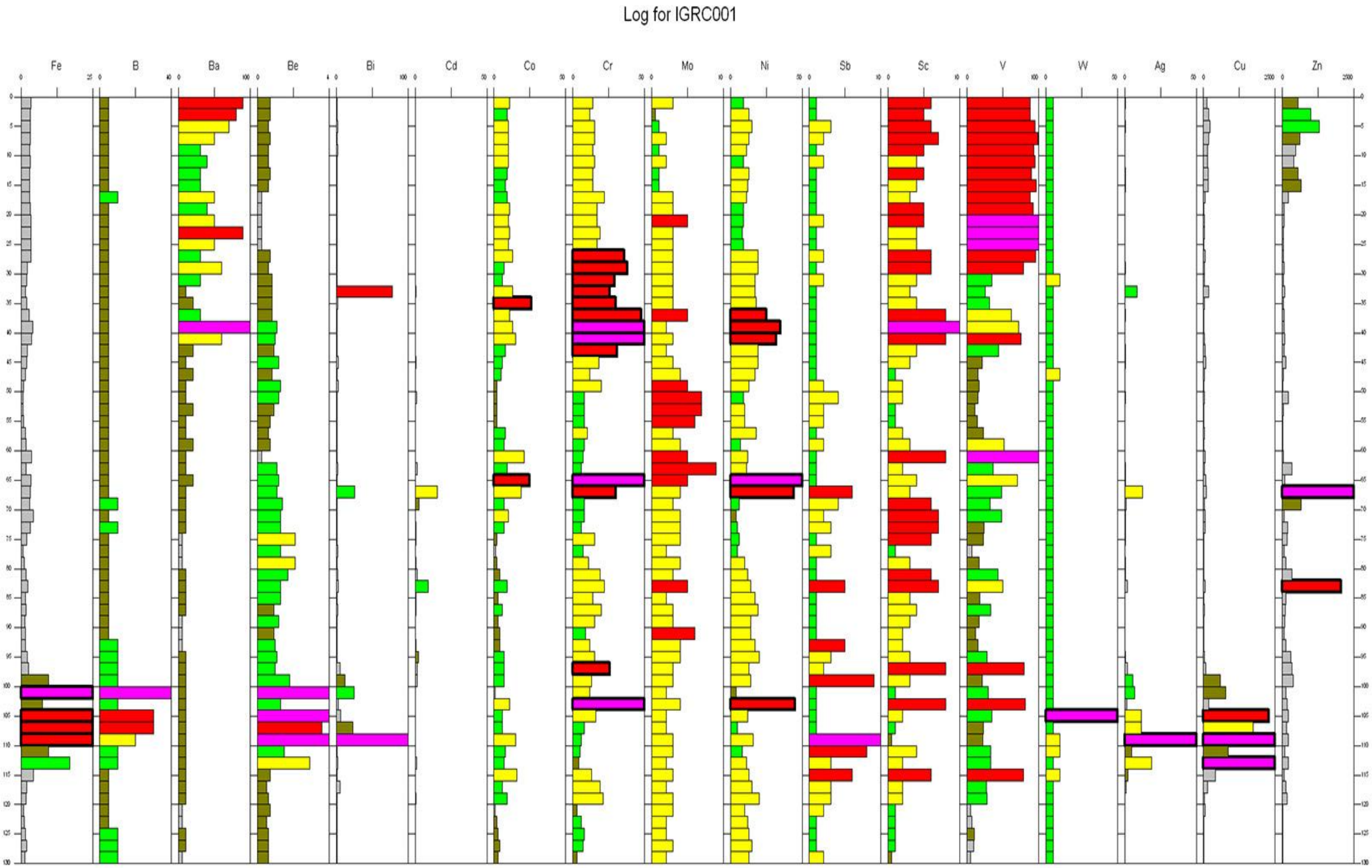
FILL	
SOIL	
SCRE	Transported scree
APL	Aplite
GRD	Granodiorite
GRT	Granite
DRT	Diorite
VEBX	Vein Breccia
MTRK	Magnetite Rock
MTSK	Magnetite Skarn
SKN	Skarn
QZCB	Quartz Carbonate Wollastonite
CSSI	Siliceous Calc-Silicate
MBL	Marble
SCHT	Schist

Log for IGRC001



Log for IGRC001





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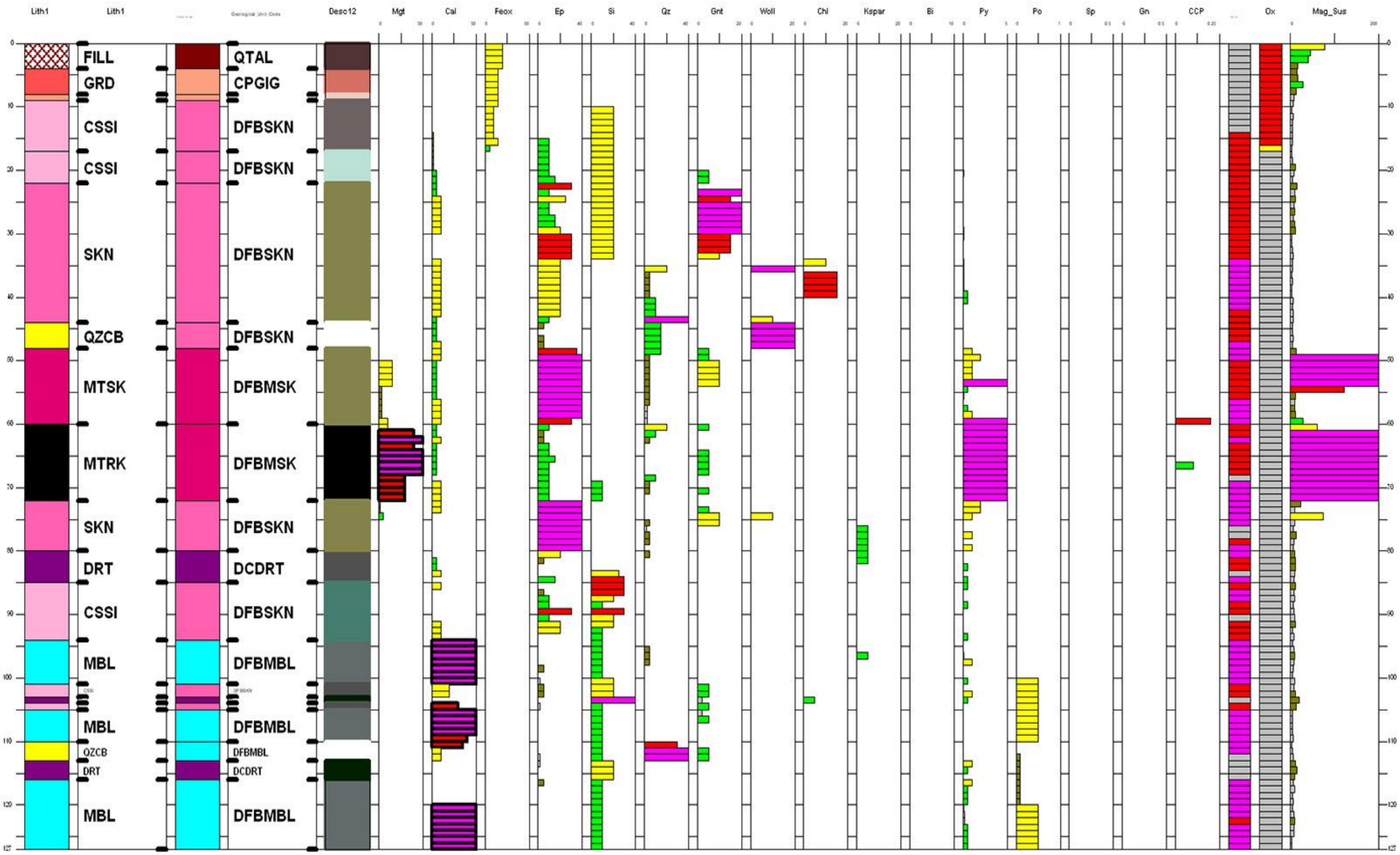
Log for IGRC002



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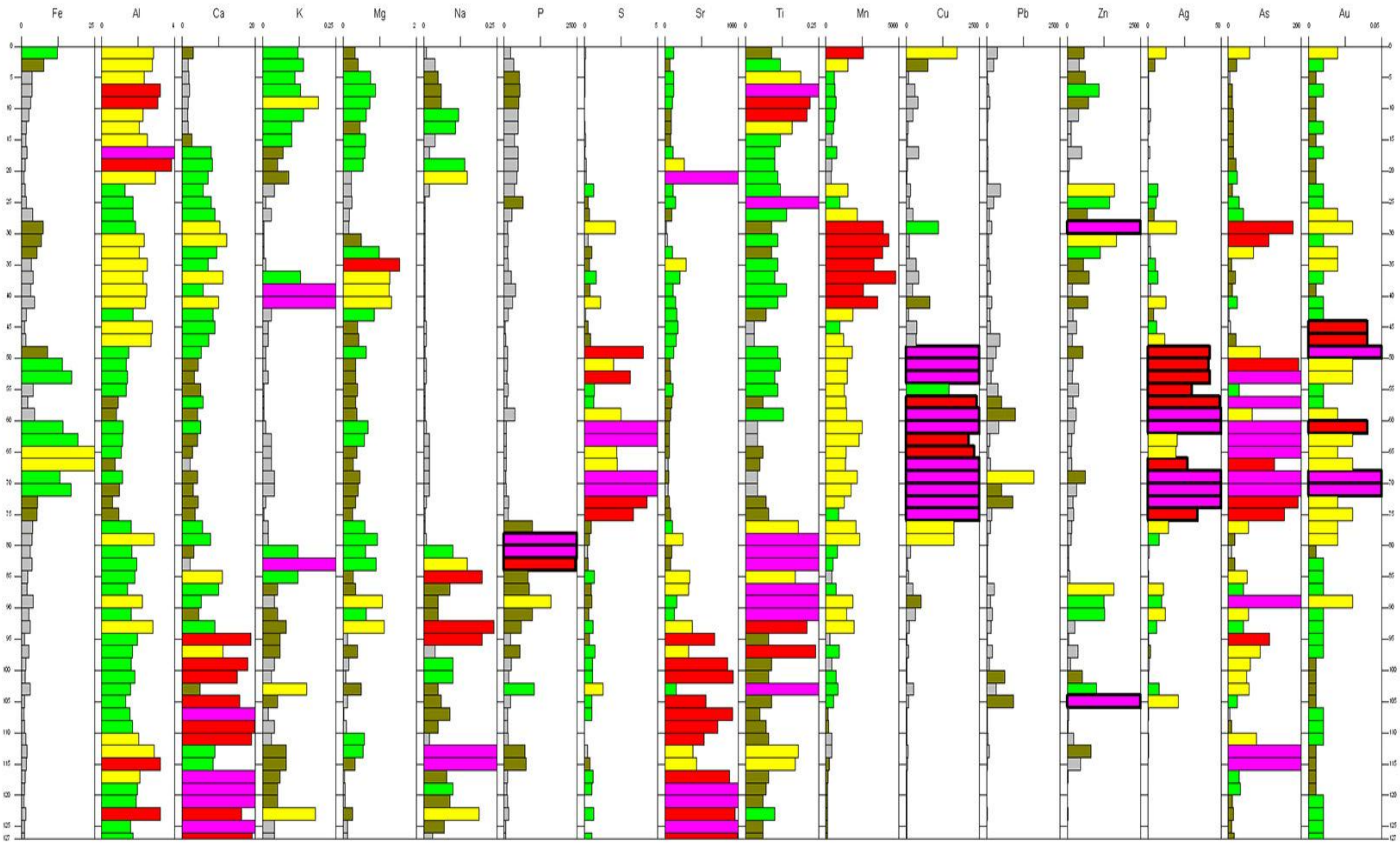
Log for IGRC002



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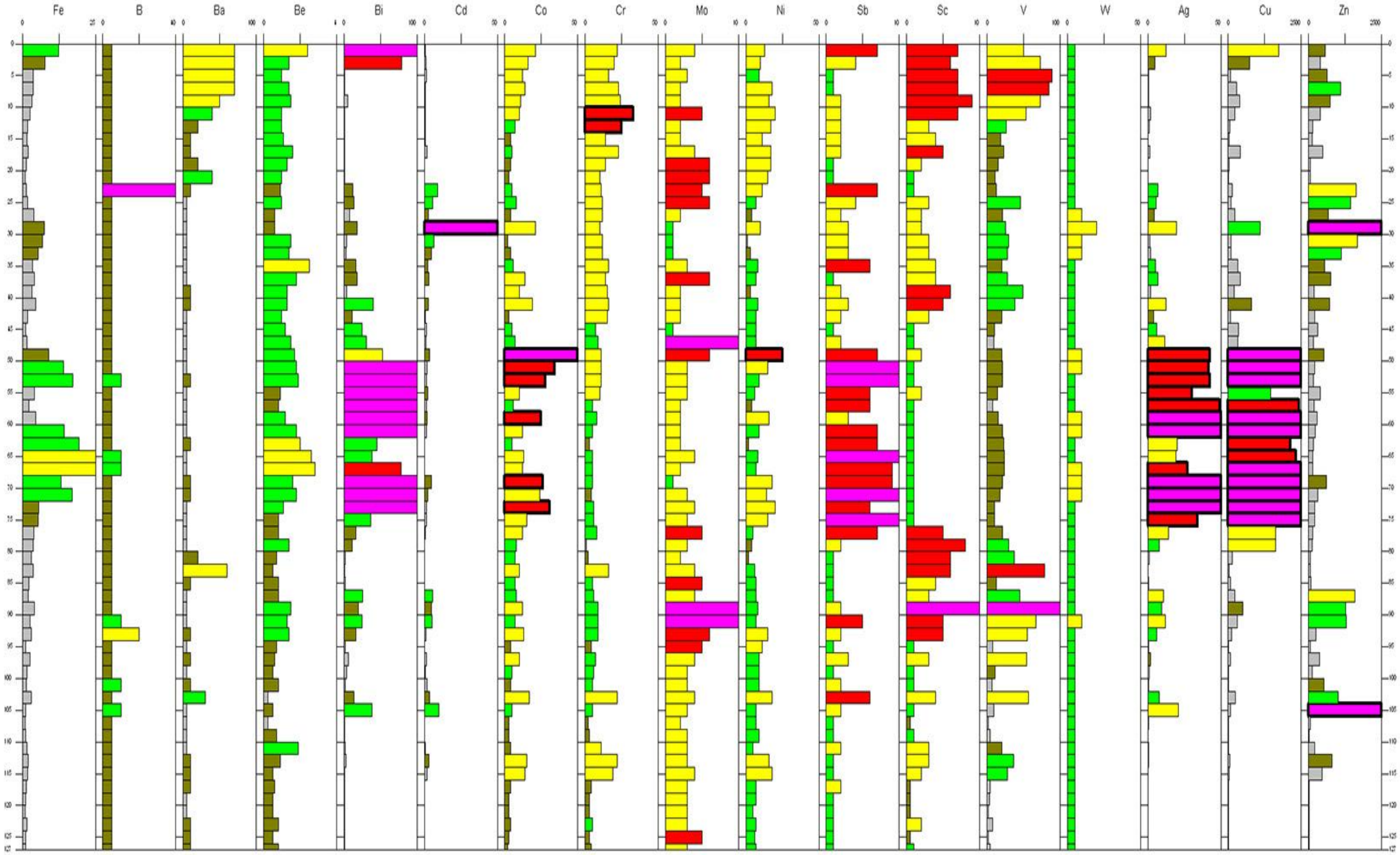

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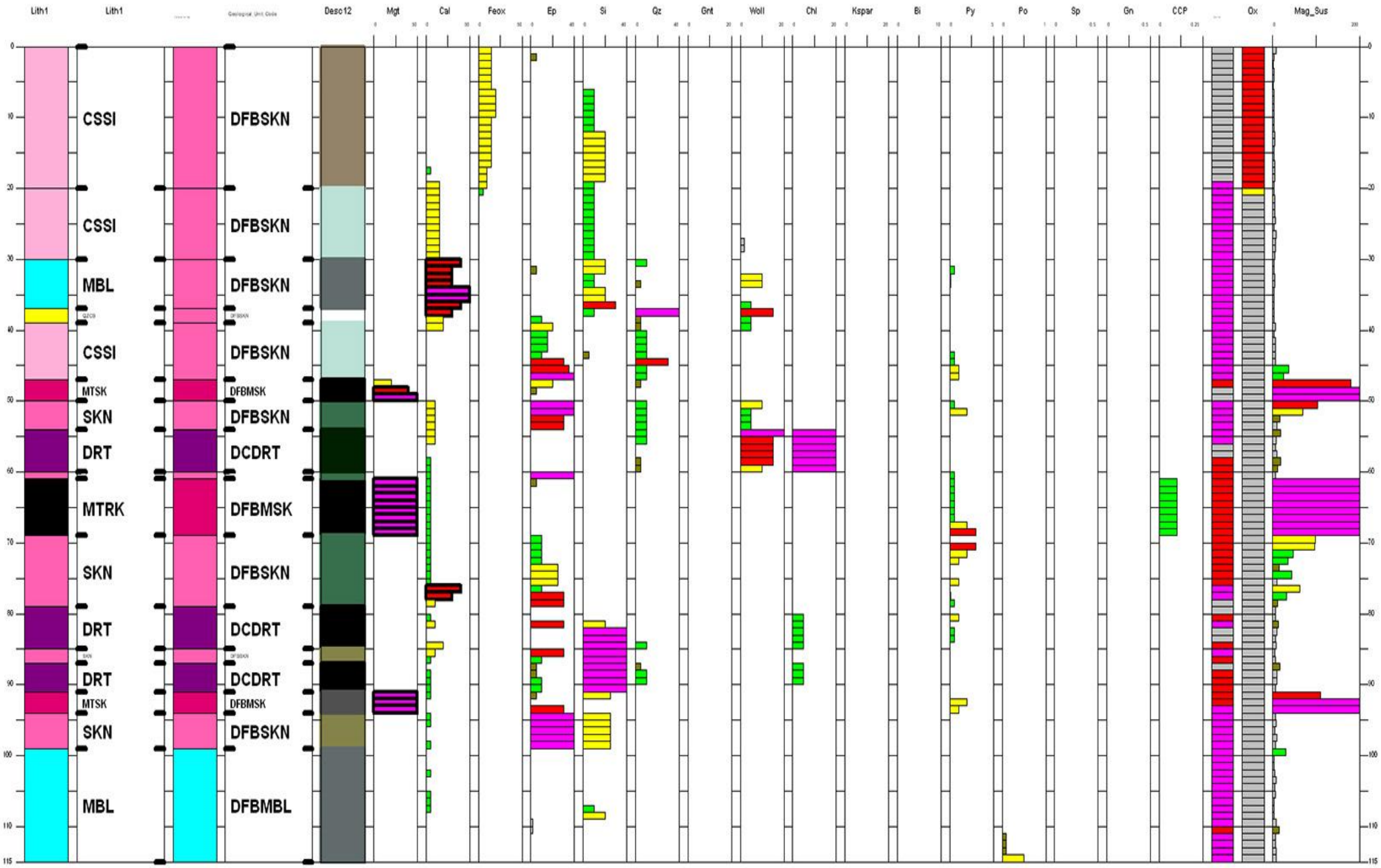
Log for IGRC003



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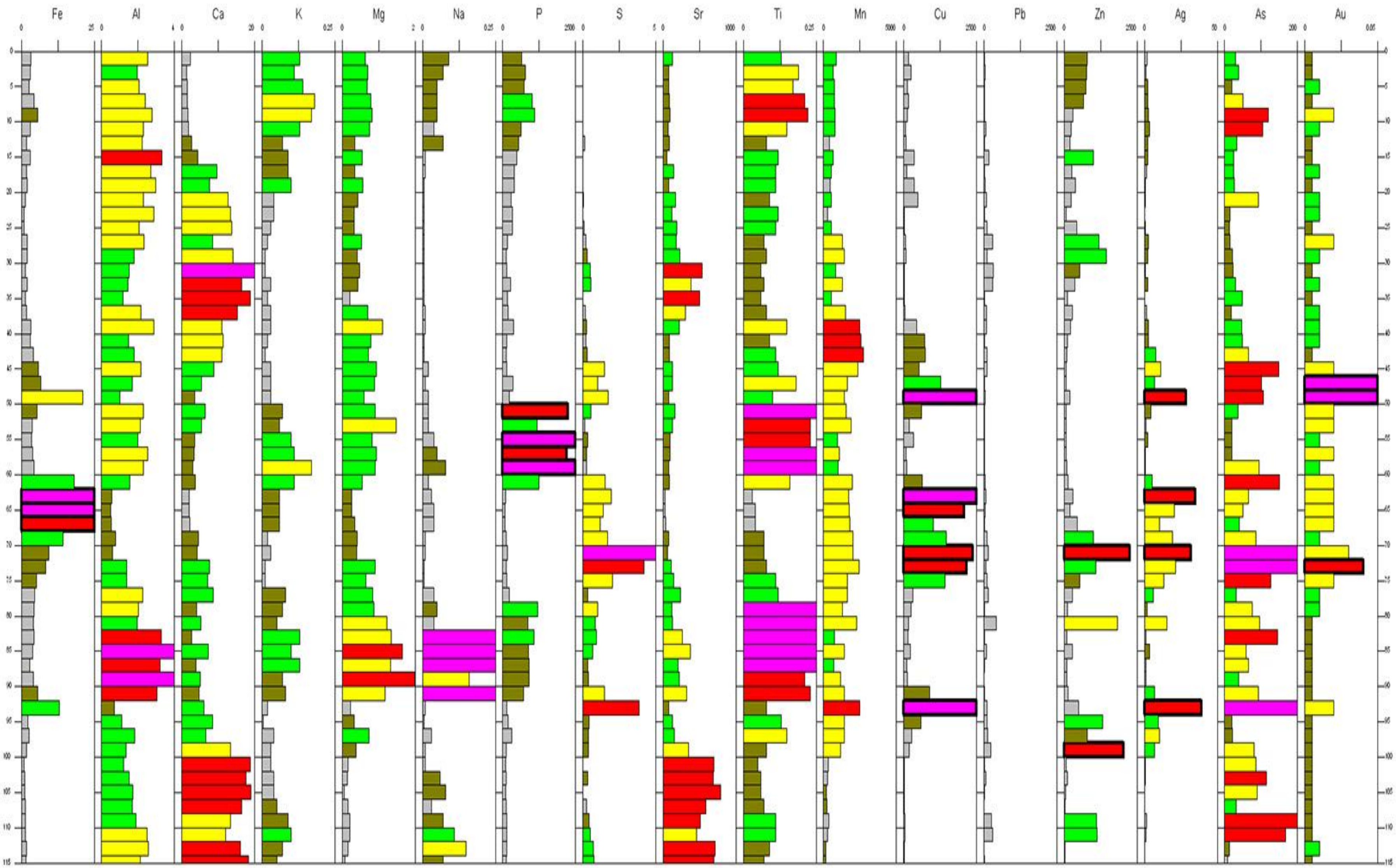
Log for IGRC003



Houston Seattle

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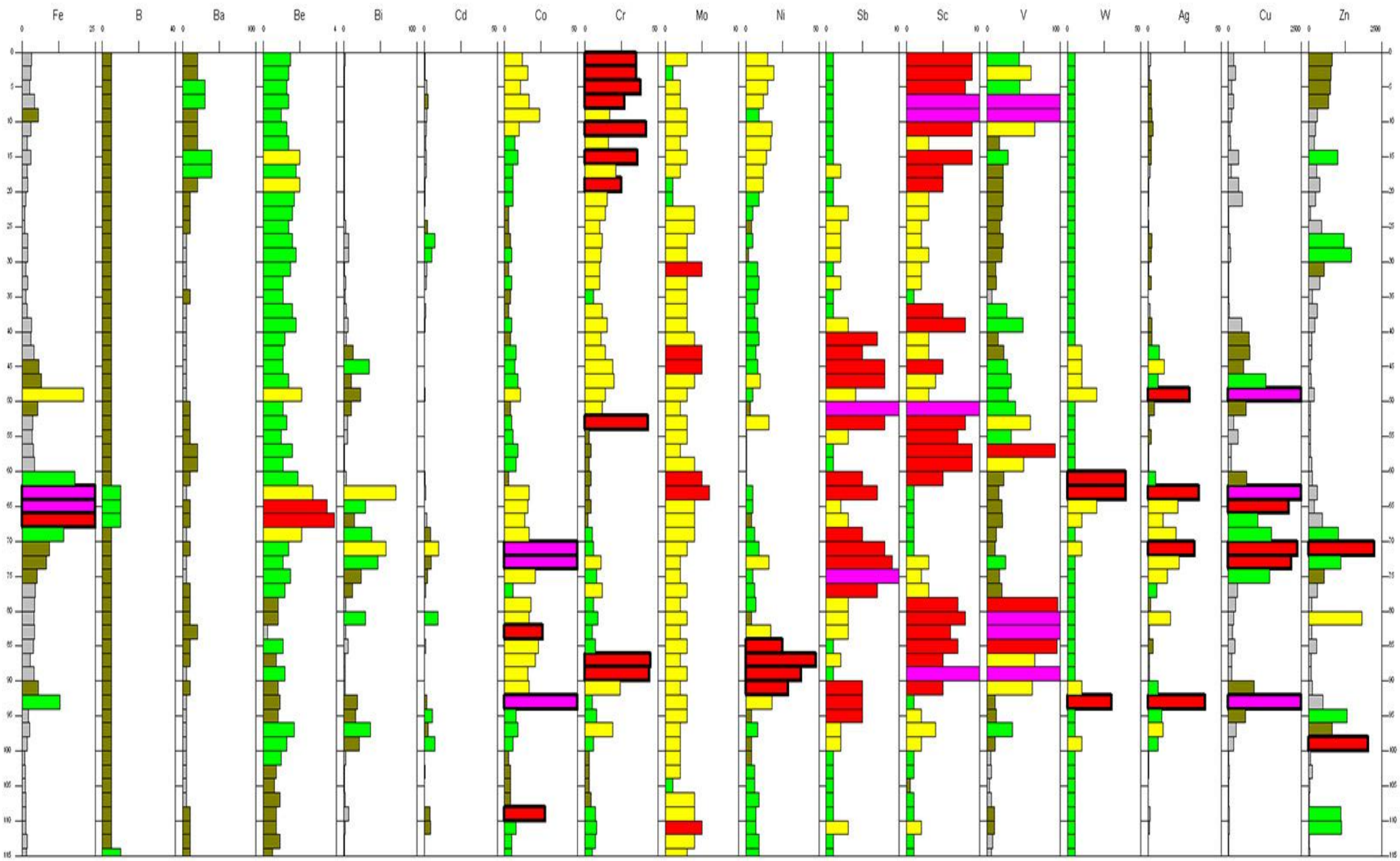

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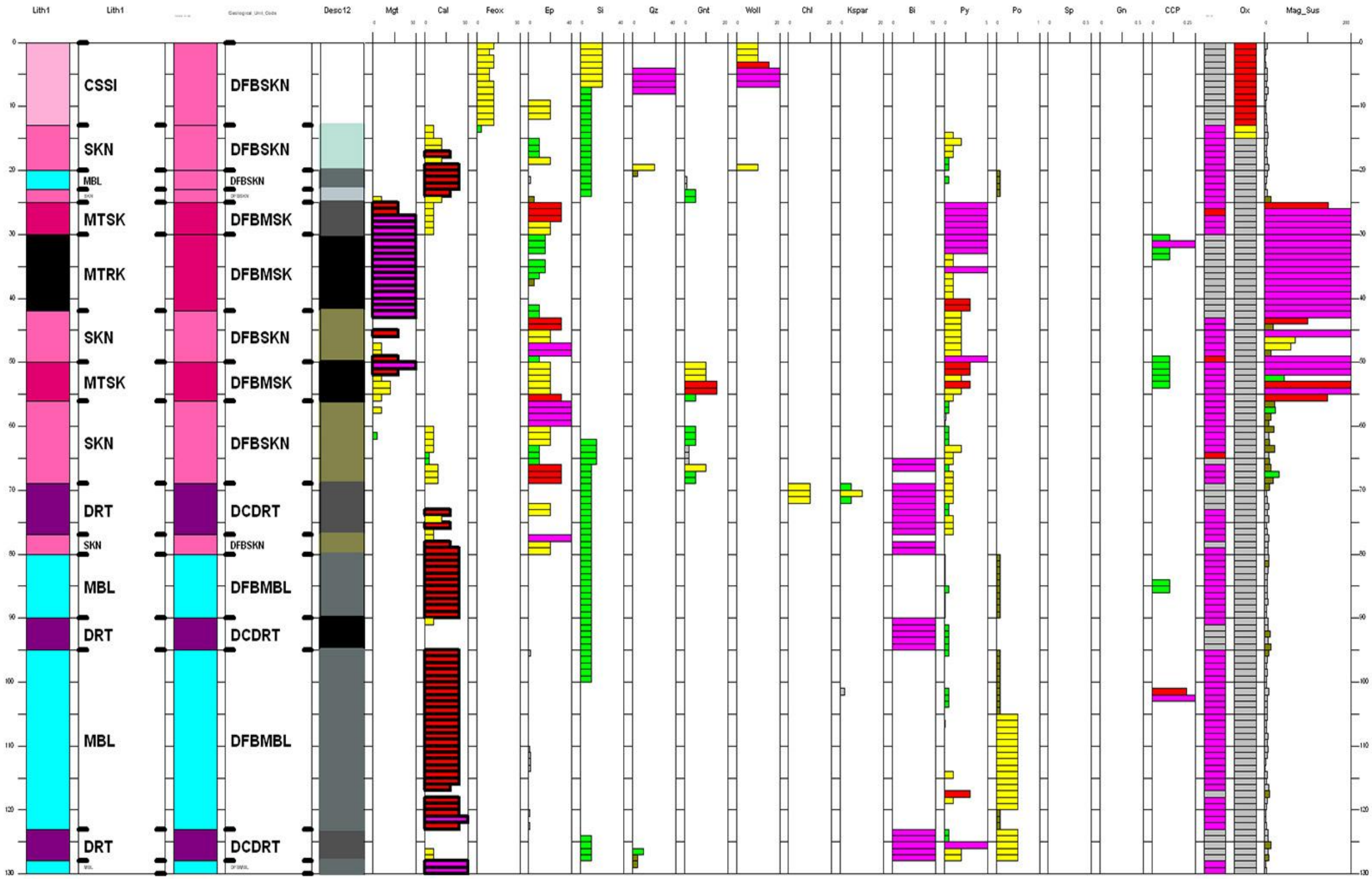
Log for IGRC004



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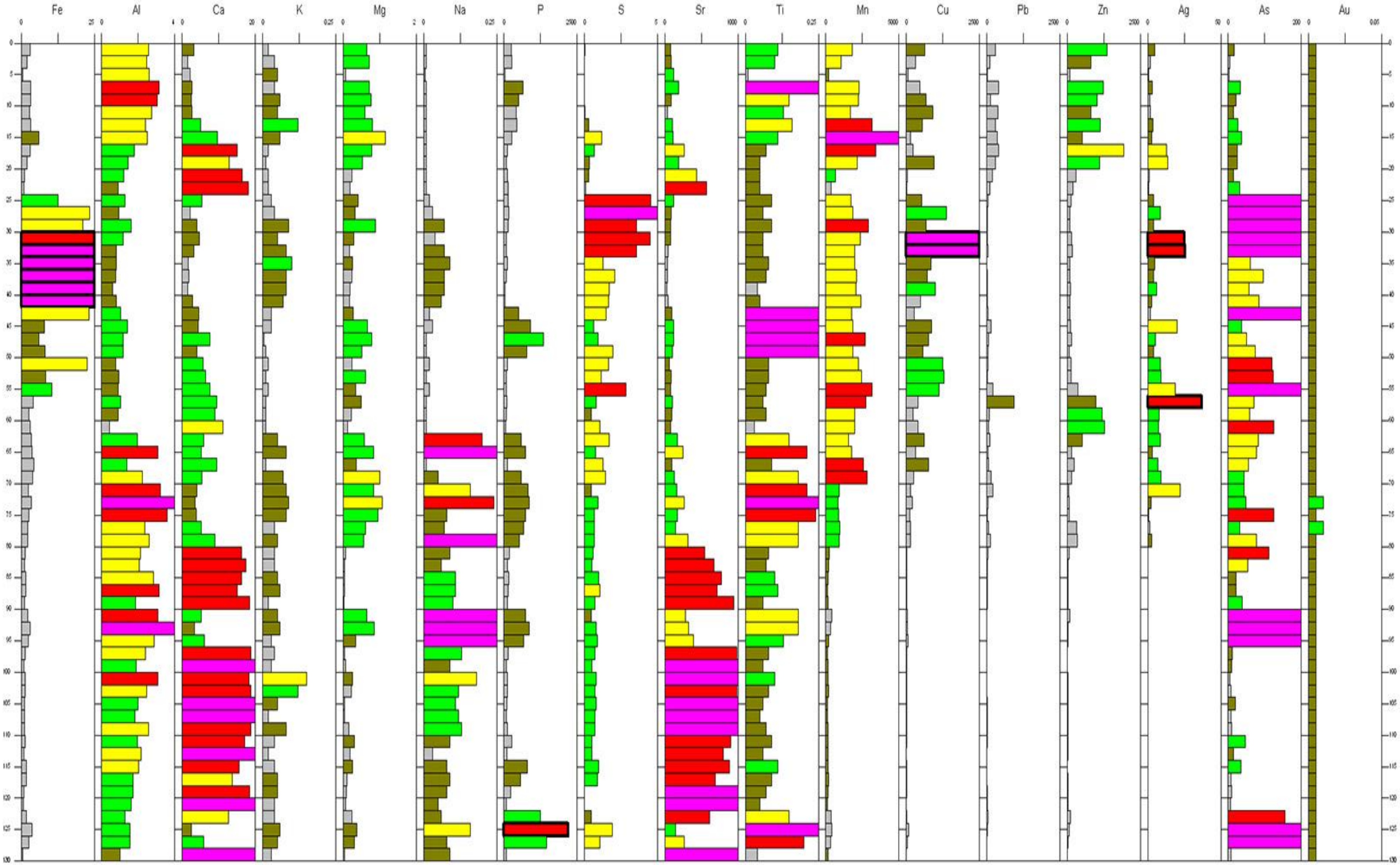
Log for IGRC004



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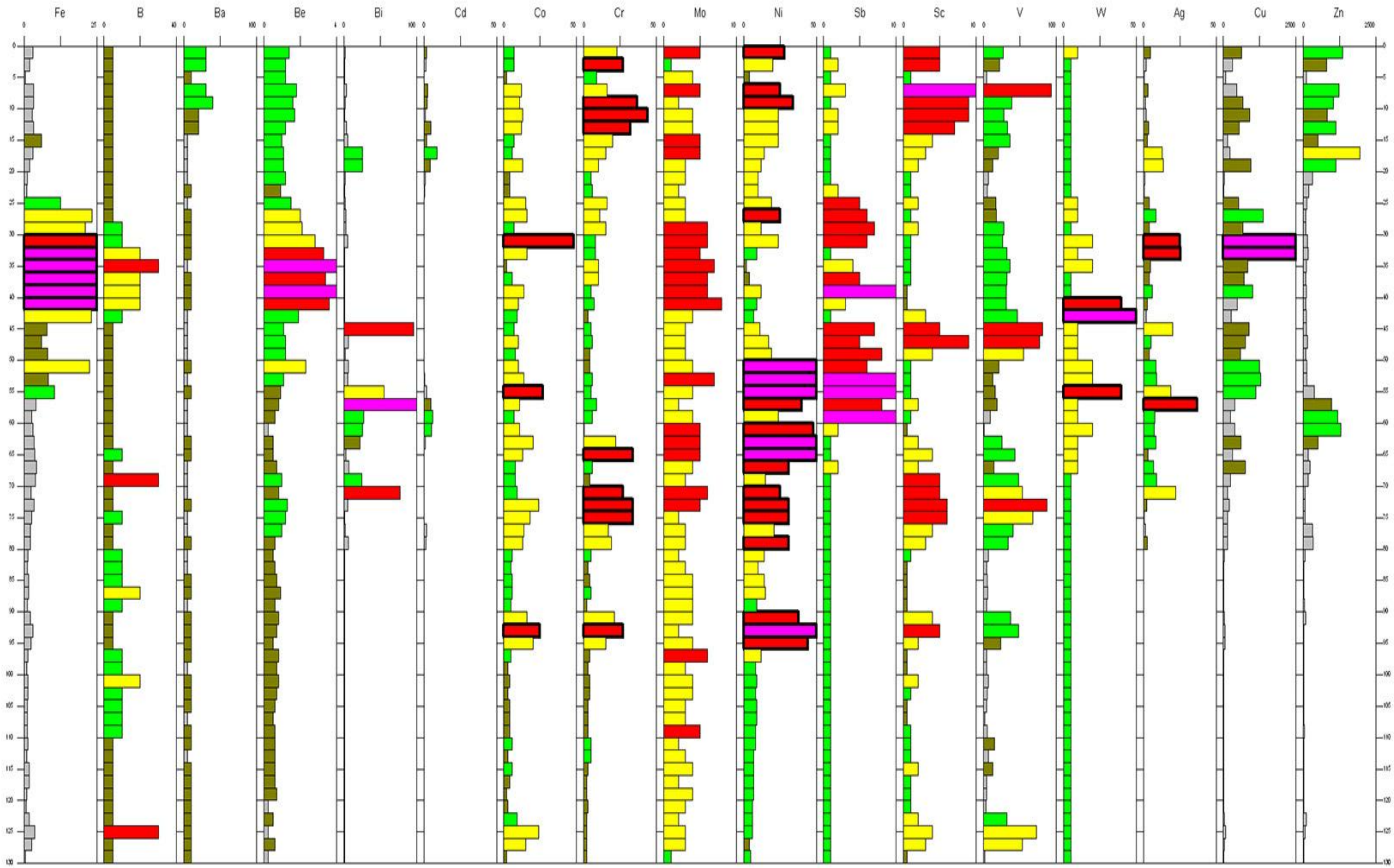

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Houston Seattle

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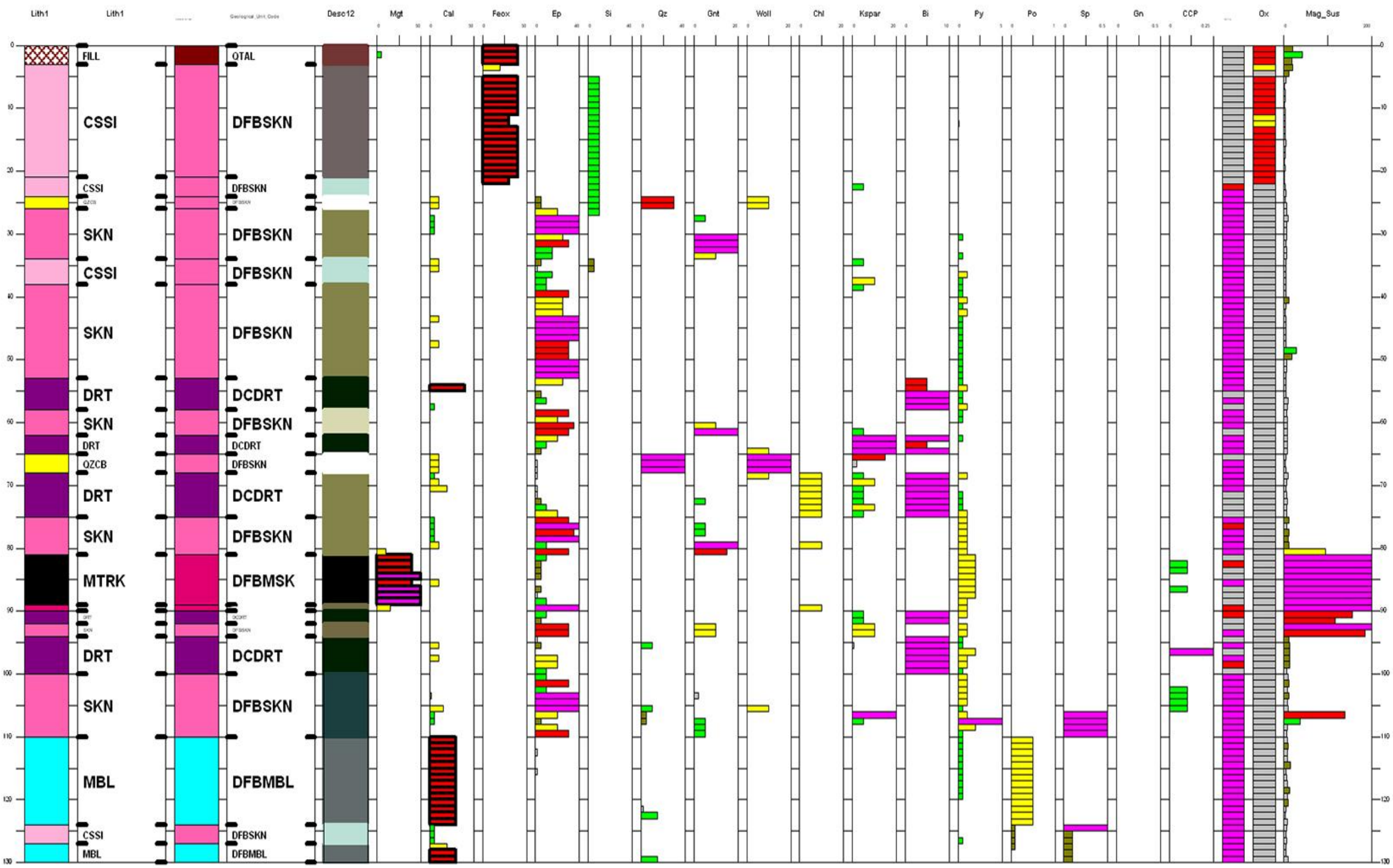

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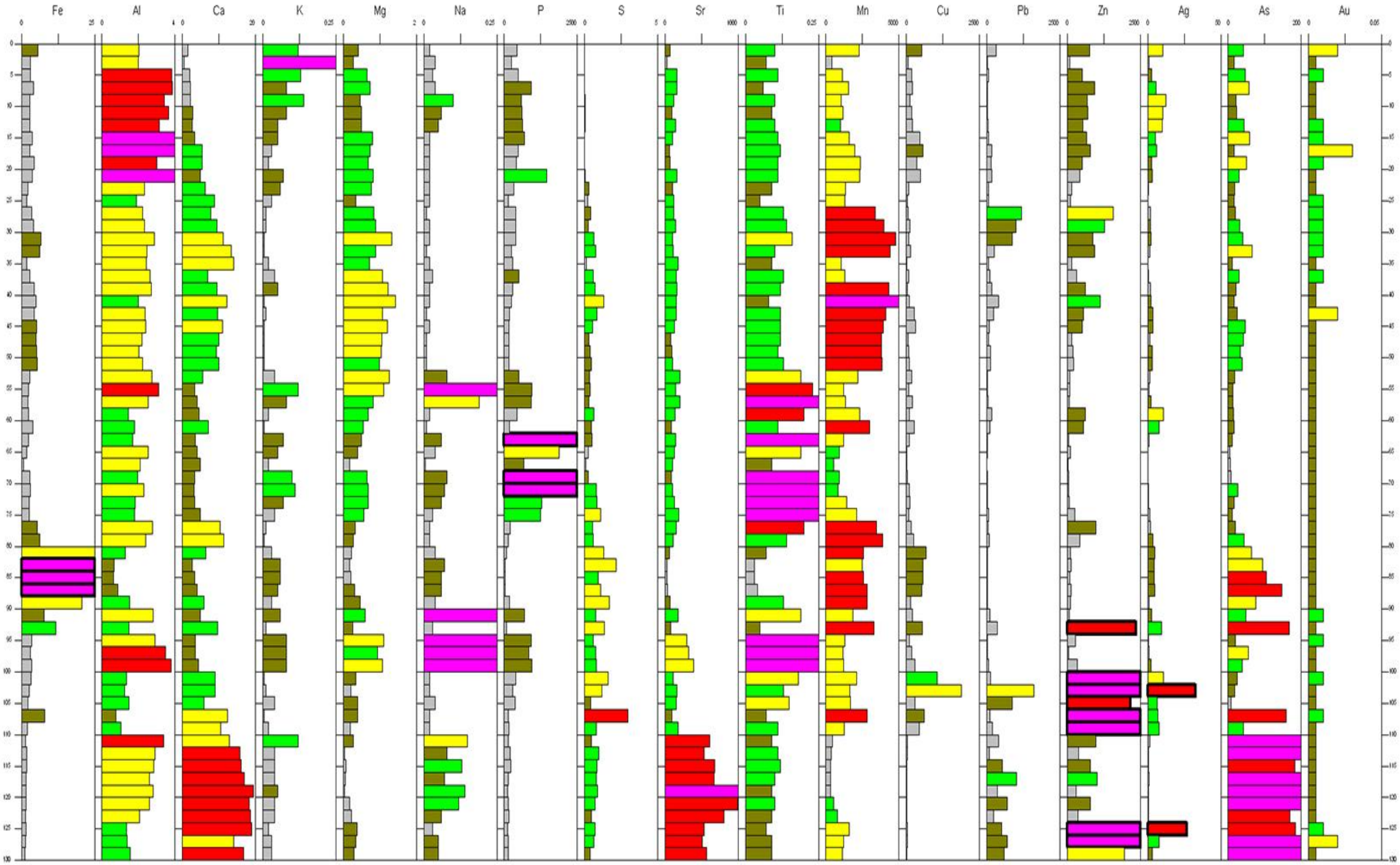
Log for IGRC005



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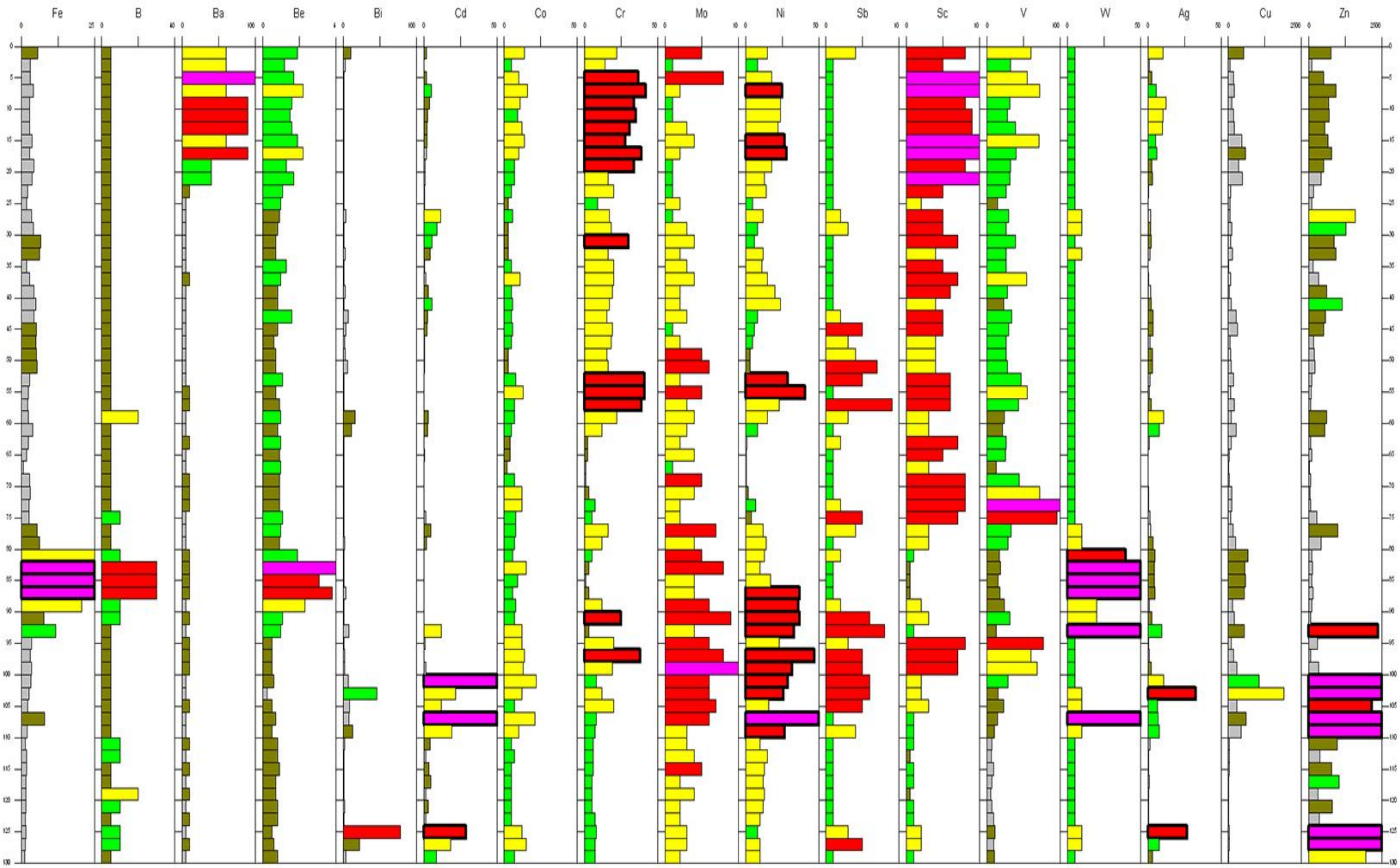

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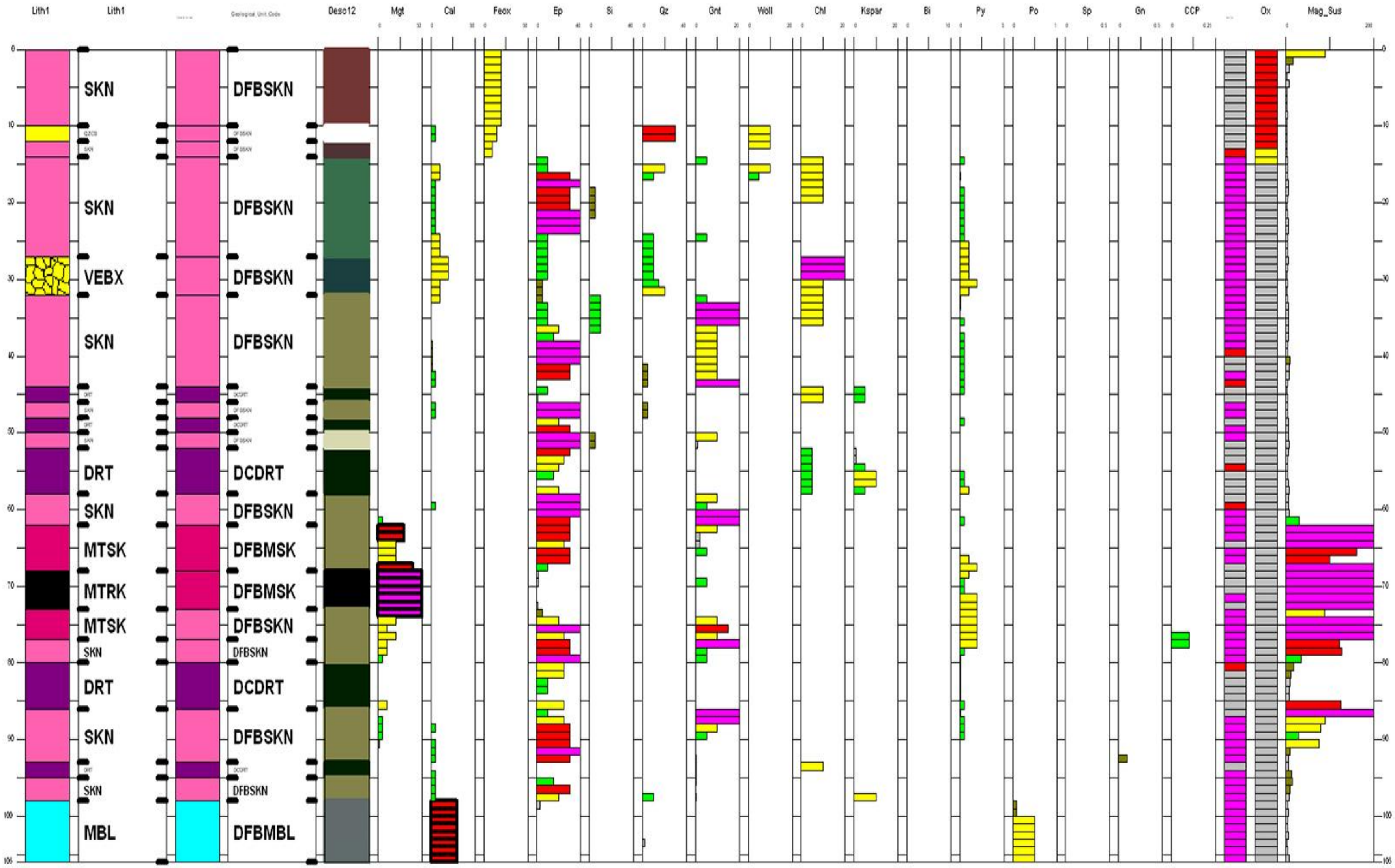
Log for IGRC006



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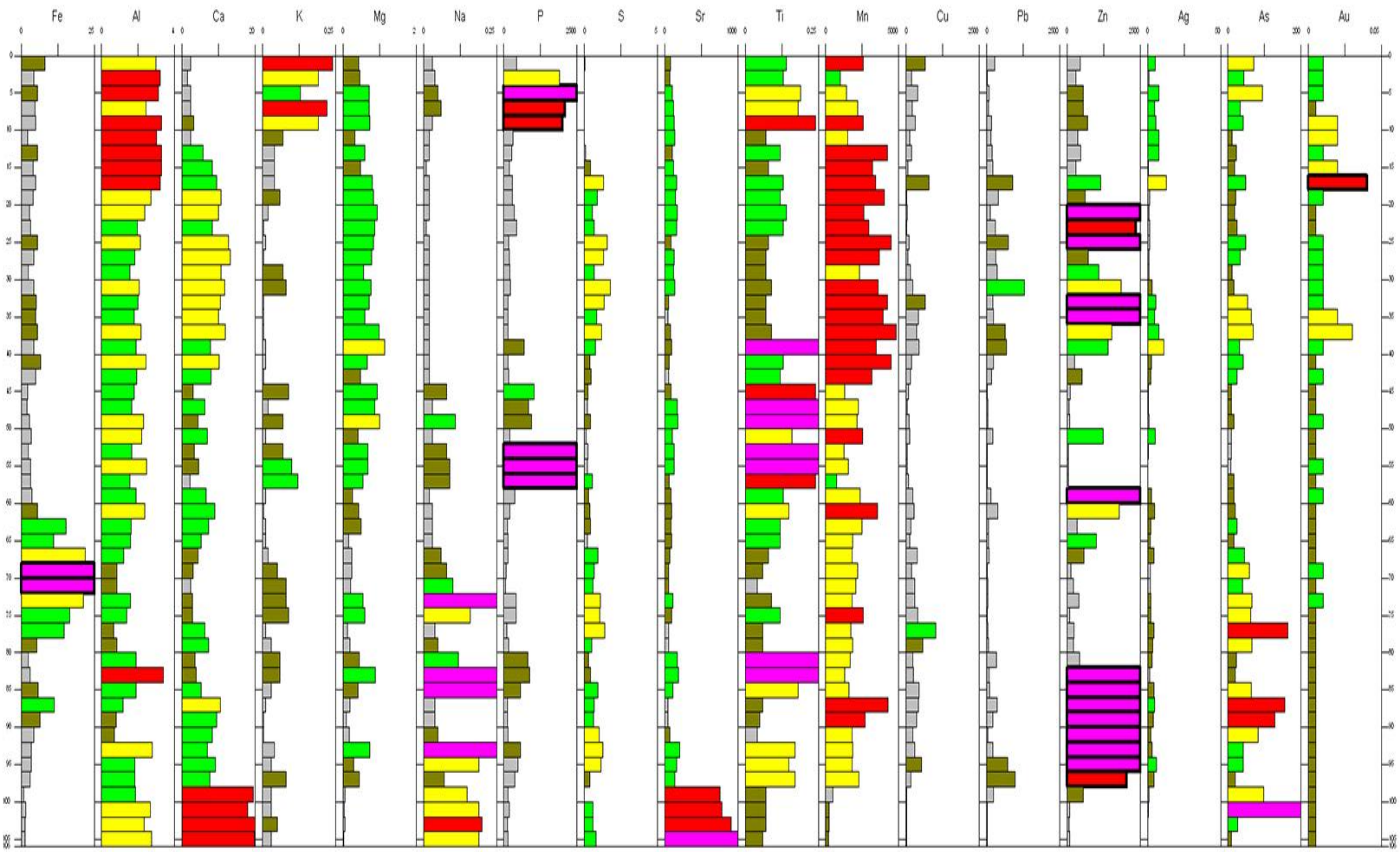

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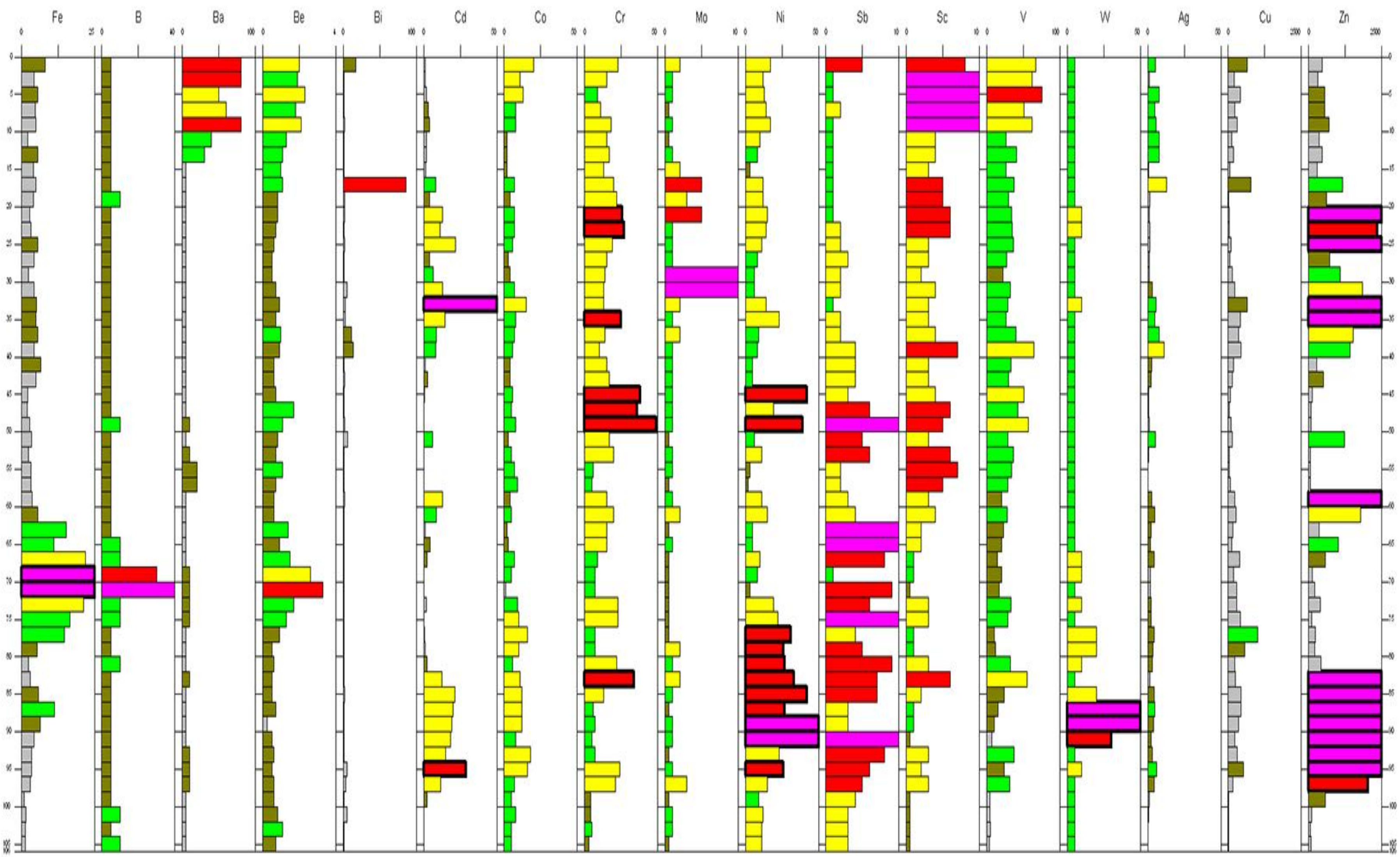

Houston Seattle

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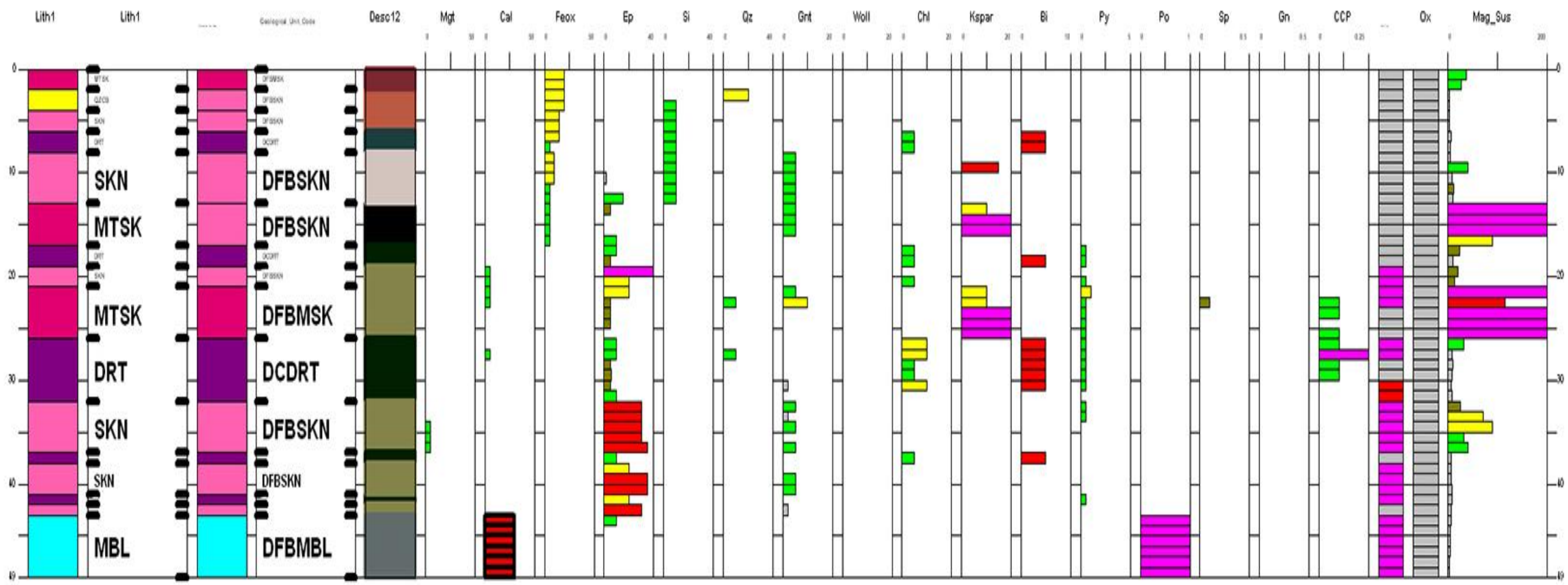

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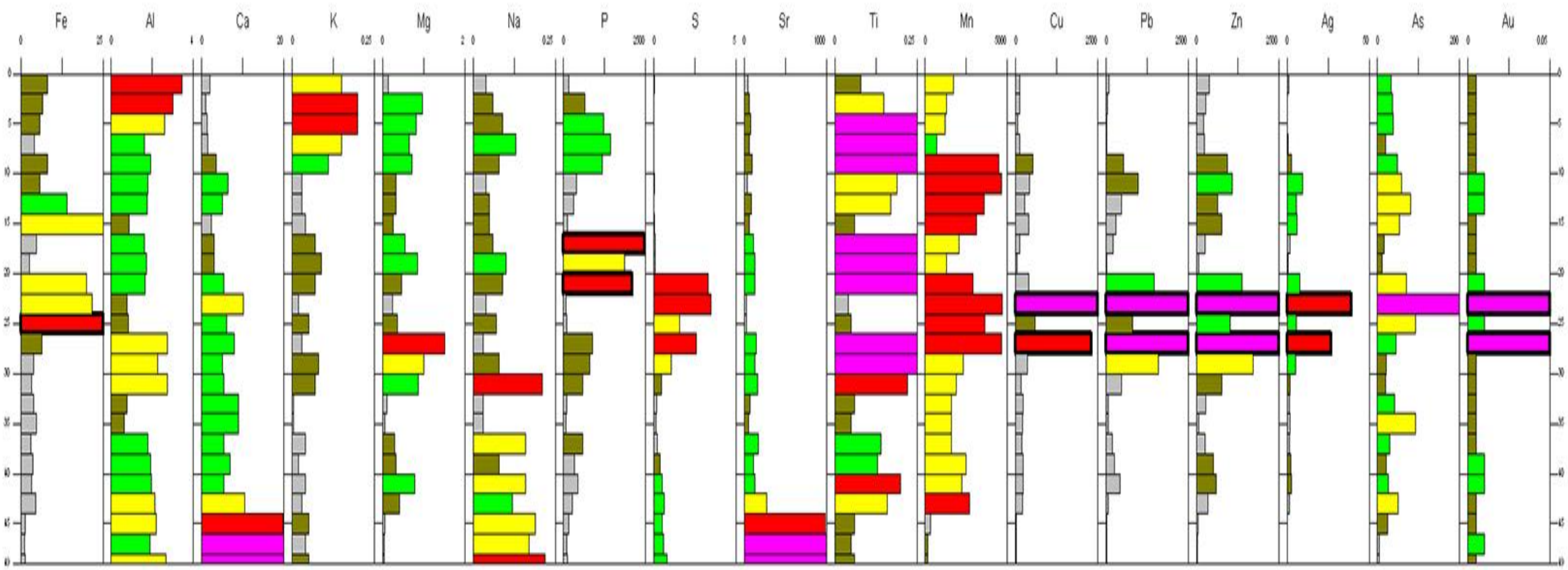

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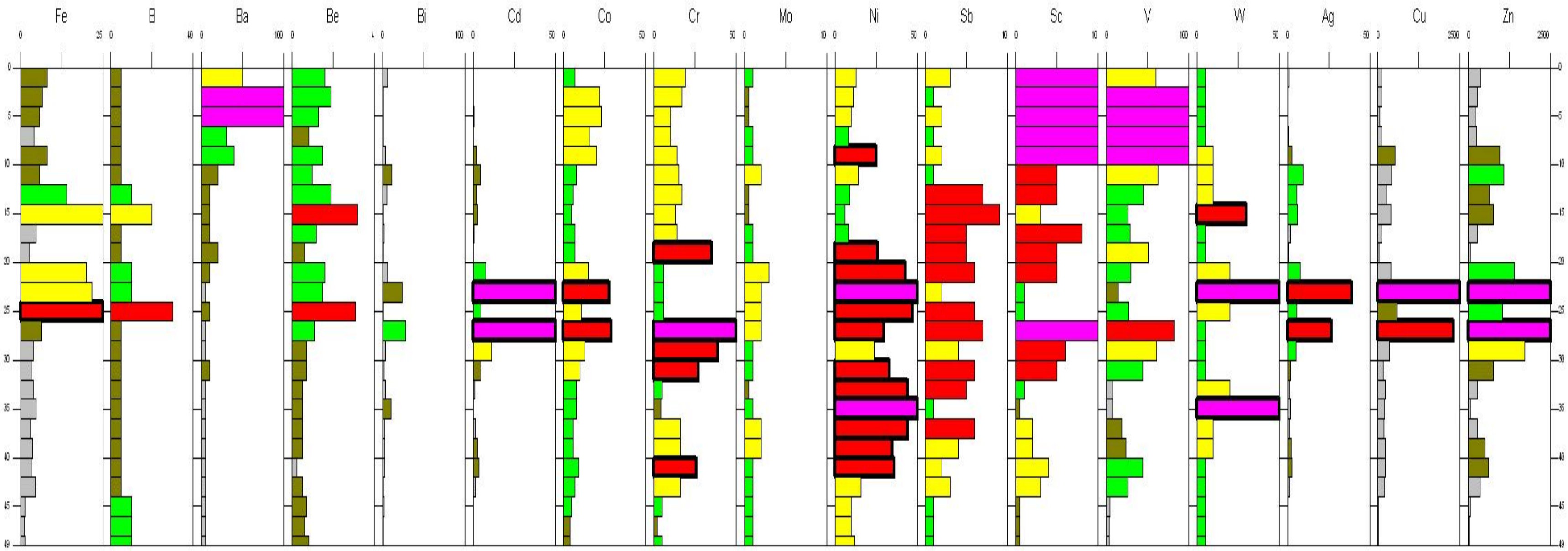

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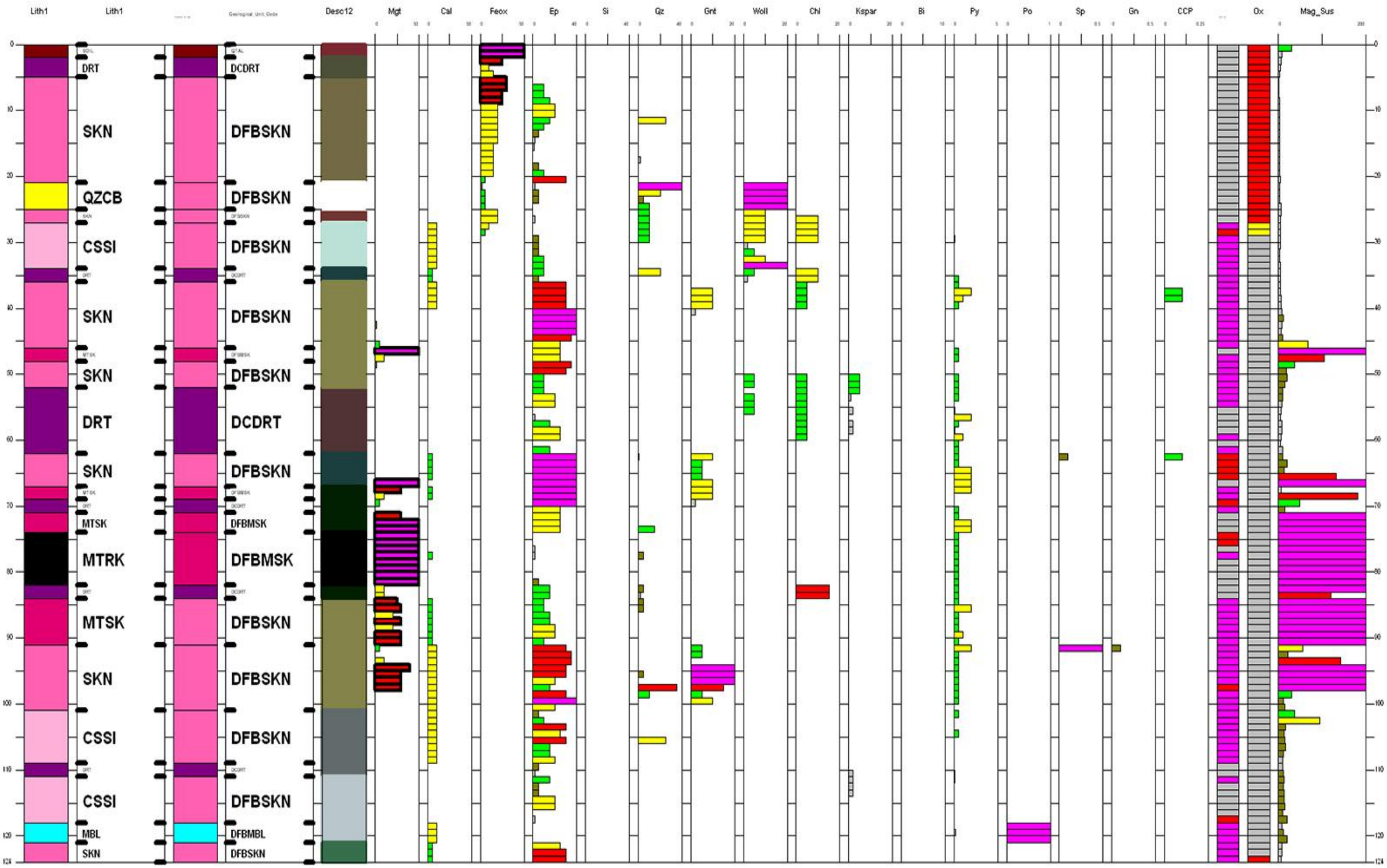

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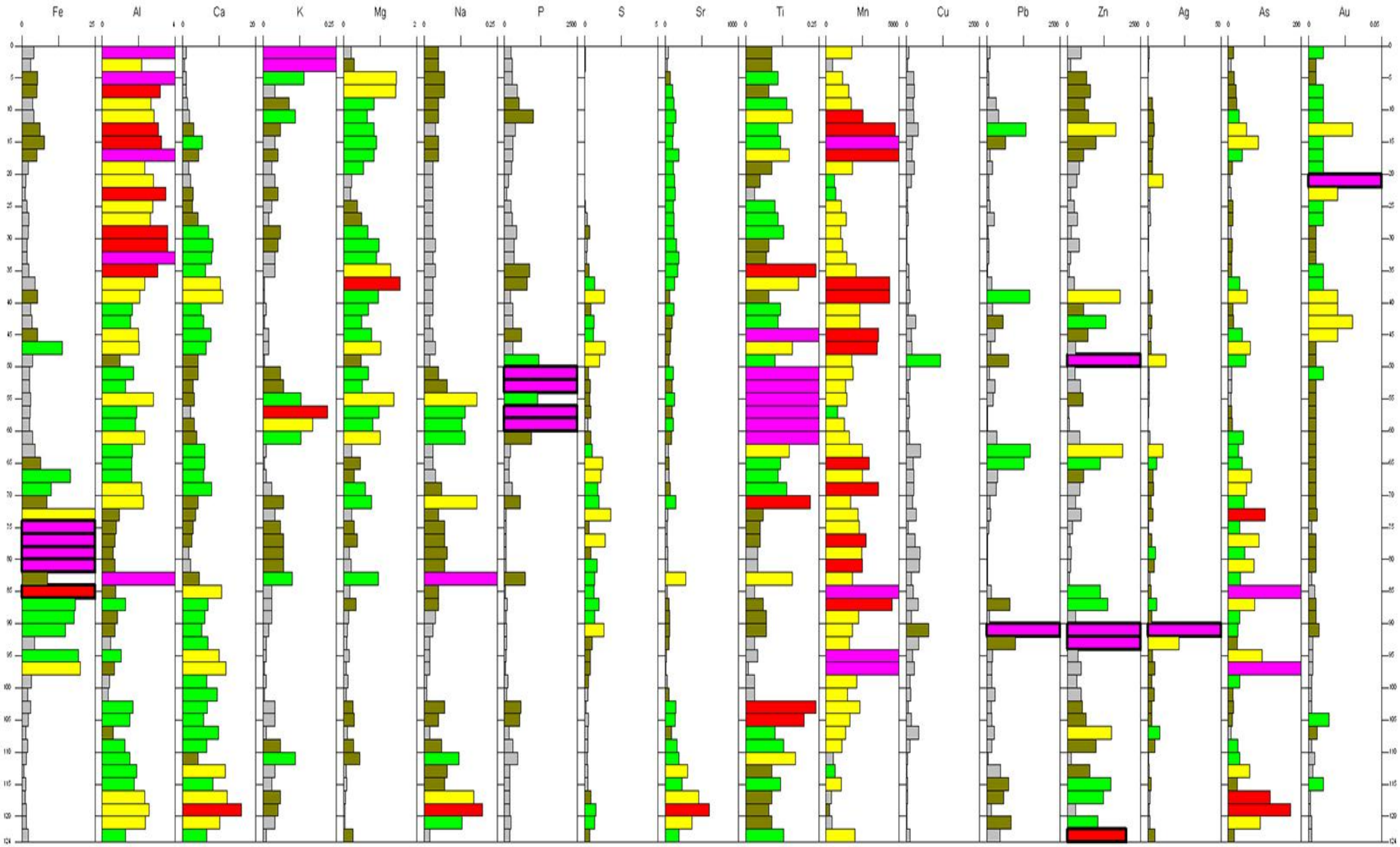
Log for IGRC008



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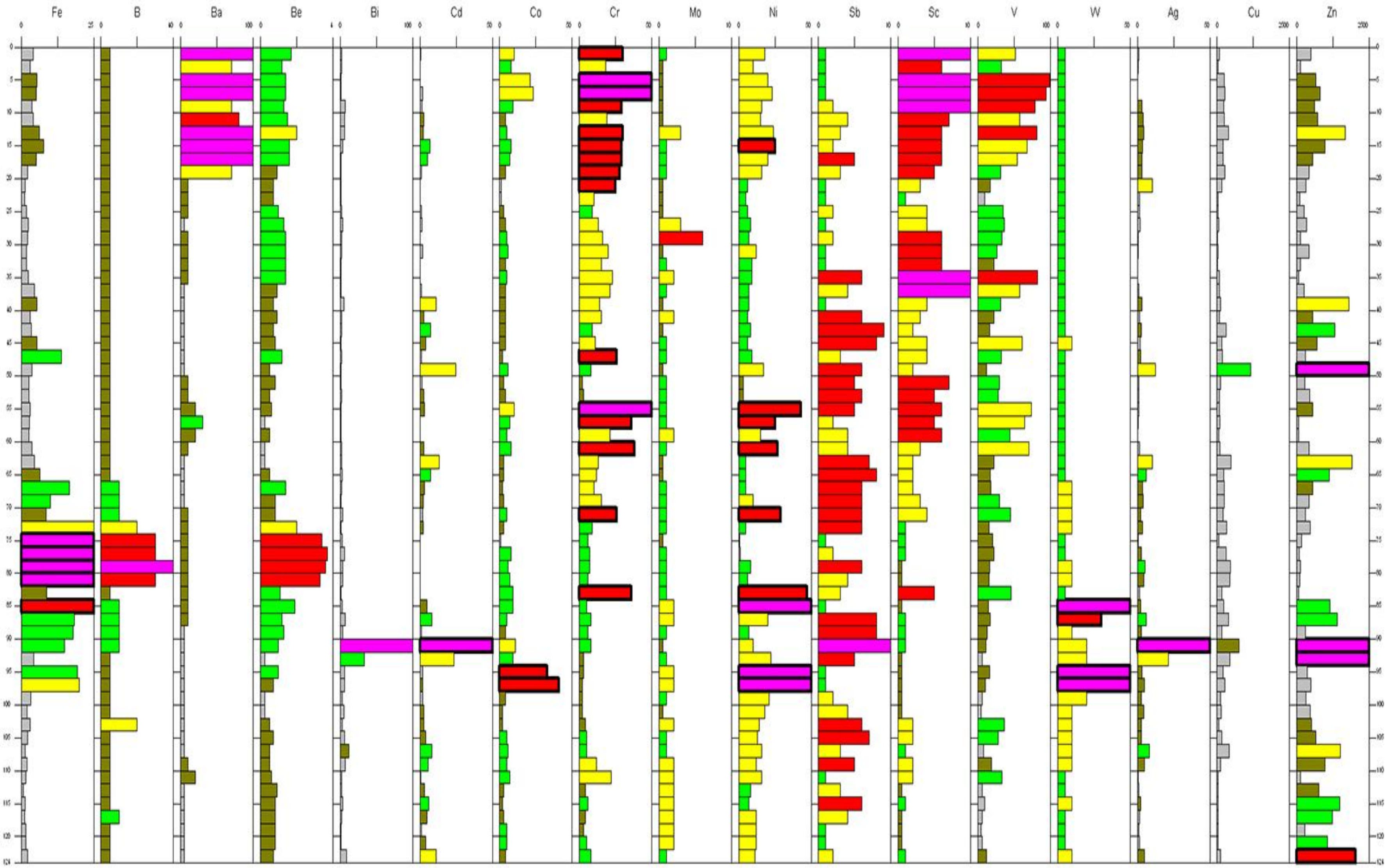

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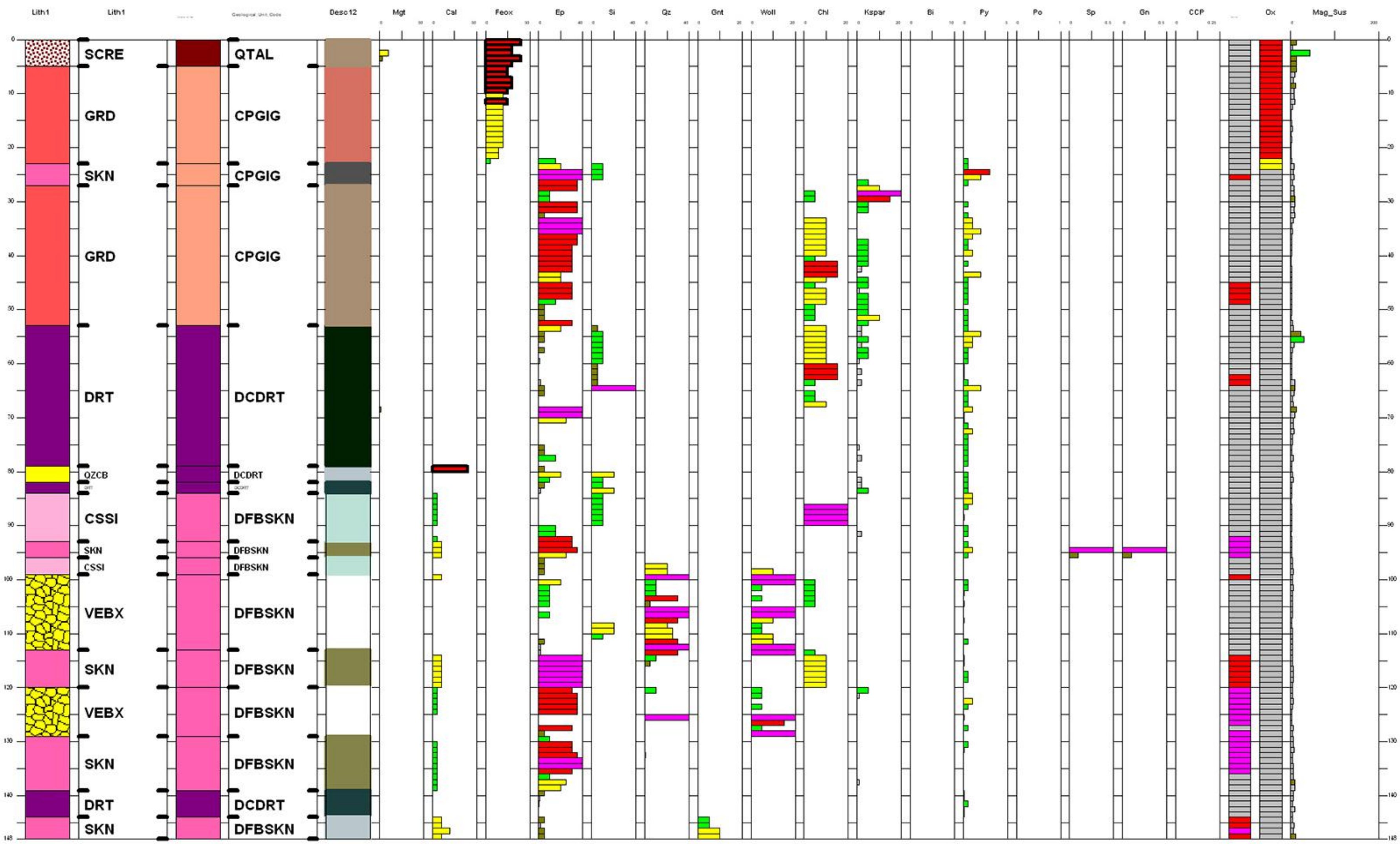

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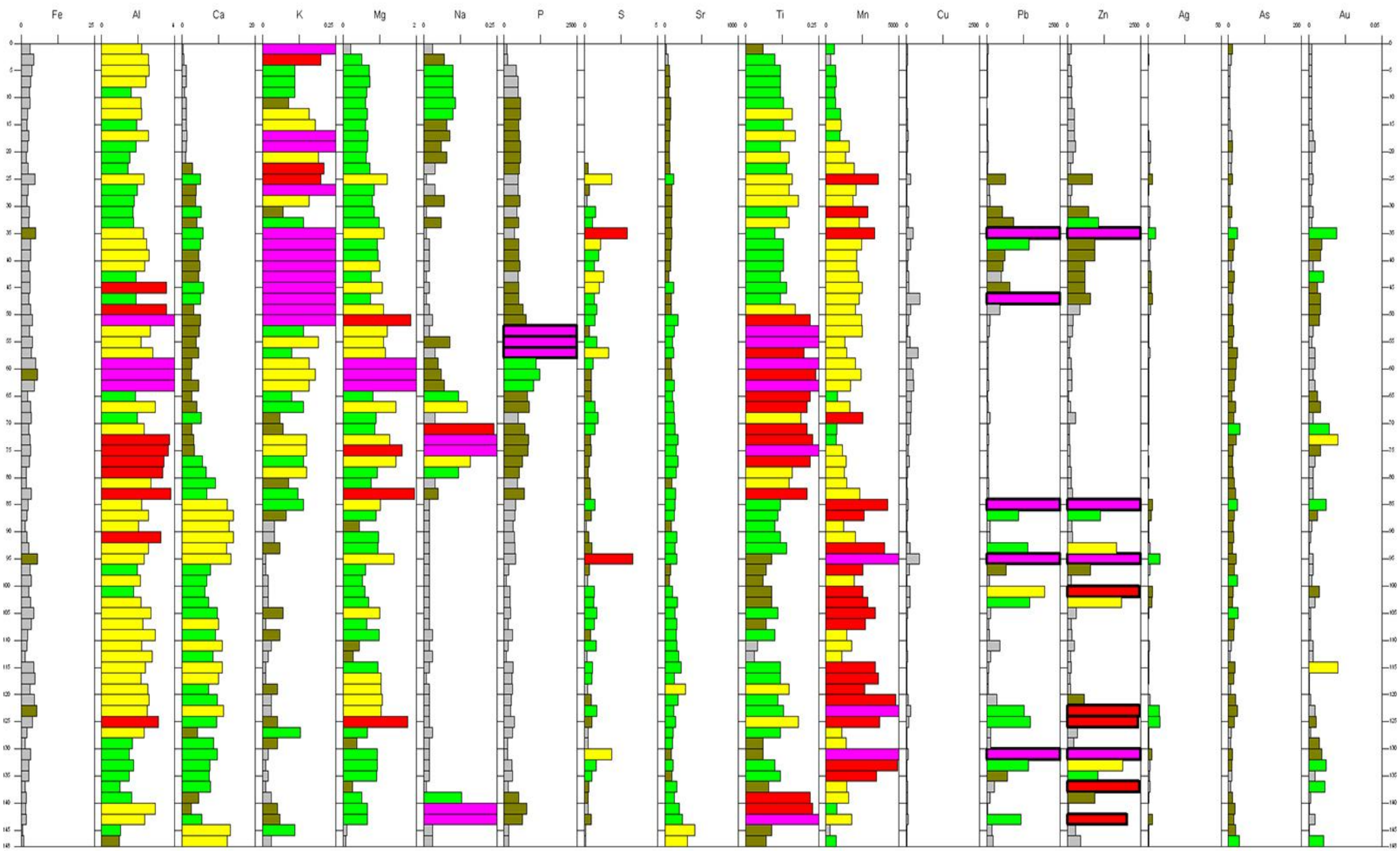
Log for IGRC009



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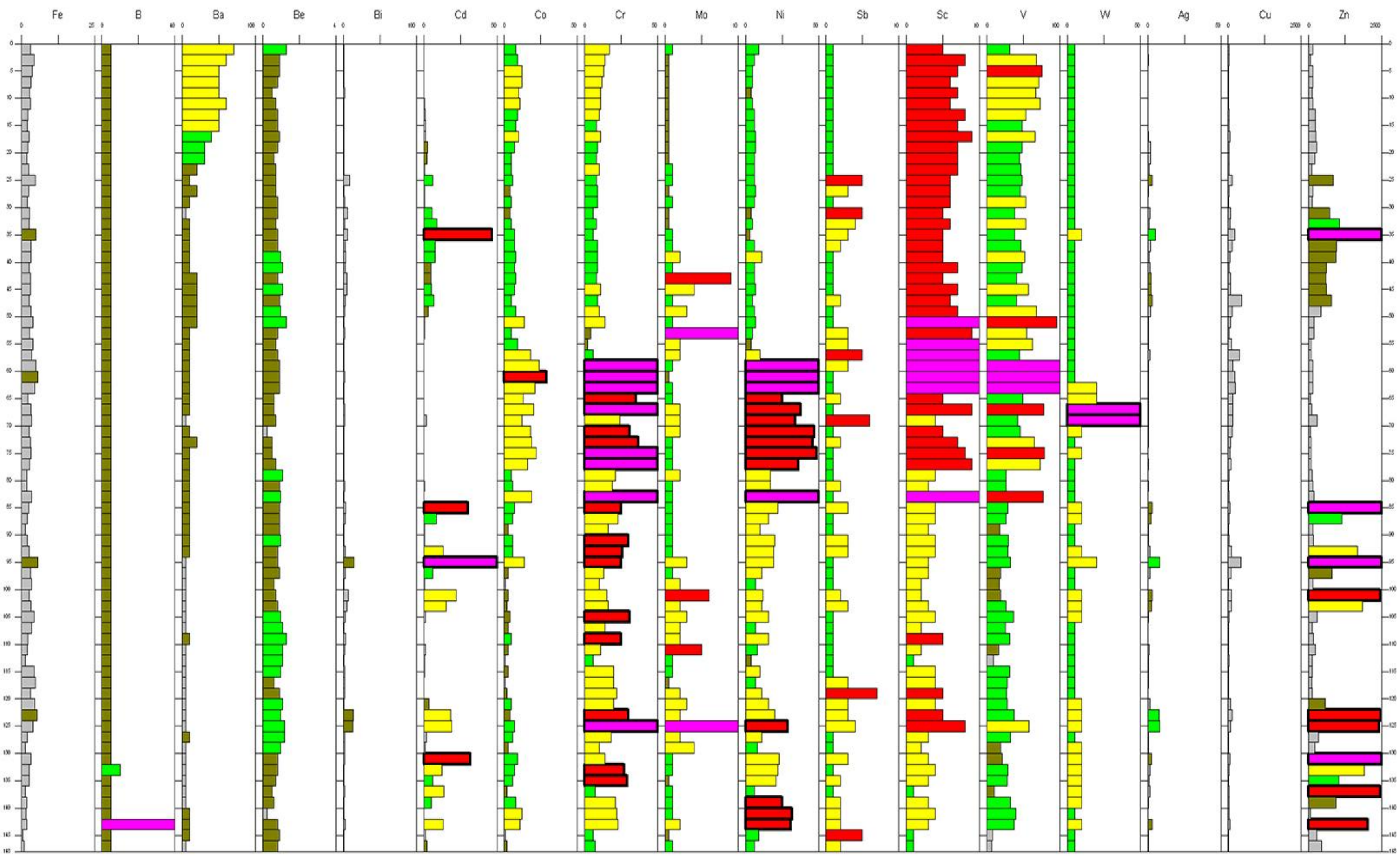

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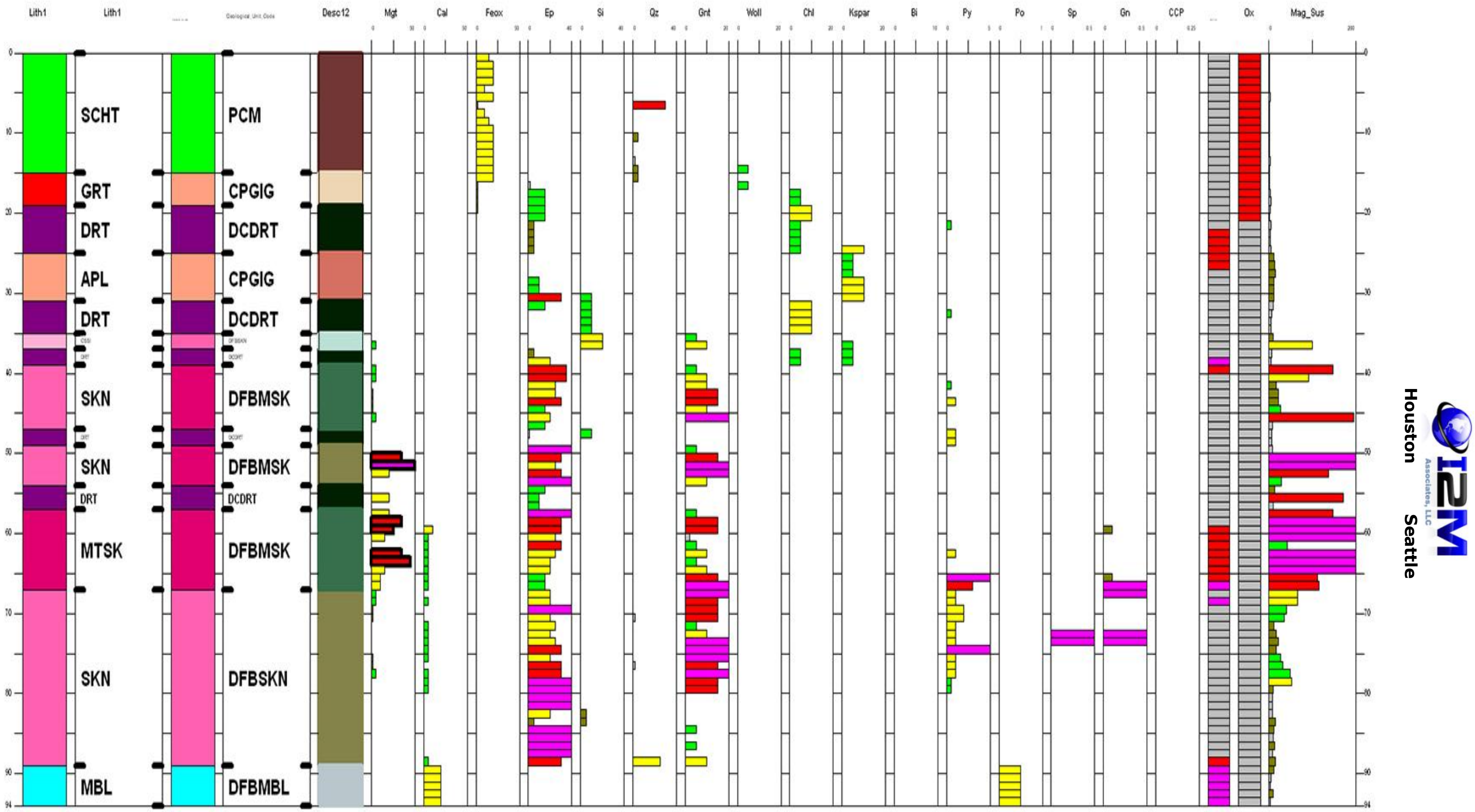

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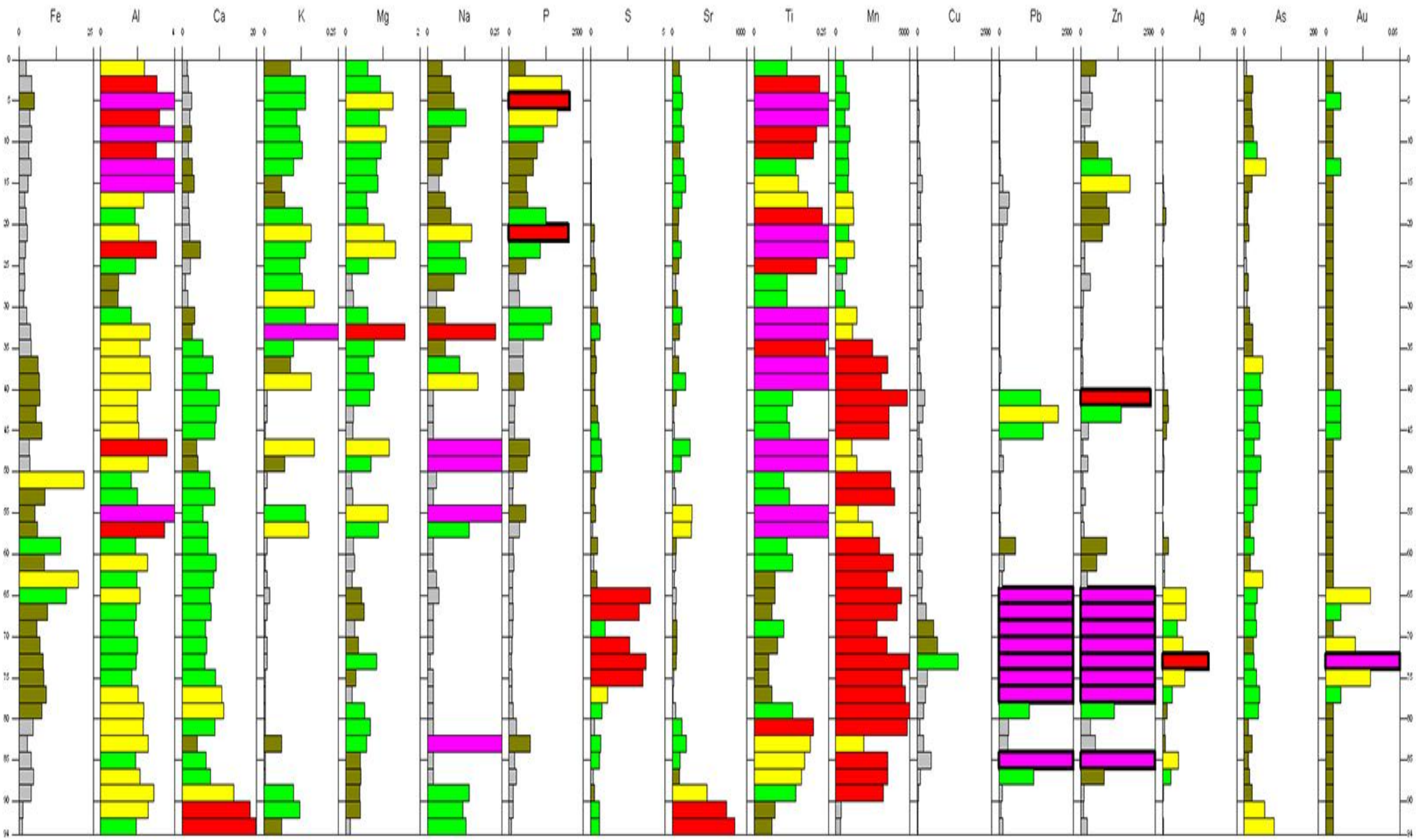

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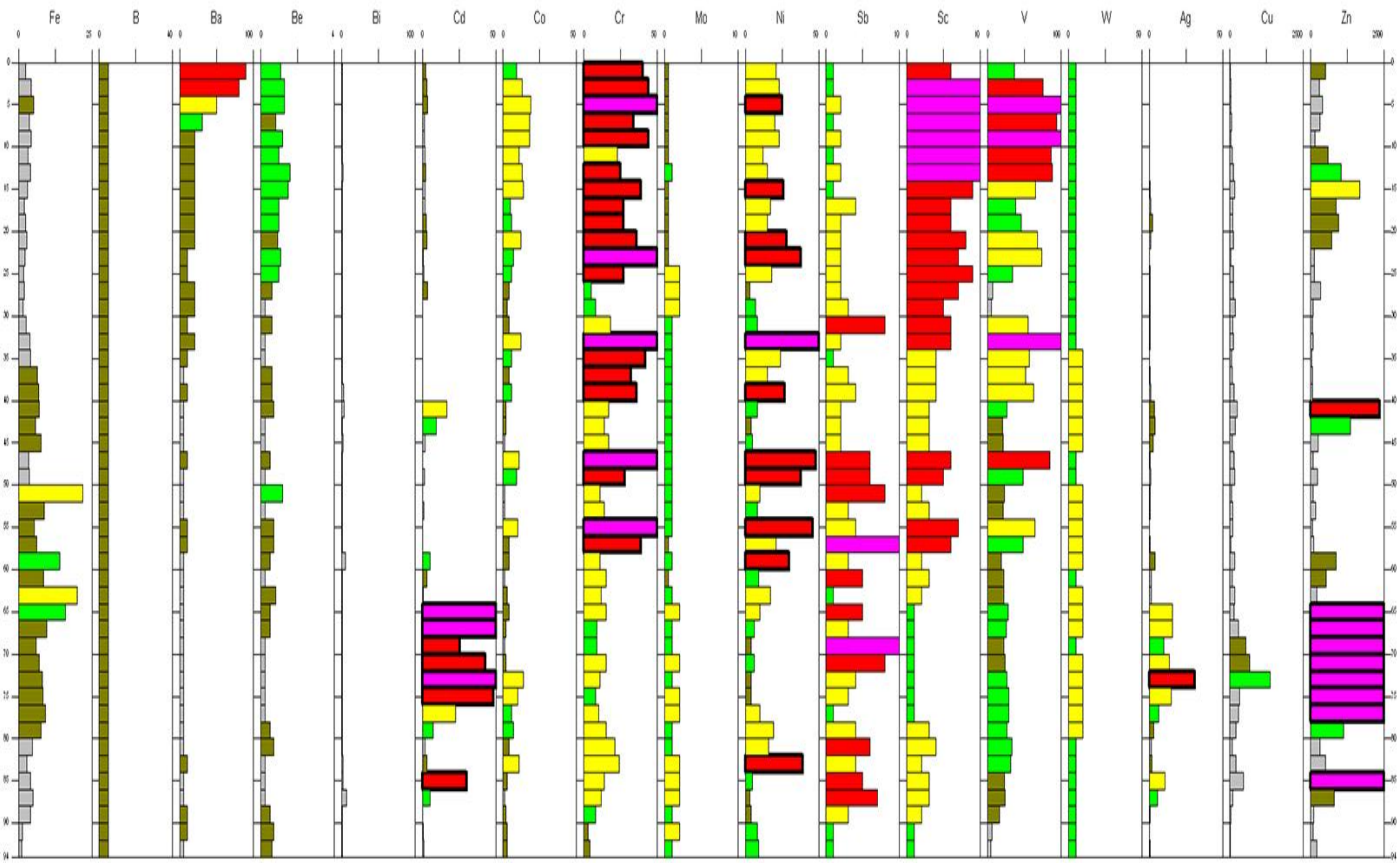

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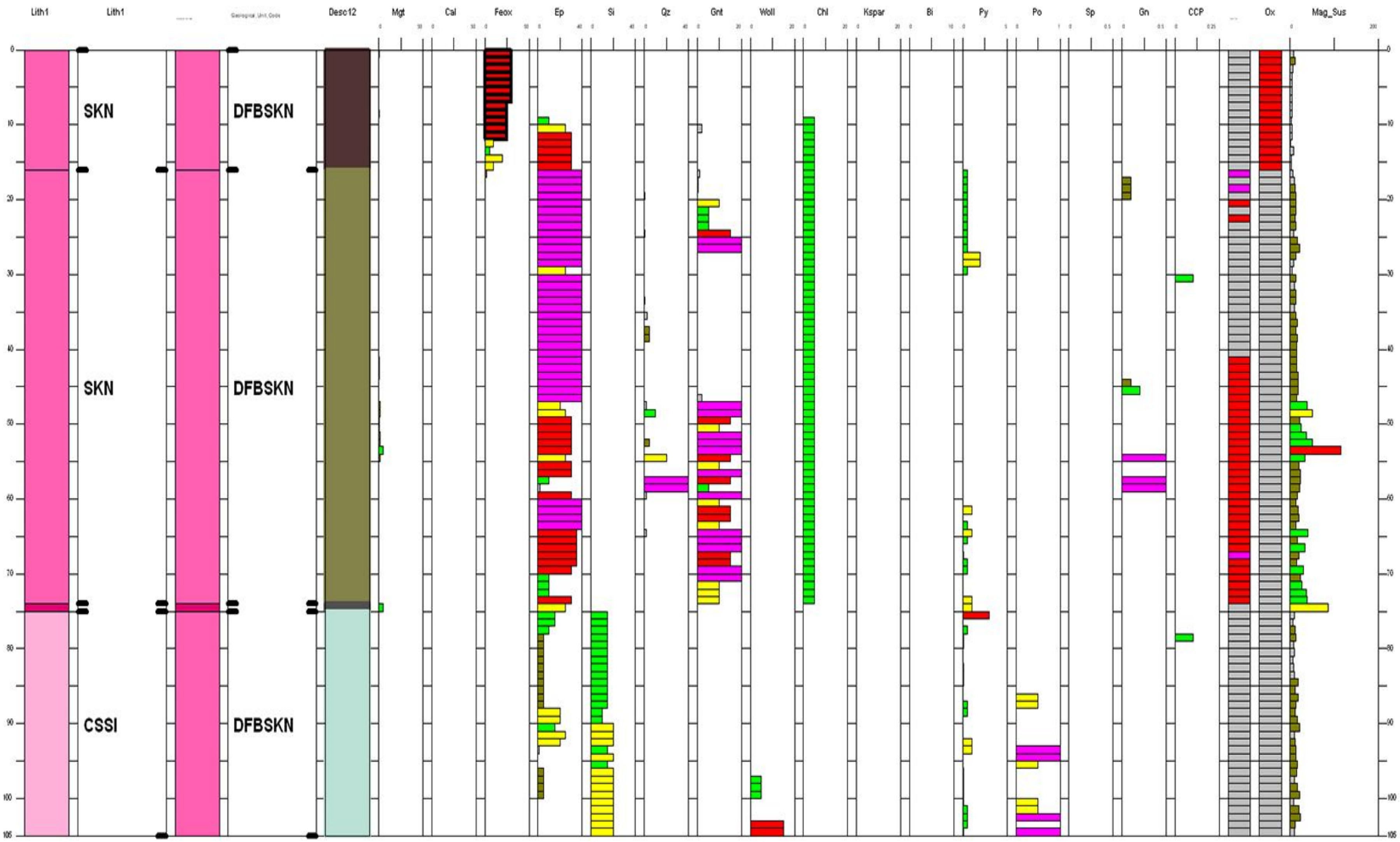

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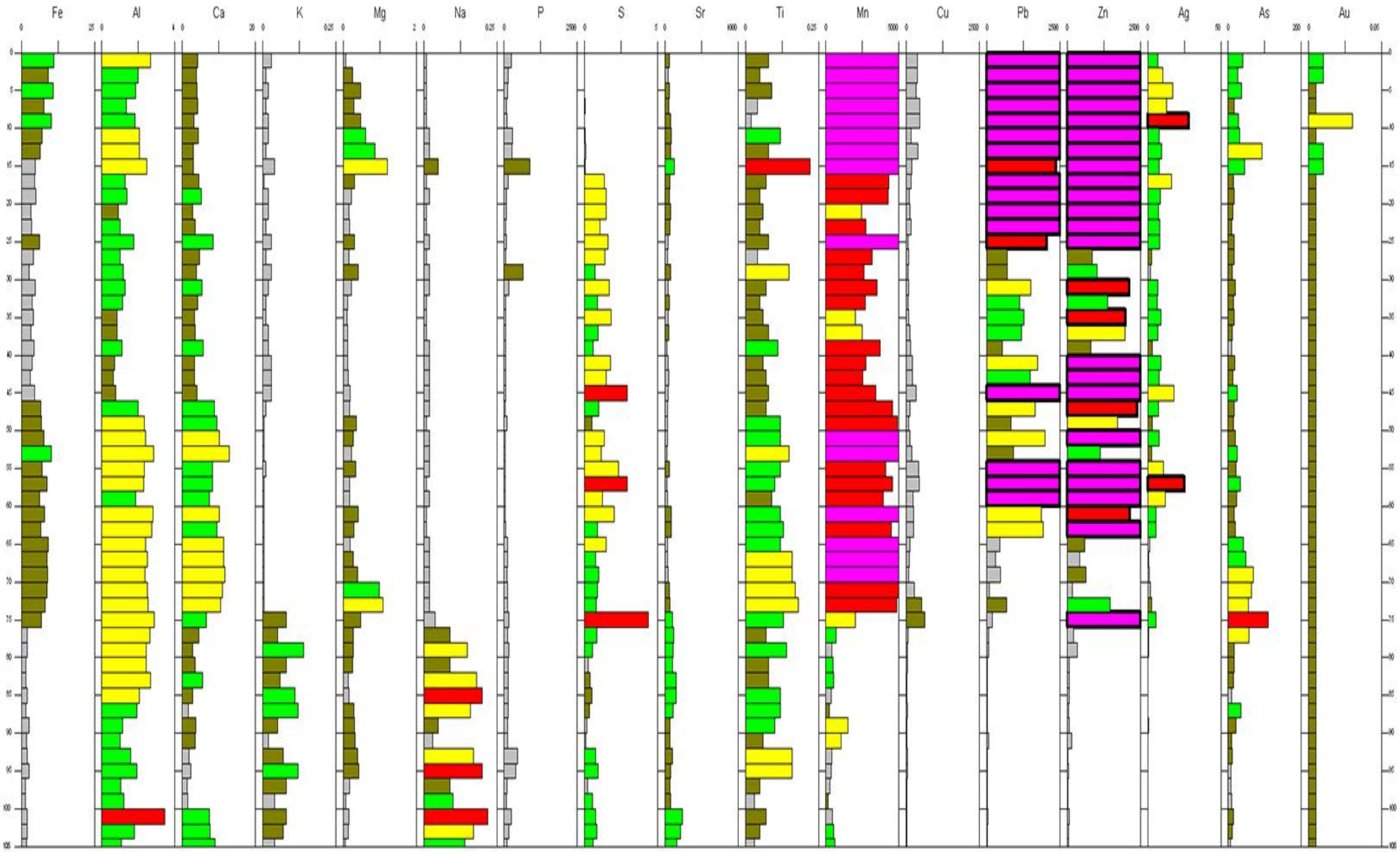

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Houston Seattle

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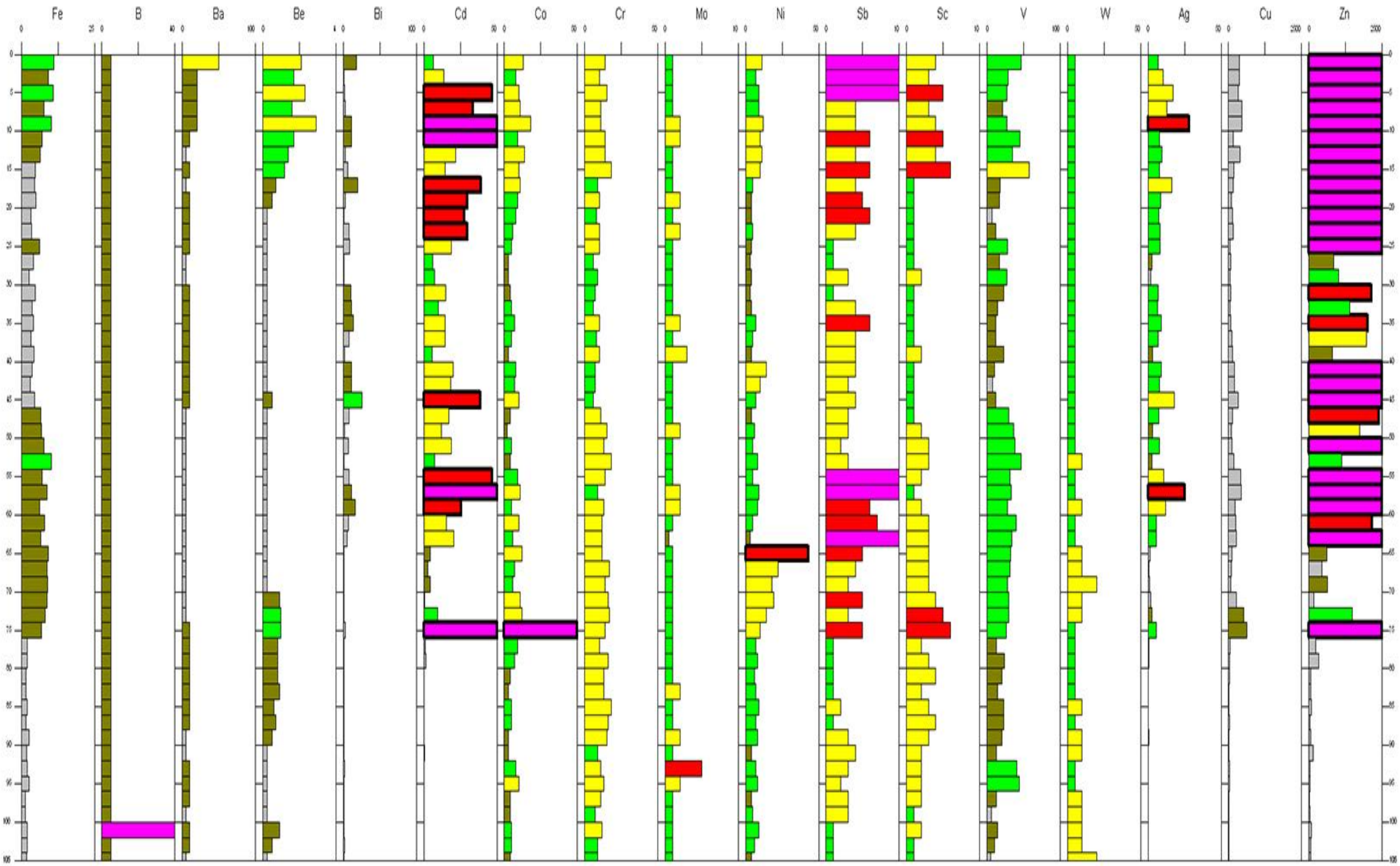

I2M Associates, LLC
Houston Seattle

Appendix III - Curriculum Vitae for:

Michael D. Campbell, P.G., P.H.

and

Jeffrey D. King, P.G.

Houston Seattle

Curriculum Vitae

Michael D. Campbell, P.G., P.H.,
Vice President and Chief Geologist/Hydrogeologist
I2M Associates, LLC
http://www.I2MAssociates.com

Online: Summary & CV (Here)

PRINCIPAL MINING CONSULTANT
PRINCIPAL HYDROGEOLOGIST
PRINCIPAL ENVIRONMENTAL GEOLOGIST
1810 Elmen Street
Houston, Texas 77019
Telephone: 713-807-0021
Cell Phone: 713-248-1708
Fax: 713-807-0985
Email: mdc@I2MAssociates.com

Education

1976, M.A., in Geology, Rice University under an *Eleanor and Mills Bennett Fellowship in Hydrology* for Research and Seminars in Hydrogeology and Associated Disciplines. 31 Graduate Hours Toward Ph.D., Houston, TX, Thesis: *Paleoenvironmental and Diagenetic Implications of Selected Siderite Zones and Associated Sediments in the Upper Atoka Formation, Arkoma Basin, Oklahoma-Arkansas*, 124 p. (Continuing Research)

1966, B.A., in Geology, The Ohio State University with Courses and Research in Hydrology, Hydrogeology and Associated Environmental Programs. German Secondary Field of Specialty, Columbus, OH. Began college in 1960 in southern California (at San Bernardino Valley College), taking undergraduate courses including: geology, chemistry, engineering drawing, etc. Transferred to OSU in 1962.

Professional Memberships / Affiliations

Association of Ground Water Scientists and Engineers (AGWSE)
American Association of Petroleum Geologists
(Div. of Environmental Geosciences & Energy Minerals - Founding Member, 1977)
American Society of Testing Materials (ASTM)
Society of Economic Geologists (SEG)
Society of Mining, Metallurgy, and Exploration (AIME)
Geological Society of America (GSA-Fellow)

Association of Geoscientists for International Development (AGID)
Houston Geological Society (HGS)
Association of Environmental & Engineering Geologists (AEEG)
International Association Hydrogeologists (AIH)
American Institute of Professional Geologists (AIPG)
International Society of Environmental Forensics (ISEF)
Texas Association Professional Geoscientists (TAPG)

Professional Certification / Registration

Professional Geologist (AIPG-#3330)
Professional Hydrogeologist (AIH-#480) (Recertification-2004)
Professional Geologist (Wyoming-#546)
Professional Geologist (Mississippi-#347)
Professional Hydrogeologist (Washington-#866)
Professional Geologist (Washington-#866)
Professional Geoscientist (Texas-#53)
Professional Geologist (Alaska-#606)

Professional Honors, Awards and Committees

Who's Who in the Southwest (First Listed: 18th Edition - 1982, etc.)
Who's Who in America (First Listed: 49th Edition - 1995, through 58th Edition for 2004)
Who's Who in Technology (1982, etc.) Listing: (CV)
American Men & Women of Science Listing (here) (1st Listed: 14th Ed. -1979, etc.)
Men of Achievement (International) (First Listed: 10th Edition - 1984)
American Institute of Professional Geologists (1975, etc.)
American Institute of Hydrology (1984, etc.)
Ohioana Book Award in Science (1975): by Author, (see online CV); by County (CV)
Citation by Law Engineering as Corporate Hydrogeologist (1990)
Citation by Class of the Institute of Environmental Technology (1992 & 1994)
Public Service Award - Outstanding Contributions, Texas Section, AIPG (1998)
Chairman, Environmental & Mining Sessions, AIPG Annual Mtg, Houston, Tx, Oct., 1997
Chairman, Internet Committee, Texas Section, AIPG (1998-Present)
Chairman, Internet Resources Committee, Texas Section, AEG (2003-Present)
Shlemon Mentor Hall of Fame in Applied Geoscience, GSA Mtg., Texas A&M U., March 16, 2004. Poster at GSA Mtg., Denver
Fellow, Geological Society of America, April, 2004 (Press Release on Induction, see online CV)
Distinguished Alumni Hall of Fame
Mann Mentor in Hydrogeology, GSA South-Central Section Mtg., Trinity U., April 1, 2005
Chairman, Uranium Committee, EMD-AAPG (2004-Present) - Public Web Page (see CV).
President (2010-2011), EMD-AAPG - Public Web Page (see CV).

Continuing Professional Education / Training

Mr. Campbell has attended, presented papers, or served as session chairman in the following technical conferences. He has also maintained the appropriate certifications in health and safety training.

Career Summary

Mr. Campbell is well-known nationally and internationally for his work as a technical leader, program manager, consultant and lecturer in hydrogeology, mining, and associated environmental and geotechnical fields. He has gained a wide range of interdisciplinary experience in business and technical management in the environmental (regulatory, geological and hydrogeological), mining, and financial fields spanning more than 40 years. For a summary of ELA projects, see I2M CV. For a historical summary of selected client projects, see I2M CV.

Mr. Campbell has published widely, most notably: *Water Well Technology* (McGraw-Hill) and *Rural Water Systems Planning and Engineering Guide* (Commission on Rural Water). In the mid to late 1970's, he served on the Editorial Board of the journal: *Ground Water* for eight years and served as cofounder and first Director of Research of the NWWA Research Facility at Rice University. In the late 1970's, he also produced *Geology [and Environmental Considerations] of Alternate Energy Resources* (Houston Geological Society) and many other publications and consulting reports over the years on a variety of applied hydrogeologic, geologic, and injection well and hazardous waste subjects. He maintains an extensive library of more than 300,000 citations on environmental and mining topics covering the U.S. and overseas.

Mr. Campbell interrupted his graduate studies after the master's degree (Ph.D. work at Rice University in 1976) to join a major engineering and environmental consulting company as Director, Alternate Energy, Mining and Environmental Programs. During this period, he also served as an invited technical expert and lecturer for UNESCO-sponsored water-supply projects conducted in many parts of the Earth. Mr. Campbell provided management consulting for a mining project (with revenues/expenses of more than $8 million/year) and as a principal consultant for exploration, mining, processing/refining and environmental activities. Over the past 15 years, Mr. Campbell has provided senior technical guidance, review, training, litigation support and consultation on numerous hydrogeological, water supply, and hazardous waste projects involved in both RCRA and

CERCLA programs for major law firms and consulting engineering and environmental companies as well as industry.

Chronological Professional Experience

2010-Present I2M Associates, LLC, Vice President and Chief Geologist/Hydrogeologist, based in Houston, Texas. For additional details, see: http://associates.com/content/michael-d-campbell-pg-ph-curriculum-vitae.

Mr. Campbell, in cooperation with a number of senior Associates, is employed by a new company in Texas to expand the scale of a number of projects in the U.S. and overseas. With offices in the Seattle, Washington and elsewhere in the U.S., the I2MA team is providing consulting services in uranium, gold and silver, base metals, and other mineral and energy commodities, such as geothermal energy, combined with the associated environmental projects located in the U.S. and overseas.

1993-2010 M. D. Campbell and Associates, L.P., Senior Consulting Geologist/ Hydrogeologist and Principal-in-Charge, Houston, Texas.

Mr. Campbell and a support staff served industry by providing technical consulting on RCRA, CERCLA and related waste management involving a range of contaminants such as BTEX, solvents, brine, etc., risk assessment projects, and water-supply projects in Texas, the US and overseas. Mr. Campbell provided project/document review, and technical and QA/QC training for industry, consulting companies and law firms for RCRA, Superfund, and mining-related projects. He designs, lectures, and produces formal technical short courses and semester-long courses on environmental science, engineering and technology, and has served on the Editorial Board of the *Journal of Applied Ground-Water Protection*, sponsored by the Ground-Water Protection Council, and serveed as Special Editor for the journal: *Ground Water*. Mr. Campbell also served on the Editorial Board of the *International Journal of Environmental Forensics*, for the term 2000 to 2003.

During the summer of 1992, Mr. Campbell developed, managed and served as Principal Instructor for a 220-Hr Evening Semester Course: *Introduction to Environmental Technology*, held on the campus of North Harris Community College for the purpose of cross-training petroleum geologists, engineers, chemists, and others as a prelude to entering or advancing in the environmental field. Mr. Campbell lectured on RCRA and CERCLA and on hydrogeology and project management, and selected and managed all guest lecturers from industry, government and local universities. The course was later hosted by the Houston Engineering and Scientific Society (HESS) and recently by The Institute of Environmental Technology. Almost 400 men and women have graduated from the program to date.

He served as: Principal and Chief Geologist of M. D. Campbell and Associates, L.P., Principal Hydrogeologist of Environmental Litigation Associates, and Principal Instructor for the Institute of Environmental Technology, all located in Houston, Texas.

1991-1993 DuPont Environmental Remediation Services, Houston, Texas - Regional Technical Manager and Chief Hydrogeologist. The firm is a wholly-owned subsidiary of E. I. DuPont de Nemours. Mr. Campbell managed the activities of the Technical Group covering DuPont plants and other plants over a seven-state area. He managed five operating departments: Geology, Environmental Specialties, Deepwell (Injection Wells), Conceptual Engineering, and Engineering /Construction, involving approximately 60 technical personnel. He provided technical and administrative leadership, staff recruitment, training, quality control/assurance, risk assessment on various DuPont projects and represented DuPont on technical committees in Superfund projects in the US.

1991 ENSR Consulting and Engineering, Houston, Texas - Regional Director of Geosciences and Chief Hydrogeologist. The firm is a leading environmental services firm specializing in RCRA and CERCLA projects for industry. Mr. Campbell provided senior technical review, managerial direction, guidance, and leadership to the hydrogeologic and geologic staff throughout the company's 22 offices in the US. He also provided and managed regular technical training sessions and performed quality control, assurance functions and litigation support for hydrogeologic projects (i.e., RCRA, CERCLA: Superfund and UST, and landfill investigations). He also initiated, guided and supported marketing efforts in environmental projects.

1988-1990 Law Engineering, **Inc.,** Houston, Texas - Senior Hydrogeologist and Corporate Hydrogeological Consultant. Firm is a large employee-owned geotechnical and environmental engineering company founded in the early 1940's. Mr. Campbell provided senior technical direction, guidance, leadership and motivation to the hydrogeologic staff for the company's 52 offices in the US and overseas on hazardous waste projects including UST, landfill, water supply, dewatering, and RCRA (Part B Permits) and CERCLA (Property Environmental Assessments:

Stage I and II projects, and Superfund investigations and representations), including litigation support and expert witness testimony. He was responsible for initiating, guiding and supporting marketing efforts in environmental and relevant geotechnical projects.

Mr. Campbell also provided training sessions and managed technology development programs via in-house research groups throughout the company. He served on Senior Review Boards and performed annual quality control audits for the company. Mr. Campbell was cited by Law Engineering's corporate management as the Corporate Consultant in Hydrogeology (Chief Hydrogeologist) for his outstanding contributions to the company (1990).

1983-1988 **Campbell, Foss & Buchanan, Inc**., Houston, Texas - President and Senior Partner. Firm engaged in domestic and international environmental and natural resource management projects involving geological, hydrogeological and engineering programs: environmental investigations and characterizations (Part B Permitting, and Property Transfer Assessments), mine dewatering, project management (RCRA Investigations), natural resource assessment, reserve analysis and acquisitions for industry, mining (Alaska and Utah), financial, and banking communities. Precious metal discovery credited in Nevada. Provided consulting services on an $8-million/year precious metal mining and cyanide heap-leaching project from discovery through development operations and environmental liaison with state and federal regulatory agencies. As part of these services, Mr. Campbell provided guidance and consultation in the daily review and monitoring of the financial and operational activities of the 50-person mining company. In addition, he also served numerous other companies and consulting groups in senior review functions on hazardous waste and RCRA refinery and plant investigations during the period.

1976-1983 **Keplinger and Associates, Inc**., Houston, Texas - Director, Alternate Energy, Minerals and Environmental Division. Formed group and defined marketing objectives in 1976. Responsible for and managed all non-oil & gas projects: alternate energy (coal/lignite, geothermal energy, uranium), minerals (precious and base metals and industrial commodities-phosphate, potash, sand & gravel, and related environmental projects involving property transfer assessments (Pre-CERCLA activities) for joint-venture negotiations, corporate mergers, and buyouts, financial and litigation preparations, hazardous waste investigations (RCRA Part A and Part B Permitting), geotechnical projects (dewatering), and water resource investigations. He also served on the expert's committee of the United Nations' ground water exploration and development program from 1978 to 1983. Mr. Campbell managed a staff of seven geologists, engineers and specialty consultants. He also presented seminars on a range of subjects involving environmental, hydrogeological, and water-supply issues.

1971-1976 NWWA Research Facility, Columbus, Ohio and Houston, Texas - Director of Research. Co-founded in 1971 and served as first Director of Research. Mr. Campbell conceived, formulated, supervised and conducted investigations on: water well technology, ground-water contamination and investigation practices and procedures, well construction standards, injection well systems' operation & maintenance, rural water systems' planning and engineering. Mr. Campbell was responsible for the early research programs funded by the U.S. Office of Water Resources Research (here), and in the development of EPA's early protocol development and characterization of ground-water contamination and remediation practices (Early RCRA and CERCLA).

The NWWA Research Facility and the staff of six were moved to Rice University, Department of Geology and Geophysics, in 1973 and continued through 1976. He also was an invited lecturer for graduate-level seminar courses on hydrogeology and economic geology for two years. Conducted graduate research on paleo-environmental and diagenetic processes under fluvial-deltaic conditions. This project is continuing as new information becomes available. For an interim report on the research, see I2M CV.

1969-1971 Teton Exploration, Div., United Nuclear Corporation, Casper, Wyoming - District Geologist/ Hydrogeologist, Eastern US and Canada, Mr. Campbell was responsible for mineral prospect generation (with emphasis on uranium and other strata-bound mineralization) and for field reconnaissance, mapping, sampling, drilling site operations, recommendations for land acquisition and project budgeting and execution. He also conducted research on the hydrochemistry of the Morton Ranch uranium geochemical cell and nature of mine dewatering and water-supply development in and around the deposit, including the nature of abandoned drill holes plugged with bentonite muds. He advanced the development of hydrochemistry and geochemistry as an aid to frontier uranium exploration and for developing models of mineralization in frontier exploration areas.

1966-1969 Continental Oil Company (Australia), Sydney, Australia - Staff Geologist/ Hydrogeologist, Minerals and Mining Division. Mr. Campbell was responsible for conducting, coordinating, and implementing prospect evaluations, mapping and sampling programs, well-site operations, and ground-water supply programs in various parts of Australia, Micronesia (Caroline Islands) and the South Pacific (Coral Sea) for: phosphate, potash, sulfur, coal, base metals, and uranium. Phosphate discovery credited. Also investigated a new uranium district on the Nullibar Plains of South Australia (see publications list). Joint-venture programs with Japanese and Korean companies required extensive travel between Australia and Japan and Southeast Asia.

Fields of Activities, Major Reports, Publications and Presentations:

1. **Mineral Exploration and Development Projects**
2. **Hydrogeological and Environmental Projects**
3. **Geothermal Exploration and Development Projects**
4. **Coal / Lignite Exploration and Development Projects**
5. **International Projects**
6. **Miscellaneous Projects**

Management of Mineral Exploration Programs

During the mid-to-late 1960's, Mr. Campbell worked for a major American oil and minerals company (Conoco) in Australia and Southeast Asia, successfully conducting/managing field exploration programs, drilling operations, and water-supply investigations for development projects involving industrial and energy minerals, and precious and base metals (discovery credited). In the early 1970's, after returning to the U.S., he served three years as Regional Geologist with a major uranium exploration and mining company in Wyoming (United Nuclear). While there, he conducted research on hydrochemistry associated with roll-front uranium occurrences and successfully applied the results to the company's field program nationwide.

Mr. Campbell subsequently conducted various exploration programs as a consultant in the U.S. for companies such as Texas Eastern Nuclear, General Crude Oil Company and others during the mid-1970's on targets ranging from uranium, rare earth minerals, sulfur, and industrial minerals to base metals and precious metals.

In 1983, Mr. Campbell and two associates formed a consulting firm and conducted many domestic and international geologic, mining, economic, and hydrogeologic investigations including mineral property valuations and exploration programs (discovery credited), mine operational and financial management projects, mineral reserve analyses, preliminary feasibility studies, environmental investigations of various types, and other geotechnical investigations.

Applicable Minerals Publications / Major Reports / Presentations

Campbell, M. D. and H. M. Wise, 2010, "Uranium Recovery Realities in the U.S. - A Review," Invited Presentation for the Dinner Meeting of the Houston Geological Society's Engineering and Environmental Group, May 18, Houston, Texas, 51 p. (Click here)

Campbell, M. D., J. D. King, H. M. Wise, R. I. Rackley, and B. Handley, 2009 "The Nature and Extent of Uranium Reserves and Resources and Their Environmental Development in the U.S. and Overseas," AAPG – Energy Minerals Division 2008 Report, revised for publishing in AIPG's *The Professional Geologist*, Vol. 46, No. 5, September/October, pp. 42-51 - Peer Reviewed. (Click here)

Campbell, M. D. and J. D. King, 2009, "AusPotash Corporation Project: Adavale Basin, Queensland, Australia, NI 43-101 Report, by M. D. Campbell and Associates, L.P., Houston and Seattle, July 8, 113 p. (Click here).

Campbell, M. D., J. D. King, H.M. Wise, B. Handley, and M. David Campbell, 2009, "The Role of Nuclear Power in Space Exploration and the Associated Environmental Safeguards: An Overview," Report of the Uranium Committee, Energy Minerals Division to the Astrogeology Committee of AAPG. Presented at the Conference of the AAPG-Energy Minerals Division and Astrogeology Committee Sessions, June 8-10, held in Denver, CO. - Peer Reviewed. (Click here).

Campbell, M. D., B. Handley, H. M. Wise, J. D. King, and M. David Campbell, 2009, "Developing Industrial Minerals, Nuclear Minerals and Commodities of Interest via Off-World Exploration and Mining," Paper/Poster at the Conference of the American Association of Petroleum Geologist (AAPG), Energy Minerals Division Sessions, June 9, Denver, CO., 27 p. - Peer Reviewed. (Click here).

Campbell, M. D., 2009, "Uranium," *in Unconventional Energy Resources and Geospatial Information: 2008 Review by the Energy Minerals Division, American Assoc. Petroleum Geologists*, of the Journal of *Natural Resources Research*, Vol. 18., No. 1, January. - Peer Reviewed. (Uranium section in Paper).

Campbell, M. D., H. M. Wise, and J. D. King, *2008,* "Nuclear Fuel Exploration, In Situ Recovery, and Environmental Issues in context with the National Energy Needs through Year 2040," *Proc. Texas Commission of Environmental Quality Conference and Trade Fair*, Session: "Underground Injection Control," Invited Paper, Austin, Texas, April 30, 2008 (Click here).

Campbell, M. D., J. D. King, H. M. Wise, R. I. Rackley, and B. Handley, 2008 "The Nature and Extent of Uranium Reserves and Resources and Their Environmental Development in the U.S. and Overseas," AAPG – Energy Minerals Division Conference, April 23, 2008, Session: "Uranium Geology and Associated Ground Water Issues", San Antonio, Texas - Peer Reviewed. (Click here).

Campbell, M. D., *et al.*, 2007, "Uranium In-Situ Leach Development and Associated Environmental Issues," Proc. Gulf Coast Geological Societies Conference, Fall, Corpus Christi, Texas, 17 p.

Campbell, M. D., 2007, "Pressure on the Electrical Grid and 3rd Quarter, 2006 Uranium Concentrate Production", in Unconventional Energy Resources and Geospatial Information: 2006 Review by the American Assoc. Petroleum Geologists, Energy Minerals Division, *Natural Resources Research,* Vol. 16., No. 3, September.

Campbell, M. D. and M. David Campbell, 2005, "Uranium Industry Re-Development and Expansion in the Early 21st Century: Supplying Fuel for the Expansion of Nuclear Power in the U.S., The Environment vs. The Paradigm," Rocky Mountain Natural Gas Strategy Conference & Investment Forum, Session 1, Presented by Colorado Oil & Gas Association, August 1-3, Denver, Colorado, 44 p.

Campbell, M. D., et al., 2005, Recent Uranium Industry Developments, Exploration, Mining and Environmental Programs in the U.S. and Overseas, Energy Minerals Division, AAPG, Uranium Committee 2005 Report, March 25.

Campbell, M. D., 2004, Professional Memorial: Ted H. Foss, Ph.D., P.G., Geological Society of America Memorials, Vol. 33, April, pp. 17-22.

Campbell, M. D., 2004, Preliminary Examination of Mineralogical Samples from Rwanda, April 24, 32 p. (Confidential Client from Rwanda).

Campbell, M. D. and K. H. Forster, 1996, Hydrogeology and Mining, a Study Guide for Workshop presented at The National Mining Conference, Knoxville, Tennessee, May 11, 137p.

Campbell, M. D. and K. H. Forster, 1995, Mining Hydrogeology, a study guide for a mini-course presented at the National Symposium on Mining, Hydrology, Sedimentology and Reclamation, Reno, Nevada, December 5-9, 137p.

Campbell, M. D. and K. H. Forster, 1995, Basic Mining Hydrogeology, a study guide for a mini-course presented at the National Symposium on Mining, Hydrology, Sedimentology and Reclamation, Springfield, Ill., December 7-11, 96p.

Forster, K. H. and M. D. Campbell, 1994, "Hydrogeologic Investigations for Designing a Dewatering and Depressurizing System in a Gulf Coast Lignite Mine," Kentucky Coal Mining Symposium, Bowling Green, 10p.

Campbell, M. D. and S. R. Dinkowitz, 1987, "Preliminary Conclusions on the Geology, Mineralogy and Structural Controls of Mineralization at the Lookout Mt. and Hamburg Mines," A Field Trip Lecture at the Norse Windfall Mines, Inc., Eureka, April 11, 1987, *Post-Meeting Field Trip, The Symposium on Bulk Minable Precious Metal Deposits of the Western United States*, Sponsor Geological Society of Nevada, 35 p.

Campbell, M. D. and T. H. Foss, 1987, "The Re-Discovery of Precious Metals in the Eureka Mining District, Nevada," *Proc. The Symposium on Bulk Minable Precious Metal Deposits of the Western United States*, April 6-8, 1987, Geological Society of Nevada, 15p.

Campbell, M. D., T. H. Foss and K. J. Buchanan, 1986, "Report of Investigations on the Preliminary Feasibility of Development of the Eureka Precious Metals Project, Nevada," a Campbell, Foss & Buchanan, Inc. Consulting Report (private distribution), 123 p.

Campbell, M. D., and T. H., 1984, "Report of Investigations on the Geology, Geochemistry and Geophysics of the Eureka Precious Metal Properties, Nevada," a Campbell, Foss and Buchanan Consulting Report (private distribution), approx. 300 p., August.

Campbell, M. D. and T. H. Foss, 1984, "Preliminary Evaluation of Selected Precious Metal Properties in North Carolina," a Campbell, Foss and Buchanan Consulting Report (private distribution), 15 p., July.

Campbell, M. D., 1984, "Preliminary Evaluation of the Minera Guayape, S.A. Precious Metal Project, Honduras, a Campbell, Foss and Buchanan Consulting Report (private distribution), 10 p., May.

Campbell, M. D., 1984, "Preliminary Evaluation of the Agua Fria Precious Metal Project, Honduras," a Campbell, Foss and Buchanan Consulting Report (private distribution), 10 p., May.

Campbell, M. D., 1982, "Report of Investigations on Precious Metal Properties, Rainbow Valley Area, Maricopa County, Arizona," a Keplinger Consulting Report (private distribution), 105 p.

Campbell, M. D., and L. Clark, 1981, "Preliminary Economic Analysis of the Mining Restrictions and Land Takes from the Hartman Farm by the City of Columbus, Ohio, Division of Water," for the BancOhio National Bank, Trustee for the Hartman Trust, by Keplinger and Associates, Inc., Houston, May 15, 15 p.

Campbell, M. D., 1980, "Preliminary Investigations on the Uranium and Other Mineral Potential of Sudan," a United Resources International Consulting Report (private distribution), 19 p. (April).

Campbell, M. D., and D. J. Lynch, 1980, "Preliminary Mining Engineering Evaluation and Economic Analysis of the Sand and Gravel Resources on Selected Properties Near Columbus, Ohio," for the BancOhio National Bank, Trustee for the Hartman Trust, a Keplinger Consulting Report, January 1, 85 p.

Campbell, M. D., and K. T. Biddle, 1978, "Preliminary Evaluation of Quaternary Carbonate Deposit for Use as Raw Material in Domestic Cement Production," a Keplinger Consulting Report (private distribution), 27 p., July.

Campbell, M. D., 1978, "An Evaluation of Certain Tin and Uranium Interests: Prospect Evaluation and Associated Economics," a Keplinger Consulting Report (private distribution), 35 p., June.

Campbell, M. D., 1977, *Geology [and Environmental Impact] of Alternate Energy Resources, Uranium, Lignite, and Geothermal Energy in the South Central States*, Houston Geological Society, 364 p. For Text Summary, (see online I2M CV).

Campbell, M. D. and K. T. Biddle, 1977, "Frontier Uranium Exploration in the South-Central U.S., Chapter 1: Frontier Areas and Exploration Techniques" in *Geology of Alternate Energy Resources in the South-Central United States*, (M. D. Campbell (ed)), Houston Geological Society, pp. 3-44.

Campbell, M. D., and C. C. Wielchowsky, 1977, "Phase II Geological and Mineral Reconnaissance of the Eastern Front of the Stillwater Range from I.X.L. to Cottonwood Canyons: Dixie Valley Area, Churchill County, Nevada," a Keplinger Consulting Report (private distribution), 65 p., October.

Campbell, M. D., 1977, "A Review of the Mineral Potential (Uranium, Fluorspar, Mercury, Geothermal Energy, Coal and Other Minerals) of Certain Land Holdings in the Big Bend, Texas Area," a Keplinger Consulting Report (private distribution), 20 p., May.

Campbell, M. D., 1977, "Preliminary Evaluation of Uranium Ore reserves in the Uravan Mineral Belt and Vicinity," a Keplinger Consulting Report (private distribution), 62 p., April.

Campbell, M. D., 1976, "Mineral Exploration and Development Program in the Republic of Niger, Africa," a Keplinger Consulting Report (private distribution) 22 p., November.

Campbell, M. D., 1974, *Uranium Potential of the United States: Stage I, Frontier Exploration*, United Resources Consulting Report for Pioneer Nuclear, Inc. and Texas Eastern Nuclear, Inc. (copyrighted), 218 p, 21 plates, 46 figs., 7 tabs., 389 refs. (Houston).

Campbell, M. D., 1974, "Potassium-Uranium Systematics: Geologic Implications of Moon-Earth-Meteorite Origins," *Rice University Department of Geology Special Paper*, 74 p.

Campbell, M. D., 1971, "A Preliminary Evaluation for Uranium of the Green River Utah Project," Consulting Report: United Resources (private distribution), 44 p., 20 figs., 10 refs. (unpubl.)

Campbell, M. D., 1970, "Preliminary Recommendation Report on the Uranium and Other Mineral Potential of Pennsylvania," Pa. Report No. 2, Stage II Evaluation, United Nuclear Corporation, 80 p., 19 figs, 3 plates, 2 tabs., 37 refs. (unpubl.).

Campbell, M. D., 1970, "Final Reconnaissance Report on the Uranium Potential of Ohio," Ohio Report No. 2, United Nuclear Corporation, 42 p., 8 figs., 7 tabs., 1 plate (unpubl.)

Campbell, M. D., 1969, "An Evaluation for Uranium of the Pidinga Lakes Area, South Australia," Consulting Report of Minoil, 65 p., 8 refs. (unpubl.)

Campbell, M. D., 1969, "Final Report on Undilla Basin Phosphate, Queensland, Australia, "Continental Oil Company of Australia, Minerals Exploration, 65 p., 1 fig., 5 tabs. 4 plates, 3 appen. (unpubl.) (see online I2M CV)

Campbell, M. D., 1969, "Analysis of Transportation, Water Resources, Multiple Product Recovery and Mining in Australia," Interim Phosphate Report No. 2, Australian Phosphate Project," Continental Oil Company of Australia, Mineral Exploration Division, 25 p., 15 figs., (unpubl.)

Pendry, G., (with technical support provided by Campbell, M. D.), 1969, "Report of Potash Potential, Carnarvon Basin, Western Australia," Continental Oil Company of Australia, Minerals Exploration Division, Sydney, 15 p., 6 figs., 3 tabs. (unpubl.)

Campbell, M. D., 1969, "Report on Preliminary Beneficiation Results: Undilla Basin, Queensland, Australia," Continental Oil Company of Australia, Minerals Exploration Division, 15 p., 6 figs., 3 tabs., see online I2M CV for CONOCO activities in Australia and Final Report.

Campbell, M. D., 1968, "Discovery of New Phosphate Deposits: Interim Phosphate Report No. 1: Northern Territory, Australia," Continental Oil Company of Australia, Minerals Exploration Division, 22 p., 3 tabs., 3 plates (unpubl.).

Mine Management

During the mid-1980's, Mr. Campbell provided technical, operational, financial and environmental management consulting for a heap-leach precious metal mine in Nevada. He served as part of a three-man matrix consulting management team that provided management consulting for operations and management of a multiple mine-central mill project with 35 employees and for the prime mining, crushing, hauling and agglomerating contractor with more than 30 employees.

Mr. Campbell's activities included:

1) management consulting for the start-up mine operations,
2) consulting on operational financial and accounting ($8 million cash flow/year),
3) consulting on company operating and hazardous material safety and bullion security policy development via personnel manual,
4) joint-venture representation with major mining companies,
5) development of economic modeling programs for detailed financial analyses of month-to-month economic conditions,

6) day-to-day monitoring of operational processes and hydrochemical data,

7) consulting on exploration programs and of land-acquisition projects,

8) conducted analyses of unsaturated flow in the heap-leach operations, and monitored solution chemistry, and

9) initiated ground-water monitoring programs and provided guidance in negotiations with BLM and EPA.

Applicable Mine Management Publications / Major Reports

Campbell, M. D. and J. D. King, 1988, Norse Windfall Mines, Inc. Personnel and Corporate Policy Manual, August, Eureka, Nevada, 30p.

Campbell, M. D., T. H. Foss and K. J. Buchanan, 1986, "Report of Investigations on the Preliminary Feasibility of Development of the Eureka Precious Metals Project, Nevada," a Campbell, Foss & Buchanan, Inc. Consulting Report (private distribution), 123p. (See Summary Report).

International Projects

Mr. Campbell spent his early professional years on projects in Australia, South East Asia and Micronesia, making trips to Japan, Hong Kong and Singapore as joint-venture project negotiation needs required. He has returned on occasions to present invited hydrogeological and water supply papers. Mr. Campbell has initiated or been associated with projects on mineral exploration, mining, and water supply and hydrogeological topics in the following countries: Australia, Canada, Chile, France, Honduras, Jordan, Italy (Sardinia), Liberia, Mexico, Niger, Sri Lanka, Sweden, South Africa, Sudan, and Tanzania.

Applicable International Publications / Major Reports

Campbell, M. D., and M. David Campbell, 2004, "Crisis Management: Ground-Water Supplies in the 21st Century," in *EnviroTechnology (Chinese)*, Vol. 1, Summer, pp 78-81.

Swartz, T. E., K. Mentesoglu, M. D. Campbell, and O. Akkol, 1991, "Turkey: Ground-Water Issues in a Country with a Developing Economy" in *Proc. Fifth National Outdoor Action Conference on Aquifer Restoration, Ground Water Monitoring, and Geophysical Methods, AGWSE Conference,* May 13-16, 1991, Las Vegas, Nevada, pp 165-174.

Larsson, I., M. D. Campbell, et al., 1984, *Ground Water in Hard Rocks (Igneous and Metamorphic Rocks*), United Nations (UNESCO) and the Swedish International Development Authority (SIDA), 450 p.

Campbell, M. D., 1984, "Preliminary Evaluation of the Minera Guayape, S.A. Precious Metal project, Honduras, a Campbell, Foss and Buchanan Consulting Report (private distribution), 10 p., May

Campbell, M. D., 1984, "Preliminary Evaluation of the Aqua Fria Precious Metal Project, Honduras," a Campbell, Foss and Buchanan Consulting Report (private distribution), 10 p., May.

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Other Subsurface Investigations

Mr. Campbell also has conducted a number of other scientific, geologic, hydrogeologic and geotechnical investigations involving: growth-fault investigations, remote subsurface data acquisition technology development, technology transfer, human toxicology, moon-earth-meteorite potassium-uranium systematics, paleoenvironmental and diagenetic processes in the subsurface, injection well design and operation, oil shale, sand and gravel-reserve assessment and preliminary development feasibility, geologic assessment of cavern integrity and injection operations at Strategic Petroleum Reserve Sites in Texas, and subsurface structural traps for oil and gas. Mr. Campbell has a strong interest in the industrialization of space for the purpose of development off-world natural resources:

Significant Uranium and Other Discoveries on the Moon May Indicate New Space Race is Afoot (PDF)

Campbell, M. D. and W. A. Ambrose, 2010
Press Release (with Details) April 16

Role of Nuclear Power in Space Exploration (3.85 Mb PDF)

Contributions from the EMD Uranium (Nuclear Minerals) Committee
Michael D. Campbell, P.G., P.H., (Chair) Houston;
Jeffery D. King, P.G. (Associate) Seattle;
Henry M. Wise, P.G. (Member)

Houston; Bruce N. Handley, P.G. (Member) Houston; M. David Campbell, P.G. (Associate) Houston

Developing Industrial Minerals, Nuclear Minerals and Commodities of Interest via Off-World Exploration and Mining

Campbell, M. D., B. Handley, H. M. Wise, J. D. King, and M. David Campbell, 2009. Paper/Poster at the Conference of the American Association of Petroleum Geologist (AAPG), Energy Minerals Division Sessions, June 9, Denver, CO., 27 p.

Hydrogeological / Environmental Investigations

In the early 1960's, Mr. Campbell was selected as Undergraduate Research Assistant in the Department of Geology, The Ohio State University and subsequently worked on one of the first long-term, systematic ground-water contamination investigations involving oil-field pollution by open brine disposal pits in Ohio and on early modeling of the associated ground-water flow behavior under Dr. Wayne A. Pettyjohn and others.

In 1966, Mr. Campbell joined Continental Oil Company (CONOCO), Minerals & Mining Group in Sydney, Australia working on mineral exploration, mining and associated ground-water supply projects. He served as an Invited Visiting Lecturer, University of Queensland (now James Cook University), lecturing on the principles of hydrogeology. After returning to the U.S., in the early 1970's, Mr. Campbell organized the National Water Well Association's Research Facility becoming its first Director of Research in Ohio and then at Rice University, Houston. Over the period of 1971 to 1976, Mr. Campbell provided technical seminars on hydrogeology for numerous universities and for the US E.P.A. He also served as Technical Consultant to the *Water Well Journal* and as Abstract Editor for the journal: *Ground Water*. During the period, Mr. Campbell managed numerous Association and EPA projects and programs dealing with hydrogeology and shallow drilling, shallow well design, construction, operation and maintenance, injection well, technical education and industrial contamination assessment, providing the early guidance to EPA personnel on ground-water sampling, monitoring well construction protocols and hazardous-waste spill response strategy for subsequent RCRA and CERCLA activities. He also consulted for a number of companies to evaluate gold, silver, and uranium prospects.

In 1975, he received The Ohioana Book Award in Science for the text: *Water Well Technology* (McGraw-Hill). Mr. Campbell was appointed as United Nations Technical Expert to review overseas ground-water programs for the period: 1976 to 1981. While at Rice University, he also conducted graduate fellowship research on a variety of subjects and taught courses in hydrogeology and economic geology. Mr. Campbell and his team provided substantial input for the EPA-sponsored *National Ground Water Information Center Data Base* presently operated by the NWWA. He served as an Editor or as a member of the Editorial Board of the journal: *Ground Water* from 1964 to 1978. During the period, he conducted numerous consulting geotechnical investigations and served as an invited technical expert and lecturer for the United Nations and UNESCO sponsored projects on world-wide ground-water exploration and development in igneous and metamorphic rocks in: Sweden, Italy (Sardinia), India, and Tanzania. Among the hydrogeological consulting projects conducted during the early 1980's, Mr. Campbell completed a series of investigations for a major geotechnical consulting firm on gasoline leaks in and around service stations in Texas.

With Campbell, Foss and Buchanan, Inc. (CF&B), he initiated an evaluation of vadose flow of cyanide solutions of a heap-leach precious metals mining project (see abstract). A long-term monitoring program was established for evaluating flow and hydrochemical behavior, and for providing data for optimizing process control, and for regulatory monitoring purposes. C,F&B conducted numerous projects in the U.S. and overseas. During the period, Mr. Campbell provided senior technical review and consultation for hydrogeological and hazardous waste projects associated with lignite mining (mine dewatering) and chemical plants performed by other geotechnical consulting groups in the south-central and northern United States.

While with Law Engineering, Inc., he was promoted to the company's highest technical position in the discipline as Corporate Hydrogeological Consultant (aka Chief Hydrogeologist), the first such designation in the company's 42-year history. He provided direction and technical support to Law Engineering's 52 offices through the U.S. and overseas. Mr. Campbell served in a similar capacity with ENSR Consulting and Engineering, and in industry, with DuPont Environmental. After leaving Dupont, he spent 17 years as a consultant providing consultation on mineral prospect evaluations, waste management, characterization, remediation, water supply projects, technical training, litigation support and expert witness testimony on hydrogeology, the National Contingency Plan, and related subjects (see Mr. Campbell's litigation summary). In early 2010, he joined I2M Associates, LLC, based in Seattle, with an office in Houston.

Hydrogeological / Environmental Publications
Major Reports, Publications and Presentations
[For Publications in Preparation (see I2M CV)]

Campbell, M. D., *et al., 2008,* "Nuclear Fuel Exploration, In Situ Recovery, and Environmental Issues in context with the National Energy Needs through Year 2040," *Proc. Texas Commission of Environmental Quality Conference and Trade Fair*, Session: "Underground Injection Control," Invited Paper, Austin, Texas, April 30, 2008.

Campbell, M. D., *et al*., 2008 "The Nature and Extent of Uranium Reserves and Resources and Their Environmental Development in the U.S. and Overseas," AAPG – Energy Minerals Division Conference, April 23, 2008, Session: "Uranium Geology and Associated Ground Water Issues", San Antonio, Texas.

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Campbell, M. D., 2004, "Environmental Geoscience and Litigation: Dos and Don'ts, Now or Later," Featured Speaker, Houston Geological Society Environmental and Engineering Geology Dinner Meeting, February 10.

Campbell, M. D., 2000, "Federal and State Regulations and Field Implementation in Hazardous and Solid Waste Investigations and Management," An Invited Lecture for the University of Texas School of Public Health, August 29th and September 19th, Presentation Sponsored by the Institute of Environmental Technology, Houston, Texas.

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Management of Geothermal Exploration and Development Projects

In 1976, Mr. Campbell conducted extensive investigations on the potential geothermal value of selected properties in Dixie Valley, Nevada for a series of clients. Based on the available geological, geophysical, and hydrogeological data, Mr. Campbell recommended further investigations and a preliminary drilling and hot-spring sampling program. Results indicated favorable conditions existed in the subsurface complex of Basin-and-Range geologic structures. Additional federal lands were acquired by the client in Dixie Valley and other geothermal companies became interested in the area. Deep exploratory drilling began and significant discoveries of high temperature, liquid-dominated geothermal energy reservoirs were identified. Economic analyses were conducted on behalf of the client to establish land values for possible buyout or merger with other geothermal companies. The client subsequently sold its interests. Dixie Valley geothermally generated power plants went on stream in 1987 and is producing electricity for the Nevada-California power grid on a regular basis.

Mr. Campbell conducted a series of additional geologic, hydrogeologic and economic investigations for a number of geothermal companies in the western US. He continues to monitor industry activities.

Applicable Geothermal Publications / Major Reports

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Management of Coal / Lignite Exploration and Development Projects

In the mid-1970's, Mr. Campbell initiated and managed the lignite exploration activities for General Crude Oil Company (Div. International Paper, Inc.) in Arkansas, Texas, Mississippi and Alabama. Subsequent consulting assignments on coal and lignite in the 1970's and 1980's involved: exploration programs, preliminary mining feasibility studies, detailed reserve analyses, property evaluations, and mining operations assessment and evaluation.

Applicable Coal-Lignite Publications / Major Reports

Campbell, M. D., 1983, "Preliminary Evaluation of Coal Reserves, Cambria County, Pennsylvania," a Campbell, Foss and Buchanan Consulting Report (private distribution), 10 p., December.

Campbell, M. D., C. C. Colburn, and D. J. Lynch, 1979, "An Evaluation of Coal Resources and Mining Economics, Wayne County, Utah," a Keplinger Consulting Report (private distribution), 295 p., March.

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Curriculum Vitae

Jeffrey D. King, P.G.
President and Senior Program Manager
I2M Associates, LLC
Seattle Office
Telephone: 713-807-0021
Cell Phone: 713-248-1708
Fax: 713-807-0985
Email: JDKing@I2MAssociates.com

Online: Summary (Here**)**

Education

1979, B.A. in Geology, Western Washington University, WA

Summary of Experience

Mr. King has over 25 years of technical and managerial experience in the natural resource field. Mr. King has extensive experience in developing successful regulatory- and landowner-negotiation and public-relations programs, has conducted or directly managed all aspects of site permitting, and has been involved in the financial and technical evaluation of mining properties for a major mining company and other projects. He has also founded, developed and operated two successful companies. He is licensed as a Professional Geologist in the State of Washington (#1727).

Mining Experience

Mr. King developed mining process expertise in the late 1970's and early 1980's. During this time he worked for Companies such as Bethlehem Copper, Union Oil (MolyCorp) and the mining consulting firms for Watts, Griffis and McOuat and Campbell, Foss and Buchanan, Inc. including gold mining and gold placer evaluation in the lower states and in Alaska. In 1984, Mr. King was named mine manager of a gold and silver mine in Nevada. He served in that capacity until 1986 when he was named Vice President of Operations.

Selected technical presentations on uranium by Mr. King are cited below:

> Campbell, M. D., J. D. King, H. M. Wise, R. I. Rackley, and B. Handley, 2009 "The Nature and Extent of Uranium Reserves and Resources and Their Environmental Development in

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Campbell, M. D., H. M. Wise, and J. D. King, 2008, "Nuclear Fuel Exploration, In Situ Recovery, and Environmental Issues in Context with the National Energy Needs through Year 2040", *Proc. Texas Commission on Environmental Quality Conference and Trade Fair*, April 30, An Invited Presentation, Austin, Texas (PDF).

Environmental Experience

Between 1990 and 1998 Mr. King worked for the DuPont Company directing environmental projects in Washington, Oregon, Alaska and British Columbia, Canada. In 1998, Mr. King formed Pacific Environmental and Redevelopment Corporation to focus on large-scale projects involving the redevelopment of formerly contaminated properties. In completing these projects, Mr. King has developed or managed a team of resources and associates with experience ranging from environmental sciences to master-planned community and golf-course construction.

One such environmental project managed by Mr. King involved the environmental clean-up of an industrial site south of Tacoma, Washington. Once the contaminants were removed, Mr. King oversaw the construction of a golf course followed by the construction of quality homes. The golf course was completed in 2006 and has just won the "Top Ten New Courses in the World" Award for 2007, given by *Travel and Leisure Golf Magazine* (See Announcement (CV).

In late 1990, he served with M. D. Campbell and Associates, L.P. as a Senior Program Manager. In 2010, he formed I2M Associates, LLC and presently serves in a management role for the company as President and Senior Project Manager, and in a variety of other management functions, including corporate oversight, project management and assessment, property evaluations, and field investigations of mining and large environmental projects.

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