Updated Technical Report on the Flame & Moth Deposit, Flame & Moth Property, Keno Hill District, Yukon

Report Prepared by

Alexco Resource Corp.

March 15, 2013

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Alexco Resource Corp.

1150 – 200 Granville Street
Vancouver, B. C., V6C 1S4

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Authored by:
David Farrow, P.Geo (BC), Geostrat Consulting Services Inc.

Alan McOnie, FAusIMM, VP Exploration, Alexco Resource Corp.

Cover: Photo from Flame drill site looking North over District Mill

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Executive Summary

The Flame & Moth prospect is a silver-lead-zinc deposit in the historic Keno Hill silver-lead district located near Mayo, Yukon Territory. While historically explored to a shallow depth, exploration initiatives by Alexco Resource Corp (Alexco) have outlined an area of silver-lead-zinc mineralization with sufficient confidence to produce a geological interpretation and vein wireframes for a resource estimate. SRK Consulting (Canada) Inc. (SRK) initially constructed a mineral resource model during the second quarter of 2012 using a geostatistical block modeling approach. Mineral resources were classified as Indicated and Inferred, following the Canadian Institute of Mining & Metallurgy (CIM) Definition Standards for Mineral Resources and Mineral Reserves (December 2005) guidelines.

This technical report updates that mineral resource estimate for the Flame & Moth prospect based on new drilling results. It was prepared following the guidelines of the Canadian Securities Administrators National Instrument 43-101 and Form 43-101F1, and in conformity with generally accepted CIM “Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines”.

Property Description, Location, Access, and Physiography

The Flame & Moth property is located in the Mayo Mining District, approximately 350 kilometres (km) north of Whitehorse, Yukon Territory, within the Keno Hill mining district. Mayo is accessible from Whitehorse via a 460 km all weather road and by air via the Mayo airport. A gravel road connects Mayo to the project area. Alexco currently maintains a land position at the Flame & Moth property comprising 42 surveyed quartz mining leases and 14 un-surveyed quartz mining claims. Mineral exploration at Keno Hill is permitted under the terms and conditions set out by the Yukon Government in the Class IV Quartz Mining Land Use Permit – LQ00240, issued on June 17, 2008, and valid until June 16, 2018. The mineral resources for the Flame & Moth prospect reported herein are located on the Moth, Flame, Frances 5, and Frances 7 quartz mining leases and the Blue Claim.

Central Yukon is characterized by a sub-arctic continental climate with cold winters and warm summers. Average temperatures in the winter are between -15 and -20 degrees Celsius (°C) while summer temperatures average around 15°C. Exploration is limited to the summer months although mining work can be carried out year-round. The landscape around the Flame & Moth Project area is characterized by rolling hills with a local relief of up to 1,845 metres (m) on Keno Hill.

History

Claim staking and prospecting began at Flame & Moth in 1920, which was the start of a decade of commercial production in the Keno Hill district, and shallow workings identified some mineralized veining in the area.

Subsequent to this early work, little or nothing appears to have happened on the property until the acquisition by United Keno Hill Mines (UKHM) just prior to 1950. A 27.4 m inclined shaft was sunk along the footwall of what was likely the Moth vein zone, where quartz-carbonate vein hosted mineralization averaging 10 ounces per ton (opt) Ag, 1.6% Pb, and 5% Zn was encountered. Thirteen horizontal diamond drill holes totaling 193 m were drilled from the drift, but the core recovery was poor.

During 1954 and 1955, mineralization of pyrite and minor arsenopyrite was reported up to 240 m along strike to the north. This was explored by bulldozer trenching, soil sampling, and ground geophysics, but was unsuccessful because of the depth of gravel overburden.

UKHM returned to Flame & Moth in 1961 with a program of soil sampling and ground geophysics (self-potential, magnetics, Ronka EM), and drilled five surface diamond boreholes around the shaft to test the mineralization at depth. The soil samples and geophysics yielded little information, and no veining was intercepted in the drilling.

In the 1960's through the 1980's, multiple overburden drill campaigns were aimed at outlining an open pit resource around the historical workings and along strike. A small amount of mineralized material was sent to the Elsa mill in 1984 (406 tons @ 20.40 opt Ag, 1.39% Pb, and 0.72% Zn), perhaps coming from vein material exposed during stripping of overburden.

Total production at the Flame & Moth is listed as 1,590 tons grading 18.3 opt Ag, 1.1% Pb, and 0.9% Zn (Cathro 2006). It is assumed most of this came from the underground work of the 1950's.

UKHM operations closed permanently in 1989. In June 2005, Alexco was selected as the preferred purchaser of the assets of UKHM by PricewaterhouseCoopers Inc., the court-appointed interim receiver and receiver-manager of Keno Hill. In February 2006, Alexco's purchase of UKHM's assets through a wholly-owned subsidiary, Elsa Reclamation & Development Company Ltd. (ERDC), was approved. Under the Keno Hill Subsidiary Agreement, ERDC is indemnified against all historical liability, has property access for exploration and future development, and is not required to post security against pre-existing liabilities. ERDC received a water license from the Yukon territorial government in November 2007, giving Alexco free and clear title to surface and subsurface claims, leases, free-hold land, buildings, and equipment at Keno Hill. Alexco embarked on an aggressive surface exploration program in 2006 with continued yearly exploration programs through 2012.

Regional and Local Geological Setting

The Keno Hill mining camp is located in the northwestern part of the Selwyn Basin in an area where the northwest-trending Robert Service Thrust Sheet and the Tombstone Thrust Sheet overlap. The area is underlain by Upper Proterozoic to Mississippian rocks that were deposited in a shelf environment during the formation of the northern Cordilleran continental margin and underwent regional compressive tectonic stresses during the Jurassic and the Cretaceous, which produced thrusts, folds, and penetrative fabrics of various scales.

The Robert Service Thrust Sheet in the south is composed of Late Proterozoic to Devonian clastic sandstone, minor limestone, siltstone, argillite, chert, and conglomerate. The Tombstone Thrust Sheet to the north consists of Devonian phyllite, felsic meta-tuffs, and metaclastic rocks, overlain by Carboniferous quartzite, that are the main host for the silver mineralization in the Keno Hill district. Four intrusive suites intrude the layered rocks:

- Late Triassic gabbro to diorite sills;
- Early Cretaceous Tombstone granite to granodiorite;
- Upper Cretaceous peraluminous porphyritic granite; and
- Late Cretaceous diabase dikes and sills.

The mineralized Flame & Moth vein system occurs in the upper part of the Mississippian Keno Hill Quartzite, within the thick Basal Quartzite Member that is overlain by the Sourdough Hill Member. The sequence was metamorphosed to greenschist facies assemblages during the Cretaceous. The Basal Quartzite is up to 700 m thick and comprises quartzite interbedded with minor graphitic phyllite and is intruded by Triassic greenstone sills. The Basal Quartzite is the dominant host to the silver

mineralization in the Keno Hill district. The overlying Sourdough Hill Member comprises graphitic and sericitic phyllite, chloritic quartz augen phyllite, and thin limestone units. To the south, the Robert Service Thrust Fault separates the Keno Hill Quartzite from the overthrust Upper Proterozoic Hyland Group, which is comprised of predominantly meta-sedimentary chlorite and quartz rich schist. The Keno Hill Quartzite is intruded by quartz-feldspar aplite sills or dykes that are correlated with the Early Cretaceous intrusive suite found elsewhere in the district.

Three phases of folding are identified in the district. The two earliest phases consist of isoclinal folding with sub-horizontal, easterly or westerly trending fold axes. The later phase consists of a sub-vertical axial plane and moderate southeasterly trending and plunging fold axis. In the Keno Hill district, the first phases of folding formed three structurally dismembered isoclinal folds of which the Basal Quartzite Member outlines two synforms at Monument and Caribou Hills, while the Flame & Moth Prospect is located on the limb of the third dismembered syncline between Galena Hill and Sourdough Hill.

Within the district, up to four periods of faulting are recognized. The oldest fault set consists of south dipping foliation-parallel structures that developed contemporaneously with the first phase folding. The Robert Service Thrust Fault truncates the top of the Keno Hill Quartzite and sets the Precambrian schist of the Yusezyu Formation of the Hyland Group above the Mississippian Sourdough Hill Member of the Keno Hill Quartzite. The mineralization in the Keno Hill district is hosted by a series of northeast-trending pre- and syn- mineral “vein faults” that display apparent left lateral normal displacement. These are commonly offset by post-mineralization high angle cross faults, low angle faults, and bedding faults. Most commonly these comprise northwest striking cross faults that show apparent right-lateral displacement.

Deposit Types and Mineralization

The Keno Hill District is a polymetallic silver-lead-zinc vein district with characteristics analogous to: Kokanee Range (Slocan), British Columbia; Coeur d’Alene, Idaho; Freiberg and the Harz Mountains, Germany; and Príbram, Czech Republic. Common characteristics include the proximity to crustal-scale faults, affecting thick sequences of clastic metasedimentary rocks, intruded by felsic rocks that may have acted as a heat source driving the hydrothermal system. At Keno Hill, the largest accumulation of silver, lead, and zinc minerals occurred in structurally prepared competent rocks, such as the Basal Quartzite Member.

In general, gangue minerals include (manganiferous) siderite, minor calcite, and quartz. Silver most commonly occurs in argentiferous galena and argentiferous tetrahedrite. In supergene assemblages, silver can be native or in polybasite, stephanite, and pyrargyrite. Lead occurs in galena and zinc in iron-rich sphalerite. Other sulphides include pyrite, pyrrhotite, arsenopyrite, and chalcopyrite.

At the district scale, the mineral system exhibits sharp lateral mineralogical changes equivocally associated with temperature gradients around magmatic rocks. The hydrothermal veins also exhibit sharp vertical mineralogical zoning historically interpreted to be lead rich at the top to more zinc rich at depth. The Flame & Moth deposit is composed of two fault offset segments of the Flame vein where the most abundant minerals are pyrite, galena, sphalerite, arsenopyrite, pyrrhotite, quartz, and siderite.

Exploration

Most past exploration work in the Keno Hill district was conducted as support to the mining activities until the mines closed in 1989. This historical work involved surface and underground drilling designed to explore areas surrounding the main underground working areas.

The current exploration conducted by Alexco is the first comprehensive exploration effort in the district since 1997. The first holes were drilled in the Flame & Moth area in 2010, targeting the Flame & Moth veins at depth, below an area with a historical shallow open pit resource and minor historical production. Results of this drilling were sufficiently encouraging to continue exploration in 2011 and 2012.

Total surface core drilling by Alexco in the Flame & Moth resource area including some holes not completed totalled 14 drill holes (3,986.19 m) in 2010, 32 drill holes (7,149.17 m) in 2011, and most recently in 2012 a total of 43 holes (8,752.14 m), for a combined total of 89 drill holes (19,887.50 m).

Sampling Method, Approach and Analyses

Alexco implements industry best practice procedures for all aspects of the drilling, collar and down hole surveying, core description and sampling, sample preparation and assaying, and database management. Assay samples are collected from half core sawed lengthwise with sampling intervals honouring geological boundaries. Sample intervals vary from 0.1 to 1 m in visibly mineralized core with up to 3 m lengths used away from obviously mineralized material.

Alexco uses industry best-practice assaying protocols including the use of commercial certified control samples, sample blanks, and duplicates at an adequate frequency to monitor the accuracy of the laboratories: ALS in North Vancouver, BC, and AGAT Laboratory of Mississauga, ON, both of which are accredited under ISO-170025 by the Standards Council of Canada. Assay samples were dispatched for preparation and assaying using adequate security protocols. All samples were prepared using standard preparation protocols. Each sample was assayed for gold by fire assay and atomic absorption spectrometry on 30 gram (g) sub-samples and for a suite of between 27 and 48 elements (including silver, lead, and zinc) by four acid digestions and either inductively coupled plasma atomic emission spectroscopy or mass spectroscopy on 0.5 g sub-samples. Elements exceeding concentration limits were re-assayed using methods suitable for high concentrations.

Data Verifications

SRK (2012) reviewed the analytical quality control data produced by Alexco for the 2010 to 2011 core drilling at Flame & Moth deposit and concluded that Alexco personnel used diligence in monitoring quality control data, investigated potential failures, and took appropriate corrective measures when required for the collected data. The quality control data collected by Alexco in 2010 and 2011 was considered comprehensive and the final, in some cases replicated, assay results delivered by ALS and AGAT Labs were generally reliable for the purpose of resource estimation.

In 2012, exactly the same procedures and protocols were used.

Mineral Processing and Metallurgical Testing

Metallurgical testing is underway on the Flame & Moth deposit; however it has been assumed that the mineralization found within the deposit will have similar metallurgical characteristics to the Bellekeno deposit now being mined by Alexco.

Alexco's Keno Hill district mill located near Keno City currently processes output from the Bellekeno mine, and may in the future process output from other District mine sources. It is not currently determinable if resources mined from Flame & Moth would or even could be processed through the District Mill. Until metallurgical testing has been carried out, it is not determinable if the existing District Mill would be suitable for processing resources from Flame & Moth. Furthermore, until mining plans have been developed for Flame & Moth it is also not determinable if the District Mill will have sufficient capacity to process Flame & Moth mine output.

Mineral Resource Estimates

The Flame & Moth resources were estimated using Isatis block modelling software in multiple passes in 5 by 5 by 3 m blocks by inverse distance squared. Grade estimates were based on capped 1 m composited assay data. Capping levels for silver were set to 3,000 grams per tonne (g/t). Lead and zinc were capped at 15% and 20% respectively for both veins. Gold grades were not capped. Blocks were classified as Indicated mineral resources if at least two drill holes and six composites were found within a 60 m by 60 m search ellipse. All other interpolated blocks were classified as Inferred mineral resource.

Table i below summarizes the mineral resources estimated for the Flame & Moth deposit as of January 30, 2013.

Table i: Mineral Resource Statement* for the Flame & Moth deposit, January 30, 2013.

Class	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)
Indicated**	1,378,000	516	0.42	1.72	5.70
Inferred**	107,000	313	0.27	0.86	4.21

* Mineral resources are not mineral reserves and do not have demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates.

** Reported at an NSR cut-off of $185 (0.96 USD = 1 CAD)/tonne using consensus long term metal prices (US$) and recoveries developed for the nearby Bellekeno deposit (Ag US$24.00/oz, recovery 96%; Pb US$ 0.85/lb, recovery 97%; Zn US$ 0.95/lb, recovery 88%; Au US$ 1,400/oz, recovery 72%). For all veins, Ag grades capped at 3,000 g/t; Pb and Zn capped at 15% and 20% respectively; Au grades not capped.

Conclusion and Recommendations

Between 2010 and 2012, Alexco conducted three drilling programs on its Flame & Moth property in the Keno Hill district, located in Central Yukon Territory. The drilling on the Flame & Moth deposit successfully outlined a significant polymetallic silver deposit in an area of limited historical exploration and production.

The mineralized Flame Vein system identified to date comprises two broadly north-northeast striking, southeast dipping vein segments - the Christal Zone and the Lightning Zone, offset by the northwest striking Mill Fault. The Christal Zone has a minimum drill defined strike length of 280 m with a depth of 300 m, while the Lightning Zone extends 280 m in length and up to 350 m in depth.

The mineral resources presented in this report represent an updated disclosure of the mineral resources initially disclosed by SRK on 15 June 2012 (SRK 2012) for the Flame & Moth deposit by Alexco.

The mineral resource for the Flame & Moth deposit, at a net smelter return (NSR) cut-off of $185/tonne includes 1,378,000 tonnes at an average grade of 516 g/t silver classified as Indicated

mineral resources and 107,000 tonnes at an average grade of 313 g/t silver classified as Inferred mineral resources.

It is recommended that Alexco continues exploration of the Flame Vein beyond the resource areas. It is also recommended that Alexco continues ongoing geotechnical, mineralogical and metallurgical data collection and baseline environmental studies in preparation for a preliminary economic assessment. The total cost for the recommended exploration and development program is estimated at $1.26 M.

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List of Abbreviations

Unit or Term	Abbreviation
Canadian Institute of Mining & Metallurgy	**CIM**
centimetres	**cm**
Degrees Celsius	**^{o}C**
Dollars (Canadian)	**$ or C$**
Dollars (US)	**US$**
grams	**g**
grams per tonne	**g/t**
kilograms per tonne	**kg/t**
kilometres	**km**
metres	**m**
millimetres	**mm**
Million / mega (10^{6})	**M**
Million years	**My**
National Instrument 43-101	**NI 43-101**
National Topographic Service	**NTS**
Net Smelter Return	**NSR**
North American datum	**NAD**
Ounce per ton	**opt**
Ounce per tonne	**oz/t**
specific gravity	**SG**
ton (2000 lbs)	**ton**
tonne (1000 kg)	**t**
tonne per day	**tpd**
Year	**yr**

1 Introduction

This technical report summarizes an updated mineral resource estimate produced by Alexco Resource Corp. (Alexco) for the Flame & Moth deposit located on the Flame & Moth property, one of several polymetallic silver-lead-zinc deposits occurring in the historic Keno Hill silver-lead district, near Mayo, Yukon Territory.

The mineral resource models were constructed by David Farrow, P.Geo (BC) of Geostrat Consulting Services Inc., during the first quarter of 2013 from drilling information acquired by Alexco between 2010 and 2012. Mineral resources were classified as Indicated and Inferred mineral resources following the CIM Definition Standards for Mineral Resources and Mineral Reserves (December 2005) guidelines. The report was prepared following the guidelines of the Canadian Securities Administrators National Instrument 43-101 and Form 43-101F1, and in conformity with generally accepted CIM “Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines”.

The report was compiled by David Farrow and Alan McOnie with assistance from Melanie Roberts of Alexco. The information contained in this report was provided by Alexco and the mineral resources were estimated by Mr. Farrow.

2 Reliance on other Experts

For verification of land title and tenure information as summarized in Section 3 of this report, Alexco has relied on MacDonald & Company as expressed in a legal opinion provided to Alexco on January 28, 2013. The reliance applies solely to the legal status of the rights disclosed in Section 3 below.

Alexco has no knowledge of litigations potentially affecting the Flame & Moth property.

3 Property Description and Location

The Flame & Moth property is located in the Mayo Mining District approximately 350 km north of Whitehorse, Yukon Territory, within the Keno Hill mining district (Figure 3.1). Mayo is accessible from Whitehorse via a 460 km all weather road and by air via the Mayo airport. A gravel road connects Mayo to the project area. The area is covered by National Topographic Service (NTS) map sheet 105M/14. Alexco currently maintains a land position at the Flame & Moth property (Figure 3.2) comprising 42 surveyed quartz mining leases and 14 quartz mining claims (Figure 3.3). The property is approximately 1.2 km west of Keno City adjacent to the Alexco District Mill and can be accessed from both the Duncan Creek Road and the Silver Trail Highway.

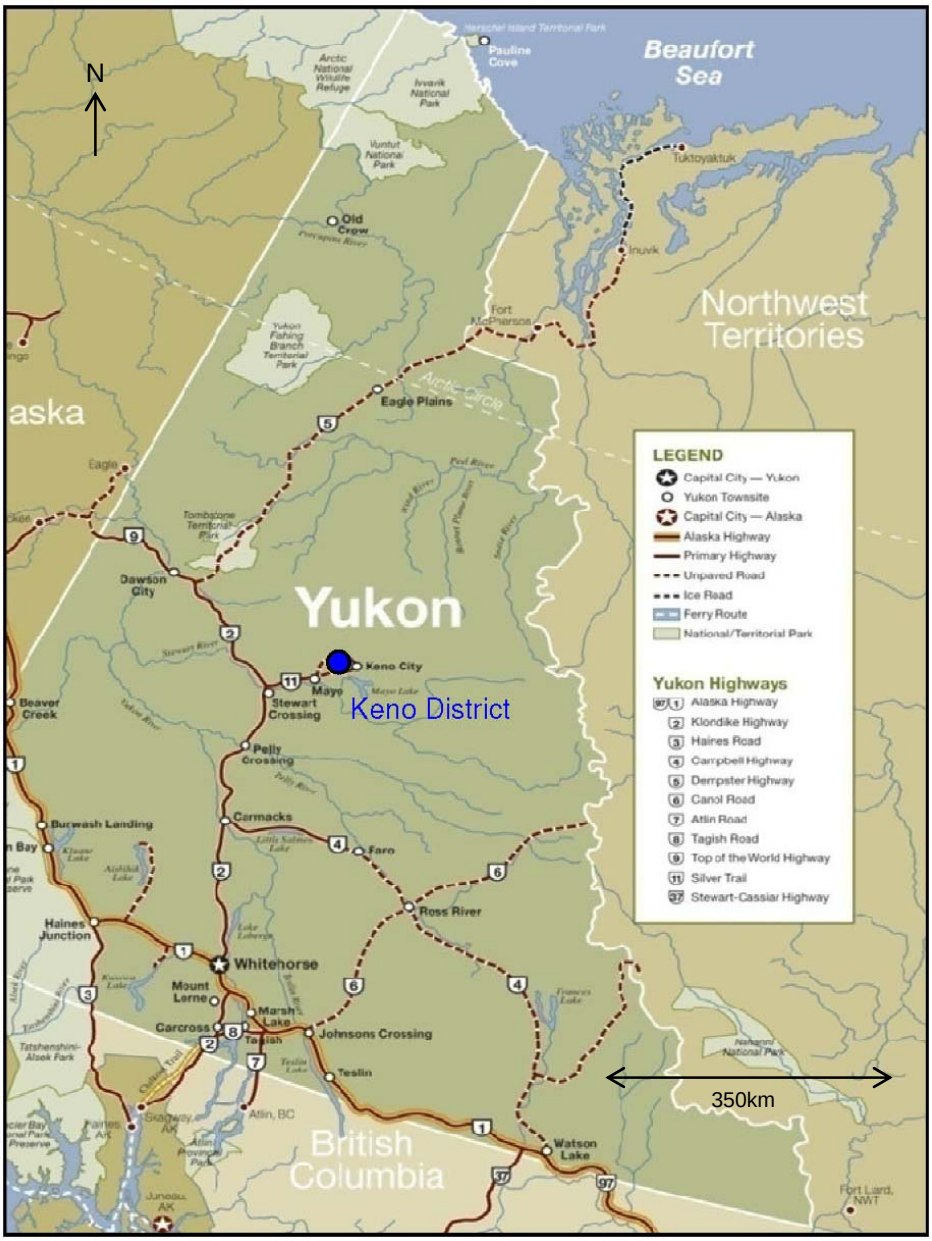


Figure 3.1: Keno District location map

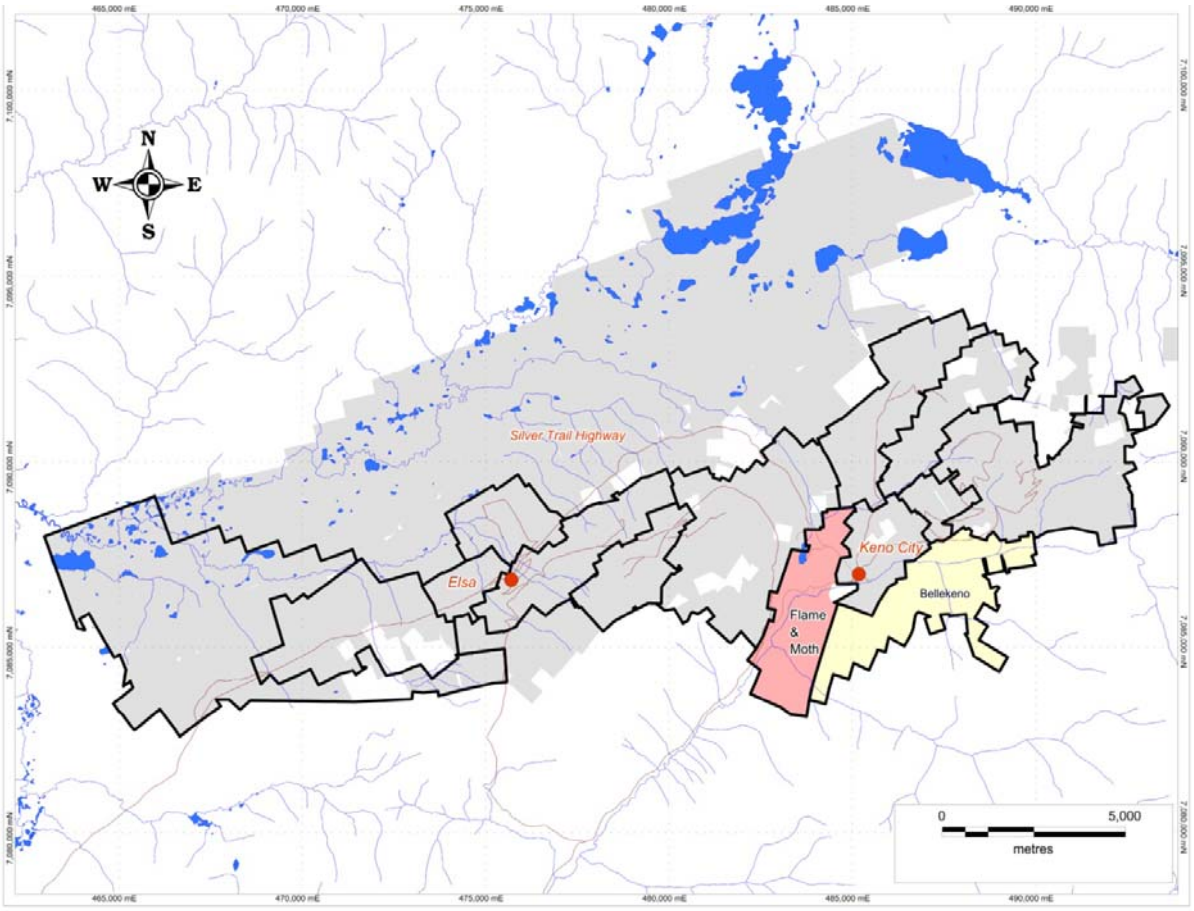


Figure 3.2: Flame & Moth Property location map

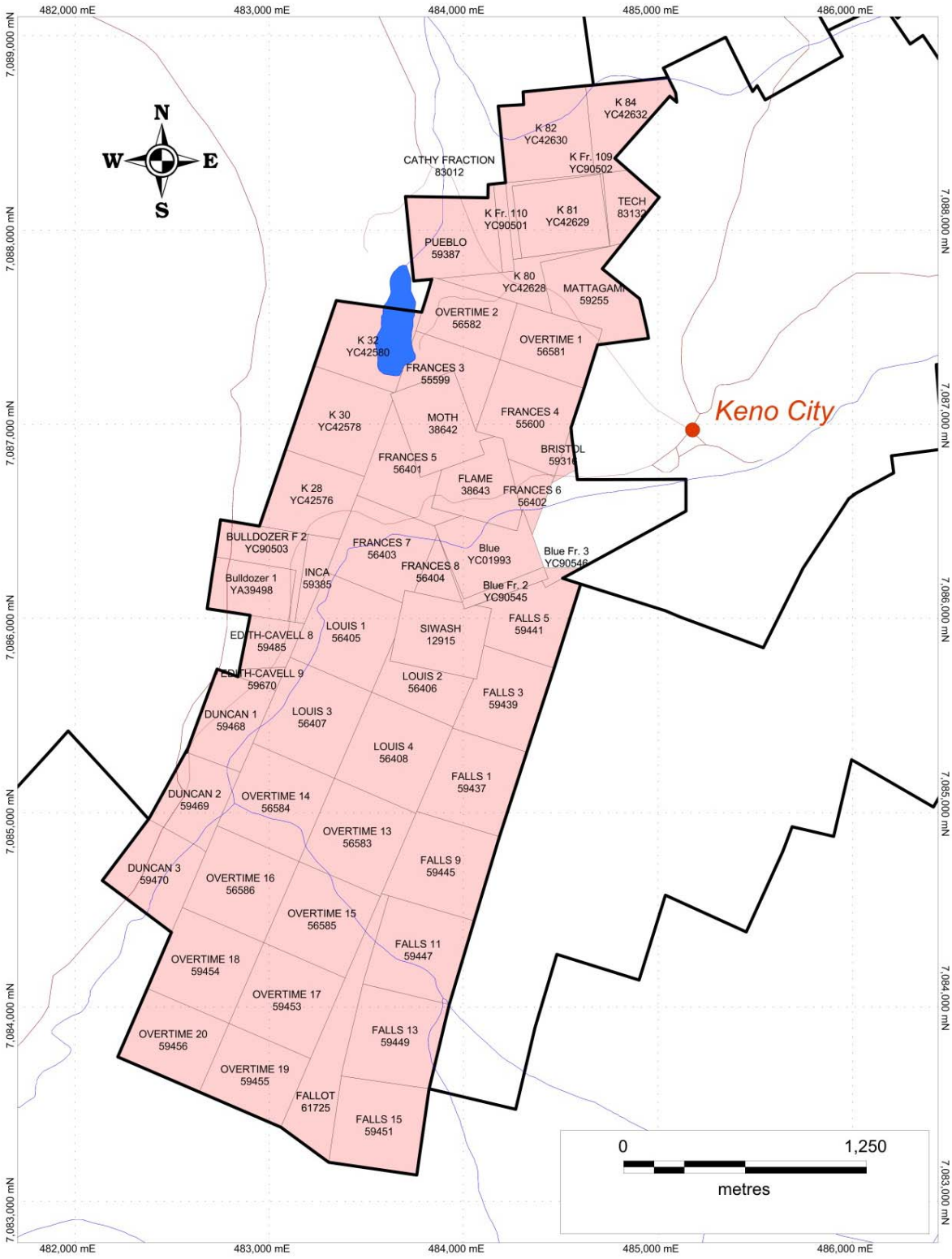


Figure 3.3: Flame & Moth Property claim map (from Mining Recorder 4 March 2013)

The Flame & Moth property is centred at Latitude 63.9023 degrees north; Longitude 135.334 degrees west. The mineral resources for the Flame & Moth prospect reported herein are located on the Moth, Flame, Frances 5, and Frances 7 quartz mining leases and the Blue Claim.

Mineral exploration in the Keno Hill district was initially permitted under the terms and conditions set out by the Yukon Government in the Class III Quartz Mining Land Use Permit – LQ00186, issued on July 5, 2006, and valid until July 4, 2011. Alexco subsequently obtained a Class IV Quartz Mining Land Use Permit – LQ00240 on June 17, 2008. The two permits were amalgamated on December 8, 2008, under LQ00240, which is valid until June 16, 2018.

The mineral resources for the Flame & Moth deposit reported herein are located on the Flame & Moth property comprising the Quartz mining claims and leases listed in Table 3.1.

Table 3.1: Flame & Moth Property Claims and Leases

Claim Label	Quartz Claim	Grant Number	Lease Number	Owner Name	Expiry Date (YYYMMDD)
Blue Fr. 2	184983409	YC90545		Alexco Exploration Canada Corp. - 100%	20161231
Blue Fr. 3	184983417	YC90546		Alexco Exploration Canada Corp. - 100%	20161231
Blue	185203956	YC01993		Alexco Exploration Canada Corp. - 100%	20171231
BULLDOZER F 2 *	185242105	YC90503		Alexco Exploration Canada Corp. - 100%	20171231
K Fr. 110 *	185243121	YC90501		Alexco Exploration Canada Corp. - 100%	20130910
K Fr. 109 *	185243122	YC90502		Alexco Exploration Canada Corp. - 100%	20130910
K 82	184949805	YC42630		Alexco Keno Hill Mining Corp. - 100%	20171215
K 32	184981291	YC42580		Alexco Keno Hill Mining Corp. - 100%	20171215
K 80	185041249	YC42628		Alexco Keno Hill Mining Corp. - 100%	20171215
K 84	185171445	YC42632		Alexco Keno Hill Mining Corp. - 100%	20171215
K 30	185188467	YC42578		Alexco Keno Hill Mining Corp. - 100%	20171215
K 81	185192206	YC42629		Alexco Keno Hill Mining Corp. - 100%	20171215
K 28	185219000	YC42576		Alexco Keno Hill Mining Corp. - 100%	20171215
FLAME	184946921	38643	4175	Elsa Reclamation & Development Company Ltd. - 100%	20161129
MOTH	185060816	38642	4176	Elsa Reclamation & Development Company Ltd. - 100%	20161208
SIWASH	184965221	12915	NM00040	Elsa Reclamation & Development Company Ltd. - 100%	20200813
OVERTIME 1	185100782	56581	NM00187	Elsa Reclamation & Development Company Ltd. - 100%	20230209
OVERTIME 2	185234482	56582	NM00188	Elsa Reclamation & Development Company Ltd. - 100%	20230209
FRANCES 3	185048538	55599	NM00261	Elsa Reclamation & Development Company Ltd. - 100%	20240109
FRANCES 4	184946296	55600	NM00262	Elsa Reclamation & Development Company Ltd. - 100%	20240109
FRANCES 5	185075044	56401	NM00263	Elsa Reclamation & Development Company Ltd. - 100%	20240109
FRANCES 6	185217460	56402	NM00264	Elsa Reclamation & Development Company Ltd. - 100%	20240109
FRANCES 7	185079127	56403	NM00265	Elsa Reclamation & Development Company Ltd. - 100%	20240109
FRANCES 8	184981746	56404	NM00266	Elsa Reclamation & Development Company Ltd. - 100%	20240109
MATTAGAMI	184948019	59255	NM00271	Elsa Reclamation & Development Company Ltd. - 100%	20240118
INCA	185098453	59385	NM00272	Elsa Reclamation & Development Company Ltd. - 100%	20240118
BRISTOL	184964316	59316	NM00287	Elsa Reclamation & Development Company Ltd. - 100%	20240627
DUNCAN 1	185178150	59468	NM00367	Elsa Reclamation & Development Company Ltd. - 100%	20250430
DUNCAN 2	184983337	59469	NM00368	Elsa Reclamation & Development Company Ltd. - 100%	20250430

DUNCAN 3	185120417	59470	NM00369	Elsa Reclamation & Development Company Ltd. - 100%	20250430
EDITH-CAVELL 9	185201218	59670	NM00386	Elsa Reclamation & Development Company Ltd. - 100%	20250522
LOUIS 1	185216868	56405	NM00433	Elsa Reclamation & Development Company Ltd. - 100%	20251126
LOUIS 3	184960757	56407	NM00434	Elsa Reclamation & Development Company Ltd. - 100%	20251126
LOUIS 4	185101559	56408	NM00435	Elsa Reclamation & Development Company Ltd. - 100%	20251126
OVERTIME 13	185001176	56583	NM00439	Elsa Reclamation & Development Company Ltd. - 100%	20251126
OVERTIME 14	185073764	56584	NM00440	Elsa Reclamation & Development Company Ltd. - 100%	20251126
OVERTIME 15	184998402	56585	NM00441	Elsa Reclamation & Development Company Ltd. - 100%	20251126
OVERTIME 16	185042691	56586	NM00442	Elsa Reclamation & Development Company Ltd. - 100%	20251126
OVERTIME 17	185138668	59453	NM00445	Elsa Reclamation & Development Company Ltd. - 100%	20251126
OVERTIME 18	185150696	59454	NM00446	Elsa Reclamation & Development Company Ltd. - 100%	20251126
OVERTIME 19	185163926	59455	NM00447	Elsa Reclamation & Development Company Ltd. - 100%	20251126
OVERTIME 20	184964701	59456	NM00448	Elsa Reclamation & Development Company Ltd. - 100%	20251126
FALLS 1	184964368	59437	NM00510	Elsa Reclamation & Development Company Ltd. - 100%	20261101
FALLS 3	184946783	59439	NM00512	Elsa Reclamation & Development Company Ltd. - 100%	20261101
FALLS 5	185007122	59441	NM00514	Elsa Reclamation & Development Company Ltd. - 100%	20261101
FALLS 9	184964700	59445	NM00518	Elsa Reclamation & Development Company Ltd. - 100%	20261101
FALLS 11	185098466	59447	NM00520	Elsa Reclamation & Development Company Ltd. - 100%	20261101
FALLS 13	185111453	59449	NM00522	Elsa Reclamation & Development Company Ltd. - 100%	20261101
FALLS 15	184964702	59451	NM00524	Elsa Reclamation & Development Company Ltd. - 100%	20261101
FALLOT	185153355	61725	NM00525	Elsa Reclamation & Development Company Ltd. - 100%	20261101
PUEBLO	184993697	59387	NM00569	Elsa Reclamation & Development Company Ltd. - 100%	20271102
CATHY FRACTION	185088324	83012	NM00594	Elsa Reclamation & Development Company Ltd. - 100%	20271102
LOUIS 2	185138102	56406	NM00596	Elsa Reclamation & Development Company Ltd. - 100%	20271126
EDITH-CAVELL 8	184964571	59485	NM00597	Elsa Reclamation & Development Company Ltd. - 100%	20271126
TECH	184984680	83132	NM00623	Elsa Reclamation & Development Company Ltd. - 100%	20300228
Bulldozer 1	184983323	YA39498		Elsa Reclamation & Development Company Ltd. - 100%	20171231

* Status Pending Staked in 2012

4 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

The Flame & Moth deposit is included within the historic Keno Hill mining camp, located in central Yukon Territory (Figure 3.1). The closest town is Mayo, located on the Stewart River, approximately 55 km to the south. Mayo is accessible from Whitehorse via a 460 km all weather road and is also serviced by Mayo airport. A gravel road leads from Mayo to the project area. Historically, the mining camp was linked by river route to the outside world. The main link since 1950 is the all-weather highway, which was also used for transporting the ore.

The central Yukon Territory is characterized by a sub-arctic continental climate with cold winters and warm summers. Average temperatures in the winter are between -15 and -20°C but can reach -60°C. The summers are moderately warm with average temperatures in July around 15°C. Exploration is generally limited to the summer months although mining work can be carried out year round.

Because of its northern latitude, winter days are short; north-facing slopes experience ten weeks without direct sunlight around the winter solstice. Conversely, summer days are very long, especially in early summer around the summer solstice. Annual precipitation averages 28 centimetres (cm); half of this amount usually falls as snow, which starts to accumulate in October and remains until May or June.

Three phase power is available in many parts of the district as well as limited telephone service. A large number of roads constructed for past mining operations are still serviceable. The old company town of Elsa, located toward the western end of the district, comprises several buildings that are currently being used for storage, maintenance work, housing, and offices. The main camp and kitchen are located at Flat Creek, just west of Elsa.

The landscape around the Flame & Moth Project area is characterized by rolling hills with a local relief of up to 1,845 m on Keno Hill. Slopes are gentle except on the north sides of Keno Hill and Sourdough Hill (Figure 4.1).

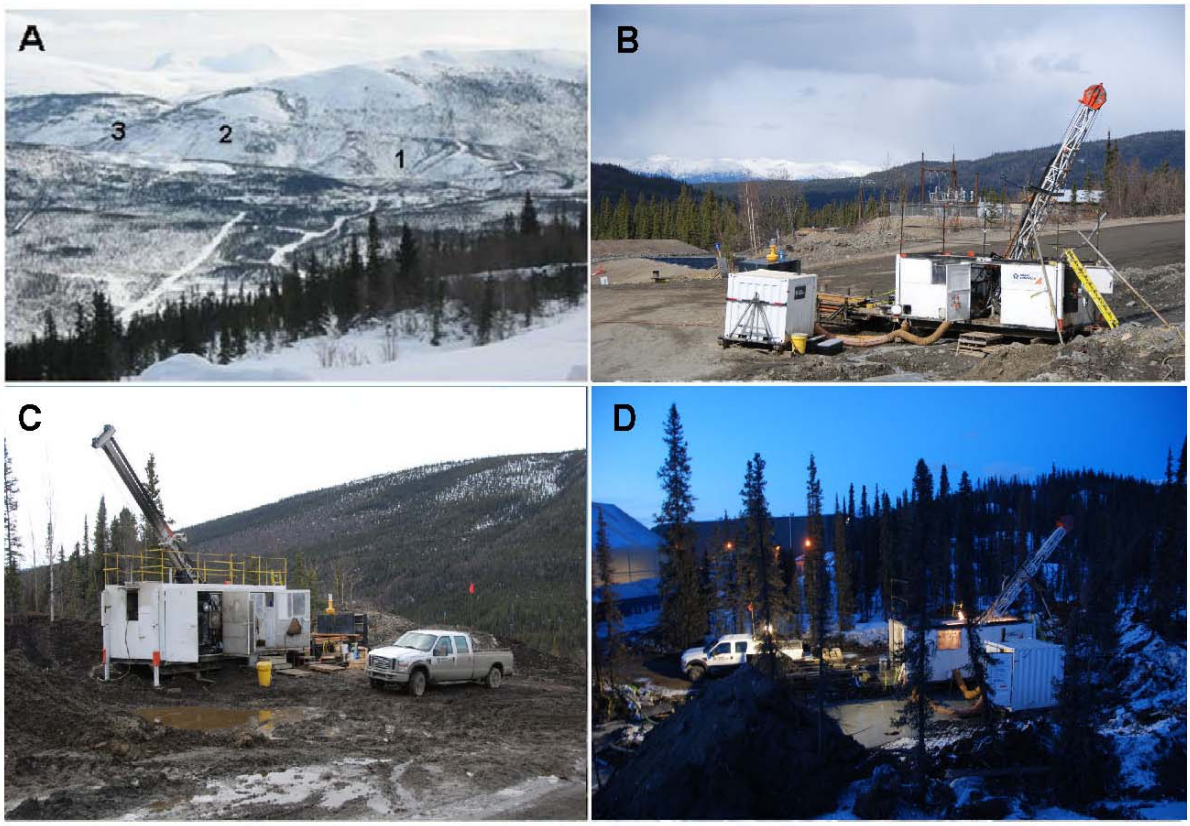


Figure 4.1: Typical landscape in the Keno Hill District.

Photo A: Taken from Galkeno 300, looking southeast at (1) Keno City and Flame & Moth area, (2) Lightning Creek Valley, (3) Bellekeno 600 adit is just out of sight from this view angle; Photo B: View of drill rig on south side of Duncan Creek Road, looking north at District Mill; Photo C: Drill site looking west at Galena Hill and Photo D: Drill site just southeast of District Mill infrastructure.

5 History

The history of the Keno Hill mining camp is described in Cathro (2006); the information presented in this section draws heavily from that source.

The Keno Hill mining camp area has a rich history of exploration and mining dating back to the beginning of the 1900s. Earliest prospectors had been working the area around Mayo for gold, especially after the Klondike gold rush of 1898. The first silver was found in 1901. However, interest was low due to the prospector's interest in gold alone despite an assay from 1905 yielding more than ten kilograms per ton (kg/t) silver. Small scale mining finally commenced in 1913 with an initial shipment of 55 ton of ore from the Silver King deposit to a smelter in San Francisco. Due to the shallow depth of the deposit and the First World War, interest in the area had dwindled by 1917.

The end of the First World War and high silver prices led to renewed and ultimately successful exploration activity in the area with the Yukon Gold Company and later Keno Hill Limited as the first truly commercial operators. Success at the Keno Mine led to a staking rush, resulting in the discovery of a number of rich deposits.

Claim staking and prospecting began at Flame & Moth in 1920. By 1923, numerous surface workings and a 13 m inclined shaft had been sunk with a 4.6 m crosscut developed from it on the Moth claim. It is believed that a second shaft to a depth of 30.5 m was also sunk in this vicinity. An adit was also developed along 12.2 m on the Frances 7 claim. Production for this period is not known.

Subsequent to this early work, little or nothing appears to have happened on the property until the acquisition by United Keno Hill Mines (UKHM) just prior to 1950. A 27.4 m inclined shaft was sunk to a vertical depth of 21.3 m along the footwall of what was likely the Moth vein. A crosscut, through the zone 13.7 m below surface and 42.7 m of drifting 22.9 m below surface, identified quartz-carbonate vein hosted mineralization averaging 10 opt Ag, 1.6% Pb, 5% Zn developed in quartzite and greenstone along a zone approximately 30.5 m long and up to 9.1 m wide. Thirteen horizontal diamond drill holes totalling 193 m were drilled from the drift, but the core recovery was poor.

During 1954 and 1955, mineralization of pyrite and minor arsenopyrite was reported up to 240 m along strike to the north. This was explored by bulldozer trenching, soil sampling, and ground geophysics, but was unsuccessful because of the depth of gravel overburden, reported to a 12 m depth.

UKHM returned to Flame & Moth in 1961 with a program of soil sampling and ground geophysics (self-potential, magnetics, Ronka EM), and drilled five surface diamond drill holes located around the shaft to test the mineralization at depth. The soil samples and geophysics yielded little information, and no veining was intercepted in the drilling.

In 1965, 28 vertical overburden holes were drilled, along with another attempt at soil sampling and geophysics. A proposal to excavate an open pit was first made at this date, based on a calculated resource of 4,030 tons grading 16.7 opt Ag, 1.4% Pb, and 5.6% Zn. The pit would have reached to 18.3 m below the surface.

In 1974, four lines of angled overburden drill holes totalling 989 m were drilled for extensions along a 180 m strike length, with limited success due to deep overburden and broken ground conditions, although a weakly mineralized structure was located at 76 m in the footwall of the main vein.

More overburden drilling was completed along strike in 1984 and four diamond drill holes were sited to test the downward projection of the known mineralization. The deeper drilling (60 to 90 m below surface) returned only very low values from a wide but diffuse pyritic vein zone. A small amount of ore (406 tons at 20.40 opt Ag, 1.39% Pb, 0.72% Zn) was sent to the mill, which may have come from vein material exposed during stripping of overburden in preparation for the open pit development. In May of 1987, a review and recalculation of the open pit resource resulted in an estimated open pit resource of 13,915 tons at 20.4 opt Ag and 4.0% Pb to a depth of 24.4 m. The key assumptions used to estimate this historical estimate are not known. The historical resource estimate does not use mineral resource categories as stipulated in NI 43-101 and the historical estimate is no longer relevant as it is being superseded by the mineral resource estimate presented in this report. The historical estimate is only stated here for completeness.

Total production at the Flame & Moth property is listed (Table 5.1) as 1,590 tons grading 18.3 opt Ag, 1.1% Pb, and 0.9% Zn (Cathro 2006). It is assumed most of this figure came from the underground work in the 1950s.

Table 5.1: Past production records for Flame & Moth property.

Mine	tons	Ag opt	Pb (%)	Zn (%)	Ag ounces	Pb pounds	Zn pounds
Flame & Moth	1,590	18.3	1.1	0.9	29,120	35,363	28,895

UKHM closed operations permanently in 1989. Between 1990 and 1998, the Dominion Mineral Resources and Sterling Frontier Properties Company of Canada Limited (Dominion), after acquiring 32% interest in UKHM, carried out extensive reclamation, remediation, and exploration work at the Bellekeno, Husky Southwest, and Silver King mines, in an effort to reopen operations. Lack of financing forced Dominion to abandon its rights, in effect reverting the rights back to UKHM. Environmental liabilities and site maintenance costs drove UKHM into bankruptcy and the Federal Government inherited the assets.

In June 2005, Alexco was selected as the preferred purchaser of the assets of UKHM by PricewaterhouseCoopers Inc., the court appointed interim receiver and receiver and receiver-manager of Keno Hill. In February 2006, following lengthy negotiations with the Federal and Territory Governments, the Supreme Court of the Yukon Territory approved Alexco's purchase of UKHM's assets through Alexco's wholly owned subsidiary, Elsa Reclamation & Development Company Ltd. (ERDC).

Interim closing of the Keno Hill transaction was completed on April 18, 2006, and an agreement governing management and future reclamation of the Keno Hill district was signed. Under the Keno Hill Subsidiary Agreement, ERDC is indemnified against all historical liability, has property access for exploration and future development, and is not required to post security against pre-existing liabilities. ERDC will also be reimbursed for its future environmental reclamation activities - estimated at more than C$50M - while itself contributing C$10M to the clean-up of the Keno Hill district. ERDC has also assumed responsibility for ongoing environmental care and maintenance of the site under

contract to the Yukon Territory Government, and is actively conducting a baseline environmental assessment and site characterization program.

To finalize the Keno Hill acquisition, ERDC applied for and received a water license in November 2007. Upon receipt of the license, ERDC received clear title to surface and subsurface claims, leases, free-hold land, buildings, and equipment at Keno Hill.

During 2006, Alexco embarked on an aggressive exploration program in the Keno Hill district and as a result the Bellekeno Mine was placed into production in 2011. Drilling by Alexco in the Flame & Moth resource area totalled 14 surface core drill holes (3,986.19 m) in 2010, 32 surface core holes (7,149.17 m) in 2011 and 43 surface core holes (8,753.14 m) in 2012.

6 Geological Setting and Mineralization

6.1 Regional Geology

The Keno Hill mining camp is located in the northwestern part of the Selwyn Basin in an area characterized by the Robert Service Thrust Sheet and the Tombstone Thrust Sheet; these thrust sheets are overlapping and trend northwesterly. The area is underlain by Upper Proterozoic to Mississippian rocks that were deposited in a shelf environment during the formation of the northern Cordilleran continental margin (Figure 6.1). A compressional regime that possibly existed during the Jurassic, but certainly during the Cretaceous, produced thrusts, folds, and penetrative fabrics of various scales. Early large scale deformation (D_1) produced recumbent folds, resulting in local structural thickening of strata. A second (D_2), and possibly third ($D_{3),}$ deformational event produced gentle southwesterly plunging syn- and antiform pairs (Roots, 1997). The dominant structural fabric (foliation) is essentially axial planar to the D_1 recumbent folds.

The Robert Service Thrust Sheet lying to the south of the district is composed of Late Proterozoic to Cambrian sandstone, locally with interbedded limestone and argillite; a Cambrian to Middle Devonian succession of siltsone, limestone and chert, and unconformably overlying Upper Devonian argillite, chert, and chert pebble conglomerate.

The Tombstone Thrust Sheet to the north consists of Devonian phyllite, felsic meta-tuffs, and metaclastic rocks, overlain by Carboniferous quartzite. This latter rock unit is locally thickened due to folding and/or thrusting and hosts the silver-lead-zinc mineralization of the Keno Hill camp.

Intrusive rocks formed during four episodes of plutonism. During the Late-Triassic, gabbro to diorite formed sills of various sizes in the Devonian and Mississippian rocks of the Tombstone Thrust Sheet. A second phase of plutonism took place around 92 million years (My) ago in the early Cretaceous and resulted in widespread and voluminous Tombstone intrusions of commonly granitic to granodioritic composition. Cretaceous fine-grained lamprophyre dated at 89 My occurs as metre-scale dykes and sills. The youngest intrusions are the McQuesten intrusive suite that occurred around 65 My ago in the Upper Cretaceous and resulted in the formation of peraluminous megacrystic potassium feldspar granite.

In addition to the Keno Hill silver mining camp, where polymetallic veins were exploited, the area hosts a number of occurrences and showings of tungsten, copper, gold, lead, zinc, antimony, and barite.

Tin, tungsten, and molybdenite occurrences are possibly related to the suite of Cretaceous intrusion, whereas lead, zinc, and barite occur in stratiform calcareous sedimentary rocks of early to mid-Paleozoic age typical of sediment-hosted deposits.

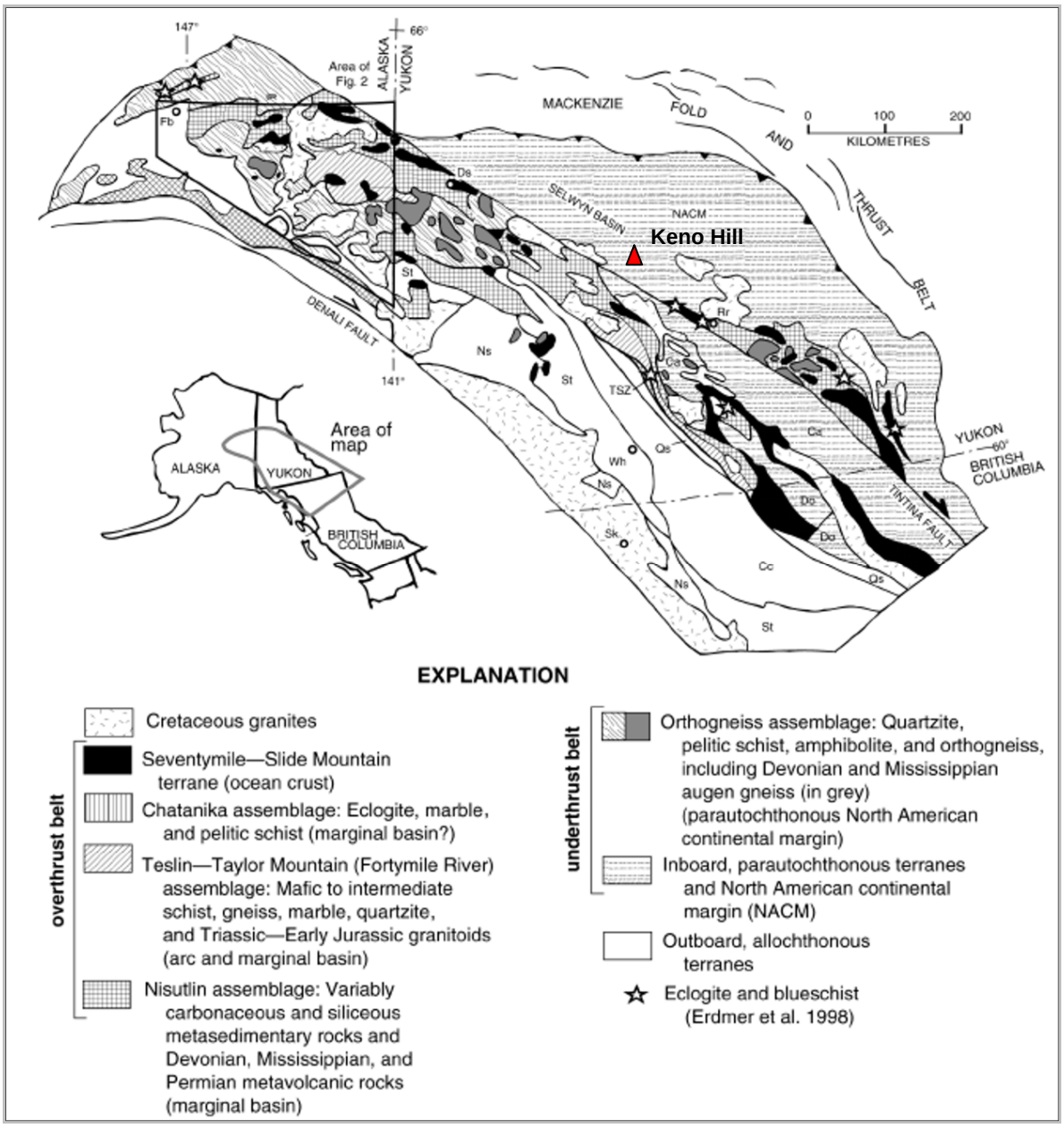
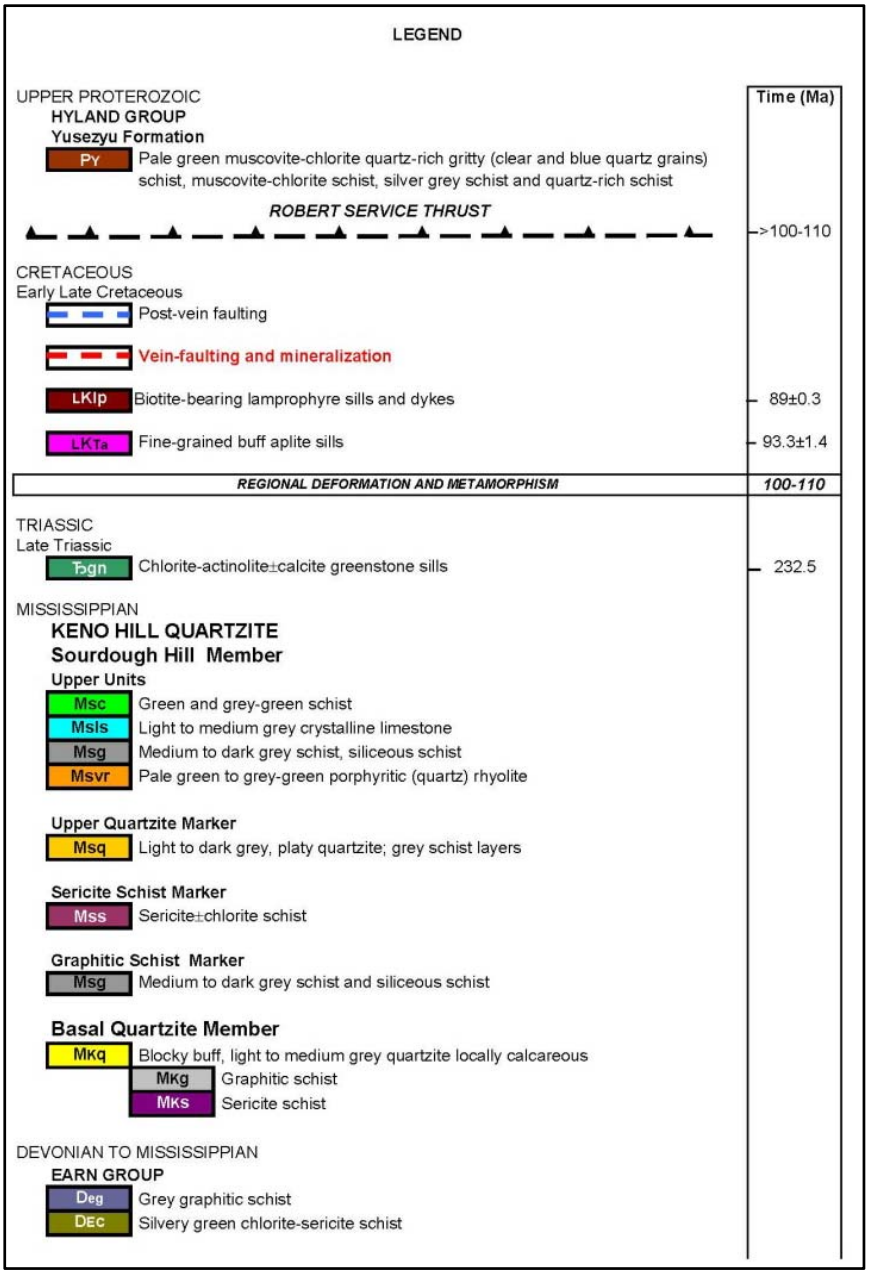


Figure 6.1: General Geology of the Selwyn Basin Area (from Dusel-Bacon et al. 2002)

6.2 District Geology

The district geology is dominated by the Mississippian Keno Hill Quartzite. This is composed of the Basal Quartzite Member and conformably overlying Sourdough Hill Member. The unit is overthrust in the south by the Upper Proterozoic Hyland Group and underlain in the north by the Devonian Earn Group (McOnie and Read 2009) as shown in Table 6.1.

Table 6.1: Keno Hill district stratigraphy



The Yusezyu Formation of the Precambrian Hyland Group is separated by the Robert Service Thrust Fault and, as seen in the Duncan Creek area, comprises greenish quartz-rich chlorite-muscovite schist with locally clear and blue quartz-grain gritty schist.

The Earn Group formerly mapped as the “lower schist formation” (Boyle, 1965) is typically composed of recessive weathering grey graphitic schist and green chlorite-sericite schist with an upper siliceous graphitic schist found locally.

Within the Keno Hill Quartzite, the Basal Quartzite Member is up to 1,100 m thick and comprises thick to thin bedded quartzite and graphitic phyllite (schist). This is the dominant host to the silver mineralization in the Keno Hill district. The overlying Sourdough Hill Member, formerly mapped as the “upper schist formation” (Boyle, 1965) is up to approximately 1,050 m in thickness and comprises predominantly graphitic and sericitic phyllite, chloritic quartz augen phyllite, and minor thin limestone.

The Earn Group and Keno Hill Quartzite are locally intruded by Middle Triassic greenstone sills.

The sequence is intruded by quartz-feldspar aplite sills or dykes that are correlated with the 92 My Tombstone intrusive suite found elsewhere in the district.

The sequence was metamorphosed to greenschist facies assemblages during the Cretaceous regional deformation.

Three phases of folding are identified in the district. The two earliest phases consist of isoclinal folding with sub-horizontal, easterly or westerly trending fold axes with the later phase having a sub-vertical axial plane and moderate southeasterly trending and plunging fold axis. In the Keno Hill district, the first phases of folding formed three structurally dismembered isoclinal folds of which the Basal Quartzite Member outlines two synforms at Monument and Caribou Hills, while the Flame & Moth Prospect is located on the limb of the third dismembered syncline between Galena Hill and Sourdough Hill.

Within the district, up to four main periods of faulting are recognized. The oldest fault set consists of south dipping foliation-parallel structures that developed contemporaneously with the first phase folding. The Robert Service Thrust Fault truncates the top of the Keno Hill Quartzite and sets the Precambrian schist of the Yusezyu Formation above the Mississippian Sourdough Hill Member.

The silver mineralization in the Keno Hill district is hosted by a series of northeasterly trending pre- and syn- mineral “vein faults” that display apparent left lateral normal displacement locally referred to as “longitudinal” veins that, depending on the competency of the host rock, can be up to 30 m wide with an anastomosing system of sub-veins. A related set of faults, known as “transverse faults” that strike north-northeast and dip moderately to the southeast, can reach up to five metres in thickness.

High angle cross faults, low angle faults, and bedding faults offset veins and comprise post-mineralization faults. Most commonly these comprise northwest striking cross faults recognized by offset veins that show apparent right-lateral displacement.

6.3 Flame & Moth Deposit Geology

Much of the Flame & Moth area is blanketed by a thick cover of fluvio-glacial overburden deposited on an irregular erosional surface that is in places up to 50 m in depth.

The mineralization occurs within the upper section of the Basal Quartzite Member of the Keno Hill Quartzite. The host rocks predominantly comprise medium to thick bedded quartzite with interbedded graphitic schist. Within this sequence, two distinctive horizons of sericite schist, up to 10 m in thickness, occur 65 m and 90 m respectively below the top of the unit. Up to five greenstone sills that may be up to 50 m in thickness are found within the quartzite sequence below these horizons (Figure 6.2).

The mineralized sequence is overlain by the Upper Quartzite, Sericite Schist and Graphitic Schist Marker Units of the Sourdough Hill Member that outcrop on the Duncan Creek Road and along Lightning Creek to the south of the area.

The sequence generally strikes to the east to east-southeast and dips moderately to the southwest.

The north-northeast striking Flame Vein developed in an environment of competency contrasts caused by juxtaposition of quartzite, schist, and greenstone along the left lateral Flame vein-fault that has now been traced by drilling along a strike length of approximately 600 m to a depth of at least 350 m. The structure dips moderately steeply to the east-southeast and, in the vicinity of the District Mill, is offset at surface by approximately 95 m of apparent right lateral oblique slip movement along the west-northwest trending post-mineral Mill Fault. The Mill Fault dips approximately 66° to the southwest with the mineralization in the hangingwall section referred to as the Lightning Zone and that in the footwall section referred to as the Christal Zone. The Christal Zone appears to be cut at its northern end by another smaller post-mineral fault, but any offset on this is not yet resolved.

In the Christal Zone, the Flame Vein has an average strike of 025° and an average dip of 66° southeast over a strike length of 280 m to a depth of 300 m. In the Lightning Zone, the Flame vein has an average strike of 027° with a dip of 62° southeast, and extends over a strike length of 280 m and to a depth of 350 m. Recent drilling in the upper part of the Lightning Zone has identified a mineralized hangingwall vein to the Flame Vein developed along about 130 metres strike length over 125 metres depth.

Geological modelling has shown that the historical workings were likely centred on the Moth Vein structure, located in the footwall of the newly discovered Flame Vein.

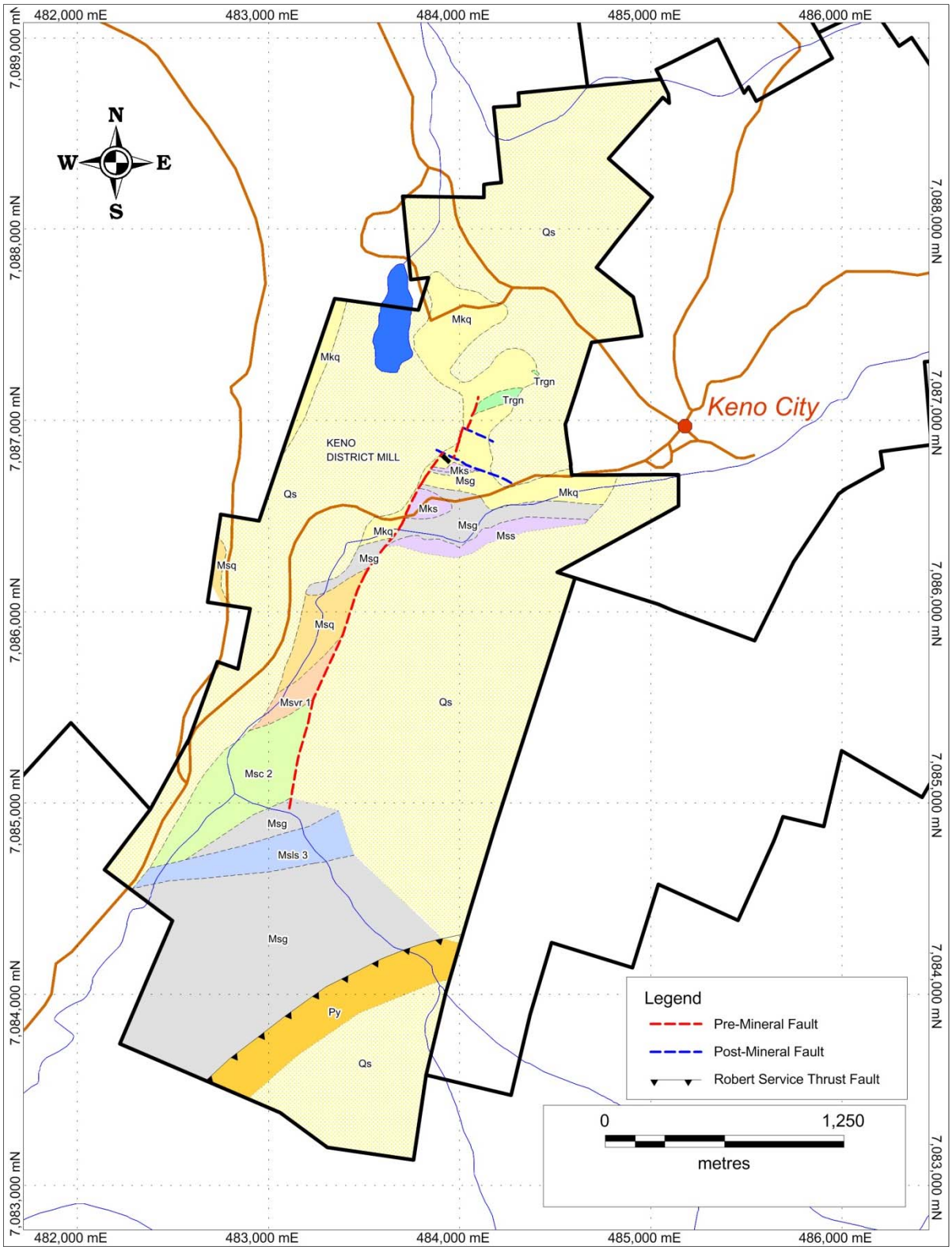


Figure 6.2: Geology of the Flame & Moth Property (stratigraphy detailed in Table 6.1). From Alexco, 2012

6.4 Mineralization

Summaries of the mineralogy of the Keno Hill District silver-lead-zinc mineralization can be found in Boyle (1965), Cathro (2006), Murphy (1997), and Roots (1997). Mineralization in the Keno Hill camp is of the polymetallic silver-lead-zinc vein type that typically exhibits a succession of hydrothermally precipitated minerals from the vein wall towards the vein center. However, at Keno Hill, multiple pulses of hydrothermal fluids, probably related to repeated reactivation and breccia formation along the host fault structures, have formed a series of vein stages with differing mineral assemblages and textures. Supergene alteration may have further changed the nature of the mineralogy in the veins. Much of the supergene zone may have been removed due to glacial erosion.

In general, common gangue minerals include (manganiferous) siderite and, to a lesser extent, quartz and calcite. Silver predominantly occurs in argentiferous galena and argentiferous tetrahedrite (freibergite). In some assemblages, silver is also found as native silver, in polybasite, stephanite, and pyrargyrite. Lead occurs in galena and zinc in sphalerite, which at Keno Hill can be either an iron-rich or iron-poor variety. Other sulphides include pyrite, pyrrhotite, arsenopyrite, and chalcopyrite.

Cathro (2006) suggested that the mineralized veins may exhibit a vertical zonation in mineralogy with a typical oreshoot displaying a vertical zoning from lead rich at the top to zinc rich at the bottom. He reported mineralogical changes to the mineralization with increasing depth from galena to galena-freibergite, to galena-freibergite-sphalerite-siderite, to sphalerite-freibergite-galena-siderite, to sphalerite-siderite, to siderite-pyrite-sphalerite that have been historically interpreted to indicate a silver-poor sphalerite-rich base to the economic mineralization. Historically, it was also believed that economic mineralization in the Keno Hill camp was restricted to a shallow zone of about 120 m thickness however the 370 m depth of production from the Hector-Calumet mine demonstrates that silver-rich veins may exist over much greater vertical intervals and that known veins exhibit exploration depth potential.

6.5 Flame & Moth Mineralization

In the area of interest for the current resource estimate, two main styles of the banded and locally brecciated mineralized veining are noted. An early phase comprises dominantly quartz gangue with abundant but irregular pyrite, sphalerite and arsenopyrite, while a later phase is siderite dominant with abundant sphalerite and irregular pyrite and galena development. Other minerals commonly observed include pyrrhotite and chalcopyrite, with trace amounts of the argentian tetrahedrite, pyrargyrite, jamesonite, boulangerite, and cassiterite identified in petrologic samples. The veining often displays multiple periods of brecciation and re-healing.

7 Deposit Types

The Keno Hill Mining camp has long been recognized as a polymetallic silver-lead-zinc vein district with characteristics possibly similar to other well-known mining districts in the world. Examples of this type of mineralization include the Kokanee Range (Slocan), British Columbia; Coeur d'Alene, Idaho; Freiberg and the Harz Mountains, Germany; and Príbram, Czech Republic.

The common characteristics of these locales are their proximity to crustal-scale faults and the occurrence in a package of monotonous clastic metasedimentary rocks, which have been intruded by plutons. Even though the mineralization may not be related to the intrusions, they may have acted as a heat source for hydrothermal circulation. Mineral precipitation occurred where metal-laden hydrothermal fluids, with a temperature of 250 to 300ºC, traveled through open fractures caused by a local tensional stress regime in an otherwise compressional environment and precipitated metals as pressure and temperature gradients changed.

The metals were likely leached from crustal rocks by hot circulating fluids and it is inferred that mineral deposition occurred at an average depth of about six kilometres. Mixing of hydrothermal fluid with meteoric fluid is common, as is boiling. Multiple fluid pulses may have resulted in a repetition of the mineral deposition sequence as well as recrystallization and modification of the existing mineral assemblage.

At Keno Hill, the largest accumulation of silver-lead-zinc mineralization occurred in structurally prepared competent rocks, such as the Basal Quartzite Member that could break with open spaces developed. Incompetent rocks, such as phyllites, would deform and produce fewer and smaller (if any) open spaces, limiting fluid flow and resulting mineral precipitation.

8 Exploration

Most past exploration work in the Keno Hill district was conducted in support of the mining activities until the mines closed in 1989. A good summary of the early exploration work is provided by Cathro (2006). This historical work involved surface and underground drilling designed to explore areas surrounding the main underground working areas. It is beyond the scope of this report to describe all historical exploration work completed in the Keno Hill district but that relating to the Flame & Moth prospect is described in Section 5.

The exploration conducted by Alexco is the first comprehensive exploration effort in the district since 1997. During the initial phase of Alexco's involvement at Keno Hill, a program of geologic data compilation, aero geophysical surveying (conducted by McPhar Geophysics), and surface diamond drilling was completed.

Past operator UKHM accumulated a large number of paper maps and documents relating to nearly 70 years of district mining, but the documentation and data were never assembled into a coherent database that could be used to decipher the geology on a district scale. Beginning in late 2005 and continuing through 2008, Alexco converted this historical data to digital form by scanning and data entry.

During 2006, Alexco embarked on an aggressive exploration program in the Keno Hill district. A district-wide surface geological mapping and structural study, started in 2008, has continued through the 2012 field season. Field mapping by McOnie and Read in 2009 identified the possible presence of two northeast trending vein faults thought to have movement upwards of 450 m based on the offset of local stratigraphy. In conjunction with review of the past exploration results on the property, this led to the generation of drill targets that were tested in 2010.

Aerial magnetic and electromagnetic surveys have been flown over the property and were successful in identifying hidden structures and covered stratigraphy.

During the 2010 drill program, a soil geochemical and a ground magnetic geophysical survey were completed over the Flame & Moth area. On the basis of drilling results obtained, a further 32 holes were collared at Flame & Moth in 2011 leading to the publication of the initial resource estimate (SRK,2012), and with followup drilling completed in 2012 that permits the estimation of this revised resource estimate.

9 Drilling

9.1 Historical Drilling

Historical drilling at Flame & Moth was predominantly shallow surface percussion overburden drill holes with 133 overburden holes totalling 4,044 m drilled on an average azimuth of 320°. Nine core holes totalling 731 m were drilled from surface and 13 holes totalling 193 m were drilled from underground. Drill recovery was generally poor, particularly in silver-lead-zinc mineralized zones, and core assays were restricted to mineralized zones.

Due to recovery issues for the core holes, lack of careful sampling techniques, and the open-hole nature of the percussion drilling, drilling data from these programs were not deemed reliable for use in the resource calculation, although the data were used in construction of geologic models where applicable.

9.2 2010 to 2012 Alexco Drilling

Alexco conducted surface diamond drilling programs within the resource area at Flame & Moth in 2010, 2011 and 2012 initiating 89 core holes (19,887.5 m), of which 76 drill holes were completed to target, for a total of 19,291.83 m and used in the geological modelling to develop the wireframes for resource estimation. The exploration drilling was initially designed to test geologically derived targets in the vicinity of the historical Flame & Moth workings. Following new discoveries, additional drilling was successful in outlining two zones of silver-lead-zinc mineralization on the Flame Vein that were offset by the post-mineral Mill fault. Sufficient density of drilling has been completed to permit a resource estimation sing current standards.

In 2010, 14 holes were collared to target the structure identified by surface mapping. After losing the first hole in deep overburden, 11 other holes intercepted silver-lead-zinc mineralization that defined a mineralized structure striking 025° and dipping 62° southeast (Christal Zone). One hole that was drilled furthest to the southwest, encountered silver-lead-zinc mineralization much deeper than anticipated and implied a right lateral fault offset of the structure. In total, thirteen holes were drilled to target depth in 2010 for a total of 3,974 m.

In 2011, 32 holes were collared; however, eight were lost or abandoned. The majority of these holes targeted the up-dip extension of the mineralized vein located in the hangingwall of the Mill Fault (Lightning Zone) located in the 2010 drilling. In total, 24 holes were completed to target depth for a total of 6,708.14 m.

In 2012, 43 holes were collared to infill and extend the initially defined resource. Of these four were abandoned. About half of the holes targeted the upper part of the Lightning Zone not previously drill tested, while the remaining holes were drilled in the lower and southwestern part of the Lightning Zone and various infill areas in the Christal Zone. In total, 39 holes were drilled to target depth in 2012 for a total of 8,609.69 m.

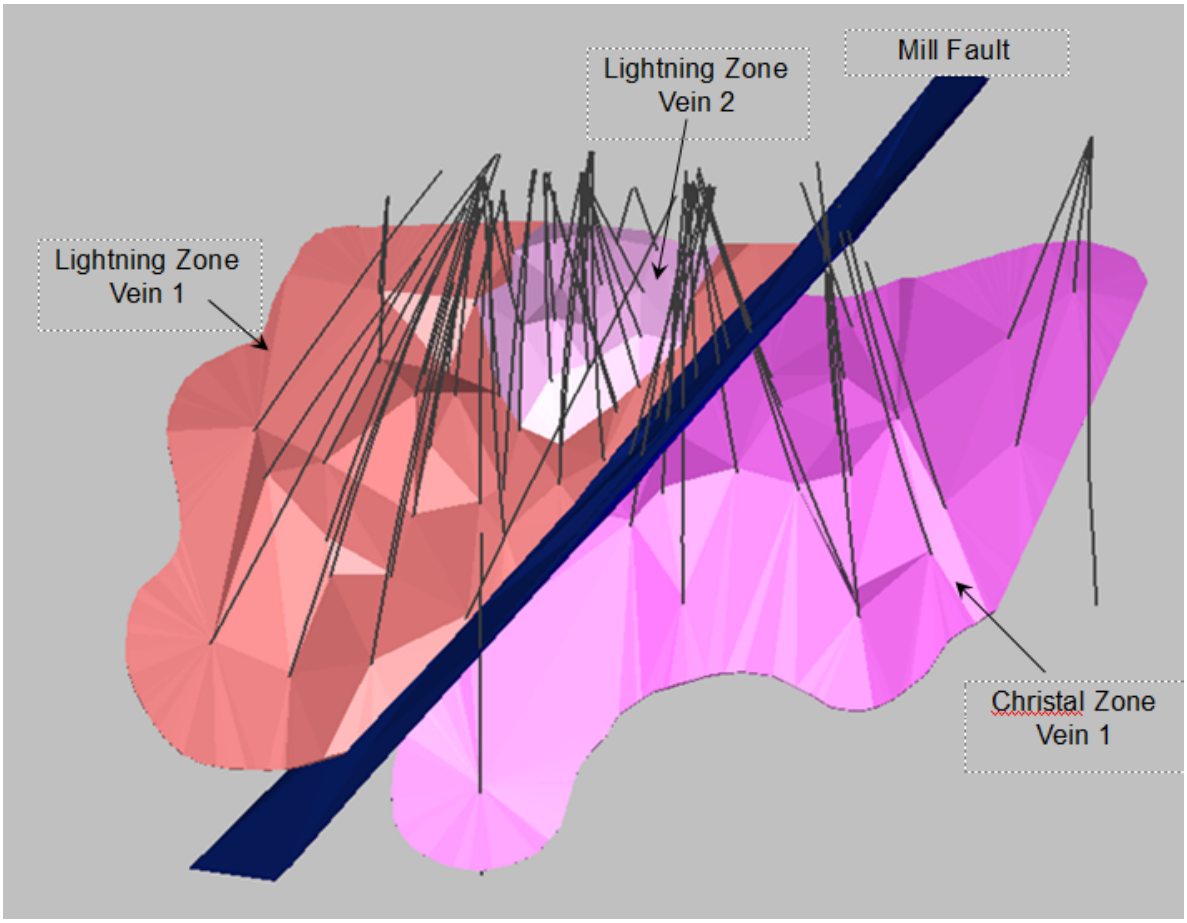


Figure 9.1: Location of Surface Drilling from 2010 to 2012 at Flame & Moth used in resource estimation. Section is looking north-northwest. (from Alexco 2013)

Surface drilling in 2010 was split amongst three contractors; Cabo Drilling based in Surrey, BC; Kluane Drilling of Whitehorse, Yukon; and Ensign Encore Drilling from Calgary, Alberta. Boart Longyear, based in Saskatoon, Saskatchewan, completed the 2011 drilling program as well as the entire 2012 program. Drilling was completed by the wireline method using PQ, HQ and NQ-size equipment. For all campaigns, the drilling was well supervised, the drill sites were clean and safe, and the work was efficiently done. Diamond drill operational safety inspections were conducted on each drill rig at various times throughout the drilling programs. On completion of the drilling the sites were rehabilitated.

Proposed drill hole collars were located using a Garmin hand-held GPS, while the final collars were surveyed with either an Ashtech GPS utilizing post-processing software or a Sokkia GRX1 RTK GPS. All coordinates are recorded in Universal Transverse Mercator NAD83 Zone 8 map projection.

Surface drill holes in the resource area that were drilled to target depth ranged in length from 74 m to 482 m. Most holes were drilled on a northwesterly azimuth with a declination of between 45-80°. In most cases, the drill holes were designed to intercept the mineralized zones perpendicular to the strike direction to give as close as possible a true thickness to the mineralized interval. Down hole surveys were taken at approximately 15 – 20 m intervals using a Reflex survey tool.

Standard logging and sampling conventions were used to capture information from the drill core. The core was initially logged using paper forms or directly in digital format as from 2011. The data was entered into a SQL database with separate tables for:

- Lithology;
- Stratigraphy;
- Structure;
- Mineralization;
- Alteration;
- Geotechnical; and
- Specific Gravity.

Lithology was documented by an alphanumeric code with additional modifiers and descriptive remarks also captured. Structural data consisted of type of structure, with measurements relative to core axis, and, where possible, the orientation of mineralized veins relative to a reference plane calculated for the area. The Mineral table captured visual percentage veining (by type), sulphide (galena, sphalerite, pyrite, arsenopyrite, stibnite, chalcopyrite, freibergite, and native silver), and oxide (limonite, sulphosalts, and manganese wad). Specific alteration features including silica, carbonate, and iron oxide (FeOx) alteration were also captured using a qualitative weak to strong scale. The geotechnical table recorded percentage recovery and rock quality determination for the entire hole and fracture intensity where warranted.

Alexco systematically measured core specific gravity (CSG) of mineralized material as well as basic rock types. Specific gravity is measured by using a balance and measuring the weight of core in air and in water. The core was not covered by wax or a plastic film before weighing in water. Alexco has collected a total of 531 core specific gravity measurements from the resource area to date Pulp specific gravity (PSG) measurements were also routinely obtained by pycnometry on select assay intervals of mineralized zones for Alexco drilling by ALS and AGAT Laboratories.

10 Sampling Method and Approach

10.1 Historical Sampling

Information regarding historical (pre-Alexco) sampling approach and methodology is limited. No historical information was used in the resource estimation at Flame & Moth.

10.2 2010 to 2012 Alexco Sampling

Core sample intervals were broken at lithological contacts and at significant mineralization changes. The logging geologist marked the sample intervals within the major rock types outside of the main vein zones which were typically 2 m in length. Sample intervals within mineralized zones ranged from 0.1 m to 1.0 m, based on consistency of mineralization and recovery. Drill holes were initially sampled top to bottom but in areas of infill drilling where there was confidence in correlation of veining and stratigraphy,samples were only taken around the vein zones or areas of interest.

After logging, the core was digitally photographed and sawn in half lengthwise with a diamond saw, with attention paid to vein orientation. One half was returned to the core box for storage at site and the other bagged for sample shipment. No further on-site processing was performed.

11 Sample Preparation, Analyses, and Security

11.1 Historical Samples

Historical sample results were not used in the production of the resource estimate summarized in this report.

11.2 2010 to 2012 Alexco Exploration Programs

Some minor modification in the sample shipment procedure has occurred over time, primarily in response to changing laboratory locations and the logistics surrounding available commercial transport. In all cases, approximately four to five individual samples were placed in rice bags (grain sacks), sealed with a numbered security tag, placed on pallets, and wrapped for shipping. In 2010, samples were shipped via Manitoulin Transport to Whitehorse, Yukon, where they were couriered to the preparation facilities of either AGAT Labs or ALS in Whitehorse. The pulverized sub-sample splits were then sent to the AGAT Labs facility in Mississauga, Ontario, or the ALS facility in North Vancouver, British Columbia, for analysis. Samples were shipped to ALS for the 2011 and 2012 drill programs.

ALS and AGAT Laboratories are accredited to ISO 17025 by Standards Council of Canada for a number of specific test procedures, including fire assay for gold and silver with atomic absorption and gravimetric finish; multi-element inductively coupled plasma optical emission spectroscopy; and atomic absorption assays for silver, copper, lead, and zinc. ALS also participates in a number of international proficiency tests, such as those managed by CANMET and Geostats.

Sample preparation and analyses were consistent for the 2010 to 2012 Alexco programs for both labs. Sample preparation consisted of initial fine crushing of the sample to better than 70% passing 2 mm. A nominal 250 g split of this material was then pulverized to greater than 85% passing 75 µ and this portion was used for analyses. Duplicate samples were prepared, when indicated by the client, at the preparation facility by collecting a second 250 g split from the 2 mm crushed material.

Samples were analyzed for gold by fire assay and atomic absorption spectrometry on 30 g sub-samples and for a suite of 27 to 48 elements by four acid digestion and either inductively coupled plasma atomic emission spectroscopy (ICP-AES) or inductively coupled plasma mass spectroscopy (ICP-MS) on 0.5 g sub-samples. Elements exceeding concentration limits of ICP-AES or ICP-MS were re-assayed by single element four acid digestion and atomic emission spectroscopy. Silver results exceeding ICP-AES limits were re-assayed by fire assay and gravimetric finish on 30 g sub-samples. Lead and zinc results exceeding concentration limits were analyzed by volumetric titration.

Alexco implemented standard assay quality control procedures for all Keno Hill drill campaigns. Each 20 sample batch sent for assaying included three control samples: a commercial Standard Reference Material (SRM), a blank, and a duplicate. The location of control samples (SRM, blank, and duplicate) in the sample stream was determined by the logging geologist and control samples were inserted when the core was prepared. The SRM was already processed to a pulp and was inserted as ~50 to 100 g amounts. The blank was commercially purchased dolomitic “landscape rock” and approximately 0.35 kg to 1.5 kg of the material was inserted into the sample stream. An empty sample bag was inserted at the location of the duplicate which was prepared during sample preparation at the laboratory preparation facility and consisted of a coarse reject split of the preceding sample.

The quality control program developed by Alexco is considered mature and overseen by appropriately qualified geologists. The data collected by Alexco on the Flame & Moth project was acquired using adequate quality control procedures that generally meet or exceed industry best practices for a resource delineation stage exploration property.

12 Data Verification

12.1 Historical Data Verification

During almost 100 years of exploration and mining in the Keno Hill area, a large amount of data and documents were produced, and much of this material is accessible to Alexco. Historical data available for the Flame & Moth area included diamond drill logs, overburden drill logs, and underground and surface mapping, although none of this was used for the resource estimation.

12.2 Alexco Data Verification

Alexco maintains an SQL database of all Keno District drill and sample data. Each property was assigned an identifier to extract property specific subsets from the master database. All data was entered or imported into the database using Datashed database management software in 2010, and thereafter by direct digital input through data loggers. The Flame & Moth data was exported from the SQL database by scripted routine to comma delimited (csv) files, which were imported into Minesight and MapInfo software. The following drill hole files were generated: collar, survey, drill hole assay, lithology, mineralization, structure, stratigraphy, alteration, geotechnical and specific gravity. During the drilling programs, Alexco personnel conducted routine verifications to ensure the reliability of the drilling data, including a 100% check of the collar and survey tables and a minimum 10% verification of the remaining exported tables. The process uncovered a low level of data entry errors which were corrected.

12.3 Analytical Quality Assurance and Quality Control Programs

Quality control measures are typically set in place to ensure the reliability and trustworthiness of exploration data. This includes written field procedures and independent verifications of aspects such as drilling, surveying, sampling, and assaying, data management, and database integrity. Appropriate documentation of quality control measures and regular analysis of quality control data are important as a safeguard for project data and form the basis for the quality assurance program implemented during exploration.

Internal and external laboratory control measures are implemented to monitor the precision and accuracy of the sampling, preparation and assaying. They are also important to prevent sample mix-up and monitor the voluntary or inadvertent contamination of samples. Assaying protocols typically involve regular duplicate and replicate assays and insertion of quality control samples to monitor the reliability of assaying results throughout the sampling and assaying process.

12.3.1 Historical Exploration

Historical assays were not used in the estimation of mineral resources summarized in this report.

12.3.2 Alexco 2010 to 2012 Exploration Programs

During the 2010 to 2012 drill programs, three control samples (standard, blank, duplicate) were included in each twenty sample batch sent for assaying. Alexco used one of seven Standard Reference Materials (SRM) purchased from WCM Sales Limited of Burnaby, British Columbia: two polymetallic copper, lead, zinc, and silver reference material (PB 131, PB137) and five silver

reference materials (PM 1123, PM 1127, PM 1128, PM 1130 and PM 1133) for inclusion with each twenty sample batch (Table 12.1).

Table 12.1: Commercial SRM Used by Alexco for the 2010 to 2012 Drilling Programs

SRM	Pb (%)	S.D.	Zn (%)	S.D.	Ag (g/t)	S.D.	Au (g/t)	S.D.
PB131	1.04	0.04	1.89	0.06	262	11		
PB137	2.62	0.09	2.69	0.12	111	2.1		
PM1123					31	1.3	1.42	0.05
PM1127					1580	36		
PM1128					592	12		
PM1130					101	3.0	3.74	0.19
PM1133					757	19		

Assay results for quality control samples were monitored on an ongoing basis during all drill programs. Each potential quality control failure was investigated and appropriate remedial action was taken, including the re-assaying of batches containing abnormal quality control results. In some instances, the potential failures occurred in batches of samples outside potentially mineralized areas. In such cases, no remedial actions were taken.

The analytical quality control data produced by Alexco is summarized in Table 12.2.

Table 12.2: Quality Control Data Produced by Alexco in 2010 to 2012 for the Flame & Moth Resource Area

Quality Control Type	Count	Percentage
Core Samples	3996	
Blanks	248	1:16 (6.2%)
Standard Reference Material	240	1:16 (6.0%)
Coarse Reject Duplicate	251	1:16 (6.3%)

Where some standard reference material samples returned values greater than three standard deviations from the expected value, batches containing these failed standards were resubmitted to ALS for analysis and the new assays were used for the resource estimates.

Analysis of assays from coarse reject duplicate samples suggest that silver, lead, and zinc grades can be reasonably reproduced from the coarse reject split of the original samples with no apparent bias.

12.4 Data Verification

The drill core handling, core logging and sampling procedures have been verified by Alexco staff under the direct supervision of Alan McOnie, who was on site throughout the majority of the exploration programs in each of 2011 and 2012. Drill site locations have been verified with hand-held GPS and are in agreement with the recorded digital database of drill hole locations and the survey

procedures have also been validated. In April 2012, as part of the initial resource estimation, SRK completed an audit of the Alexco analytical and quality control data acquired during the sampling of the Flame & Moth deposit. SRK conducted routine verifications to ascertain the reliability of the electronic borehole database provided by Alexco. All assays in the database were verified against the independently sourced sample certificates from ALS and AGAT laboratories. The silver, lead, zinc, and gold values in the assay table were found to match the laboratory certificates. All data subsequently acquired from the 2012 drill program has been subject to internal audit and similarly verified.

It is considered that the Flame & Moth drilling database is sufficiently reliable for resource estimation.

12.4.1 Quality Control Results

The assay results for analytical quality control data accumulated for the Flame & Moth deposit from 2010 to 2012 have been aggregated for further analysis. Sample blanks and certified reference materials data were summarized on time series plots to highlight any potential failure. Field duplicate paired assay data were analysed using scatter plots and ranked absolute relative difference charts.

Field blanks are used to monitor contamination introduced during sample preparation and to monitor analytical accuracy of the lab. In general true blanks should not have any of the elements of interest much higher than the detection levels of the instrument being used with batches containing a blank sample with more than five times of detection limit being problematic. In general, gold (Figure 12.1) and (Figure 12.2) returned good results while zinc (Figure 12.3) consistently returned values that were too high and lead (Figure 12.4) returned a number of values that were also too high. In general, the high or variable zinc values can be attributed to the fact that a commercially purchased landscape rock is used as the blank material. Some of the higher lead and zinc values can be attributed to samples treated after high value samples which points to possible contamination of samples in the laboratory, but these were not associated with elevated silver or to such an extent as to be material on the resource estimation of such a high grade deposit.

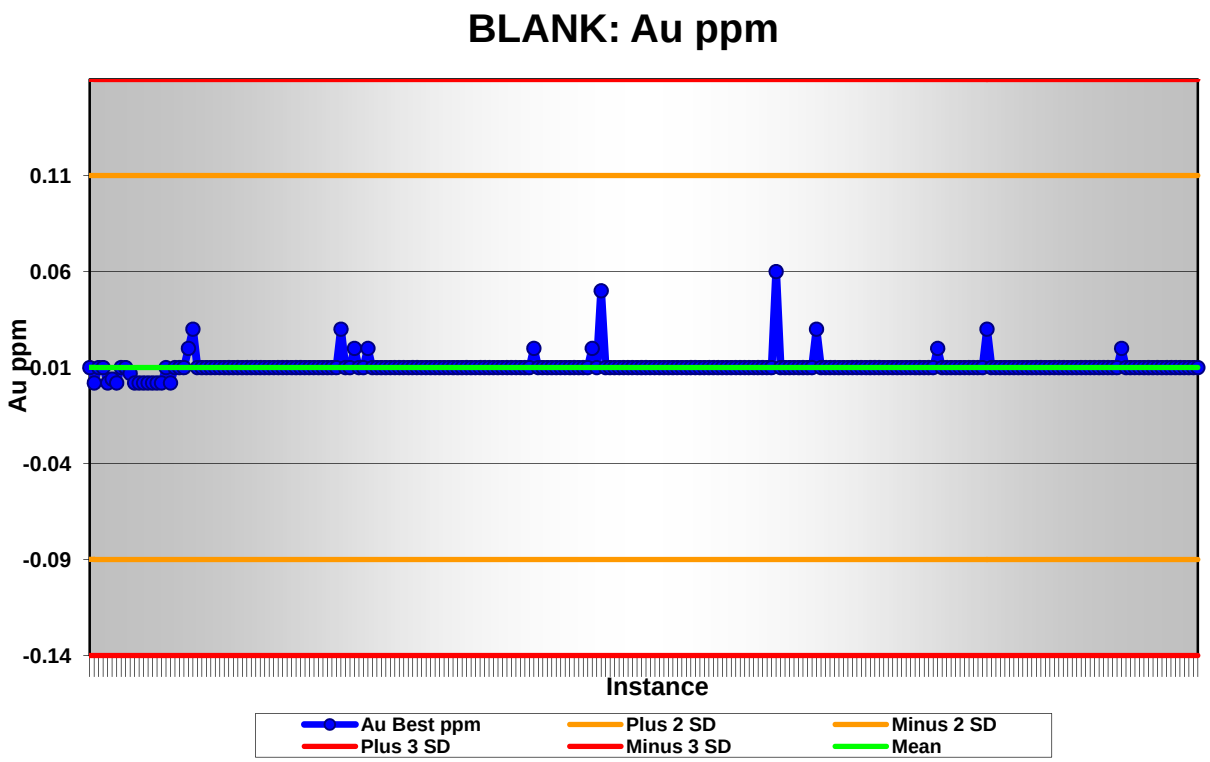


Figure 12.1: Blank analytical results for gold over time for commercially purchased landscape rock submitted with Flame & Moth deposit samples.

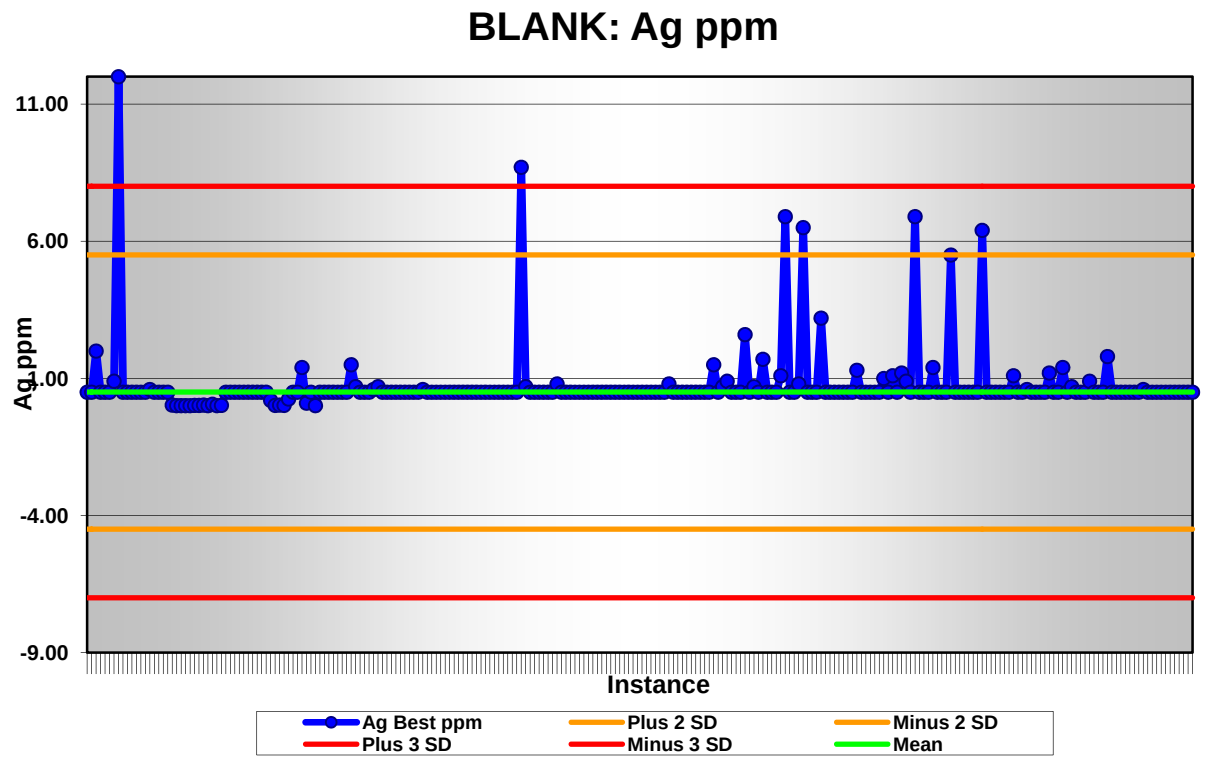


Figure 12.2: Blank analytical results for silver over time for commercially purchased landscape rock submitted with Flame & Moth deposit samples.

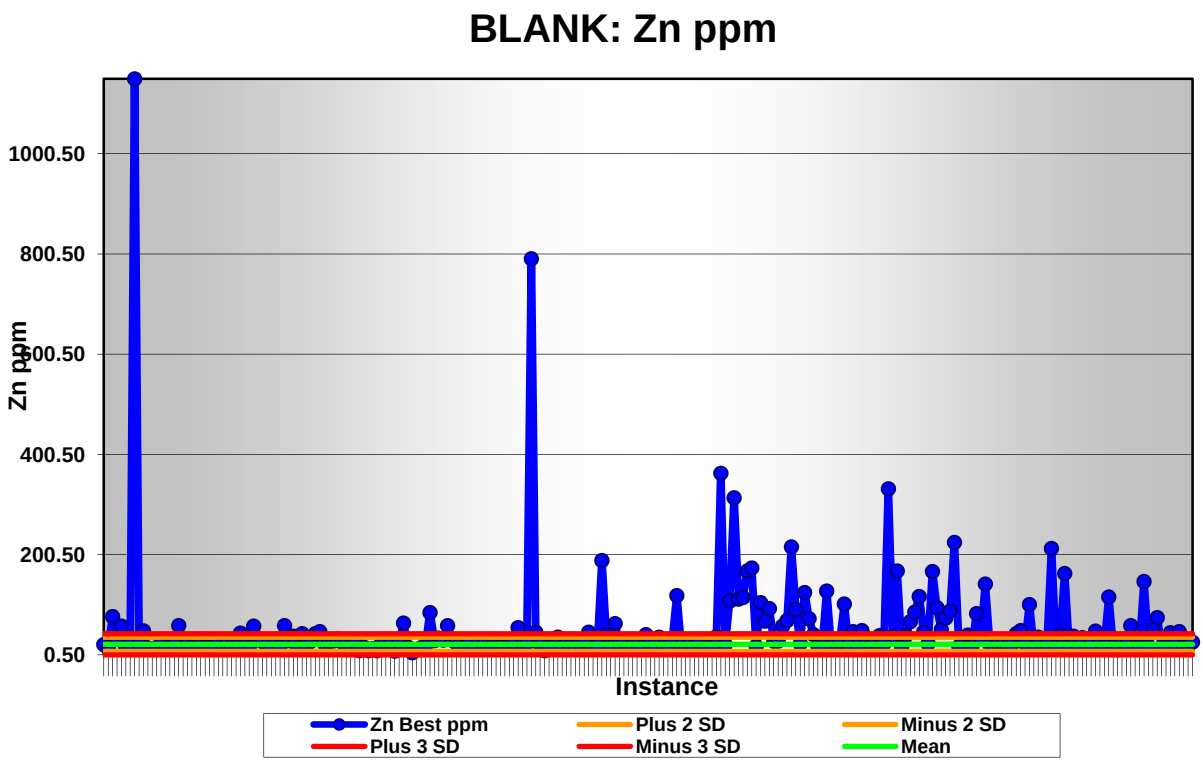


Figure 12.3: Blank analytical results for zinc over time for commercially purchased landscape rock submitted with Flame & Moth deposit samples.

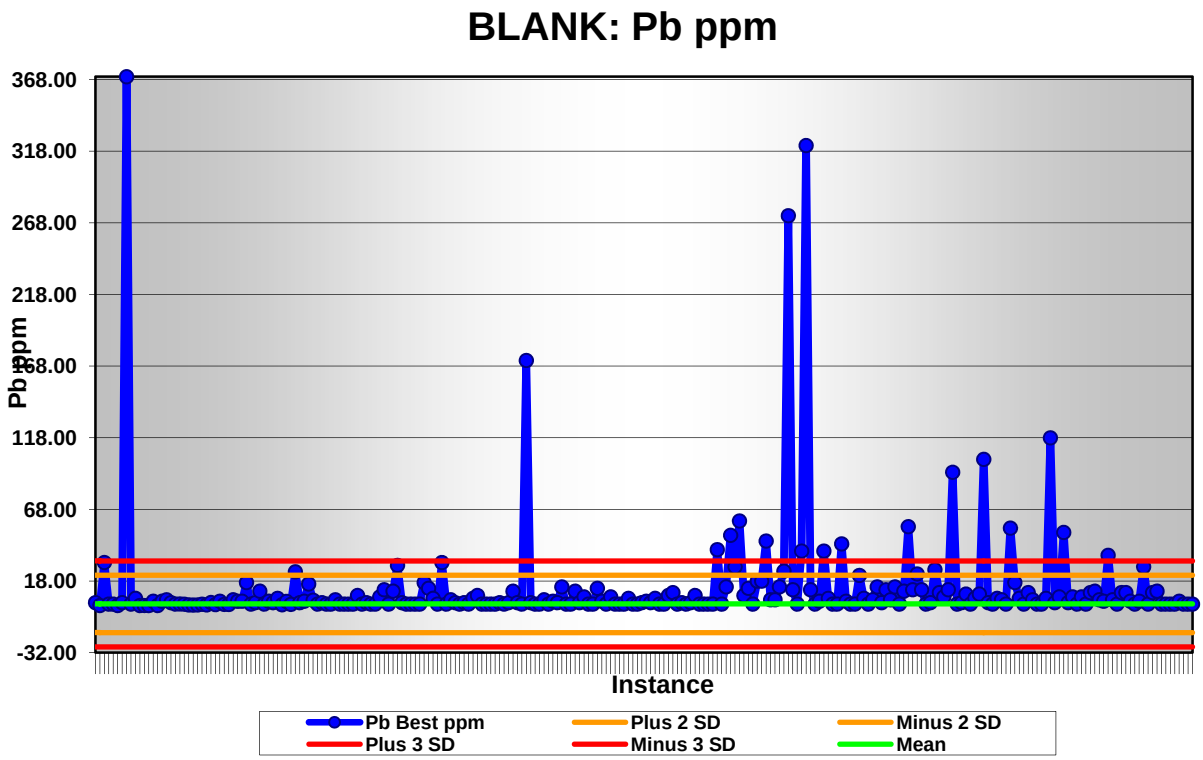


Figure 12.4: Blank analytical results for lead over time for commercially purchased landscape rock submitted with Flame & Moth deposit samples.

Scatter plots and percentile rank charts for coarse reject split duplicate gold, silver, zinc, and lead data are presented 12.5 to 12.8 respectively. Relatively good correlation is seen between coarse reject splits for silver, lead, and zinc with 84%, 84% and 92%, respectively, of duplicate pairs having a half absolute relative difference of less than 10%.

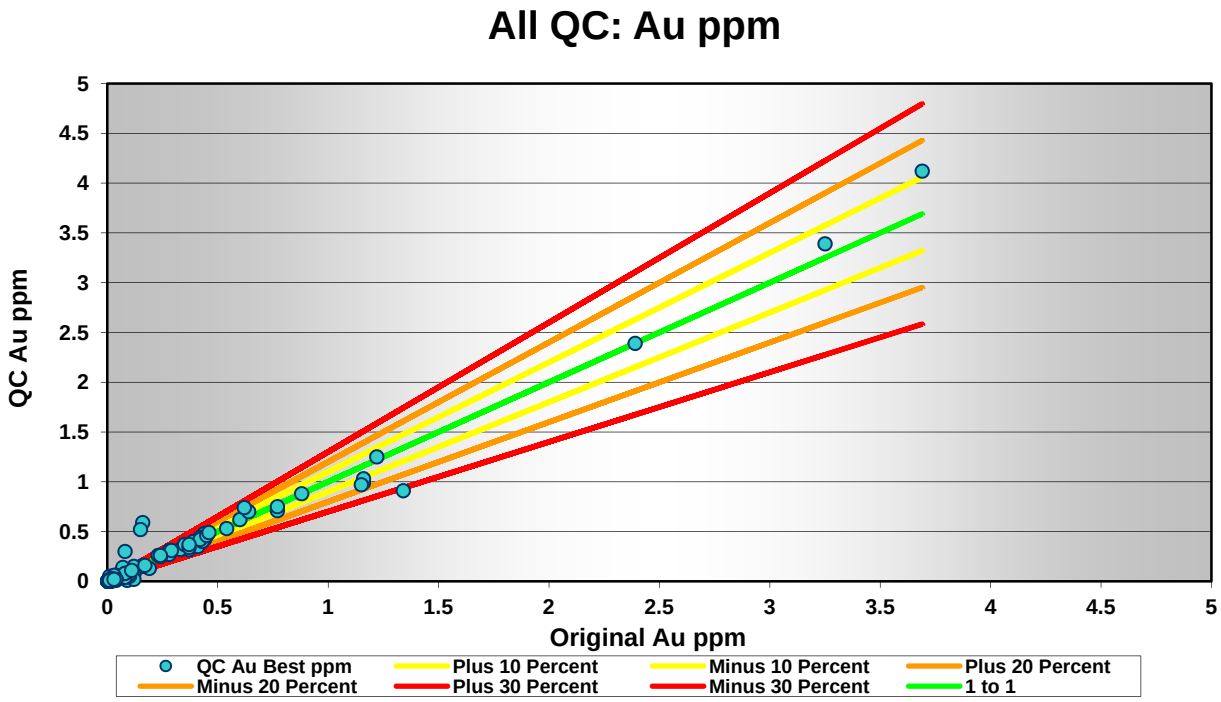


Figure 12.5: Scatter plot of gold data for coarse reject duplicate Flame & Moth samples.

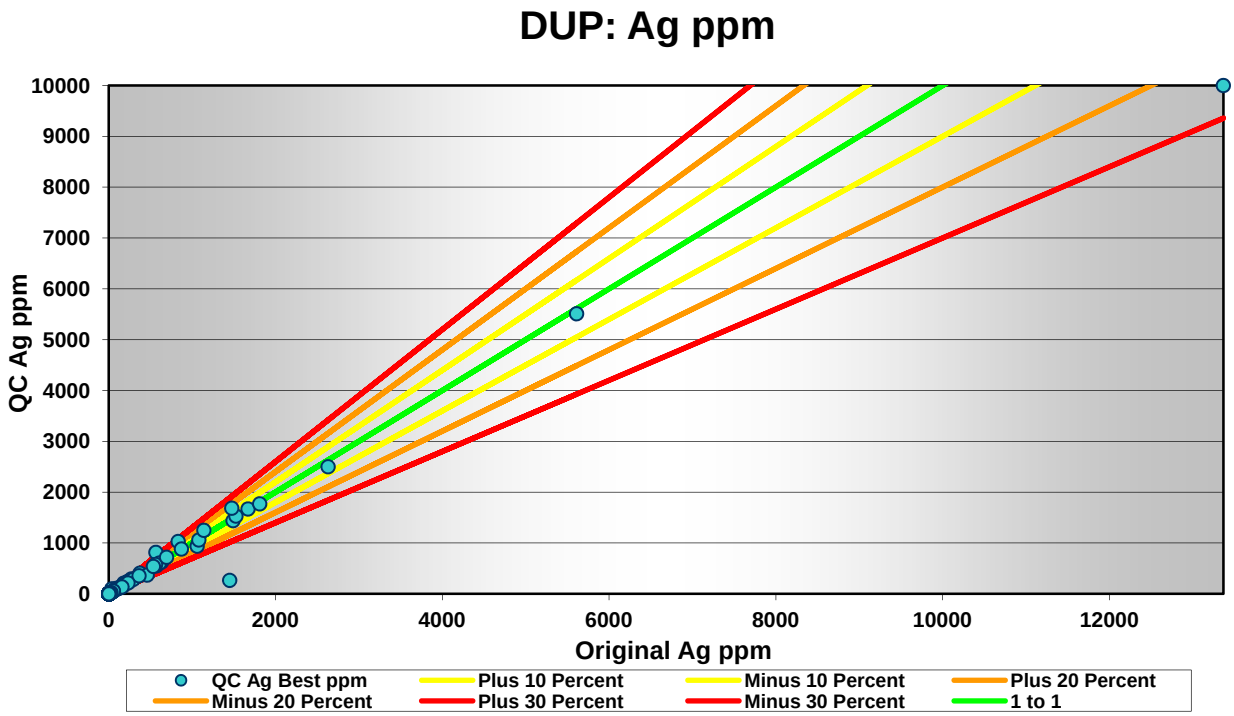


Figure 12.6: Scatter plot of silver data for coarse reject duplicate Flame & Moth samples

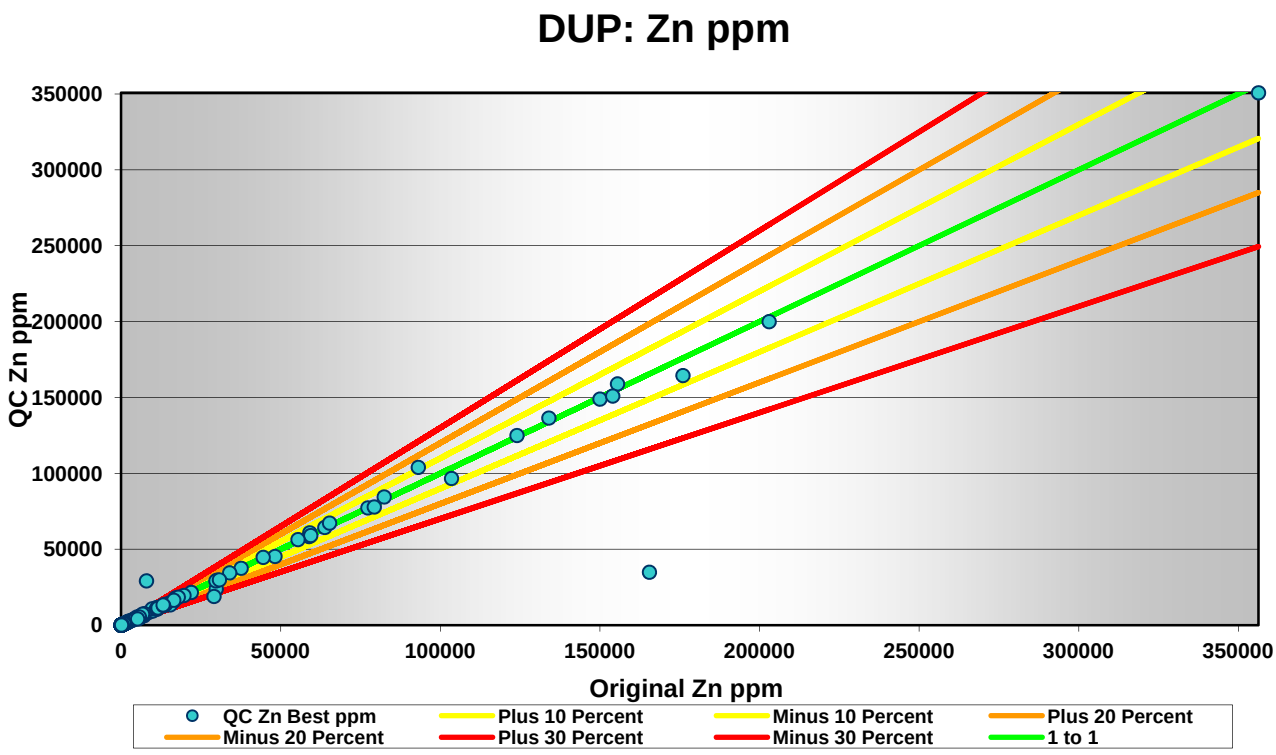


Figure 12.7: Scatter plot of zinc data for coarse reject duplicate Flame & Moth samples

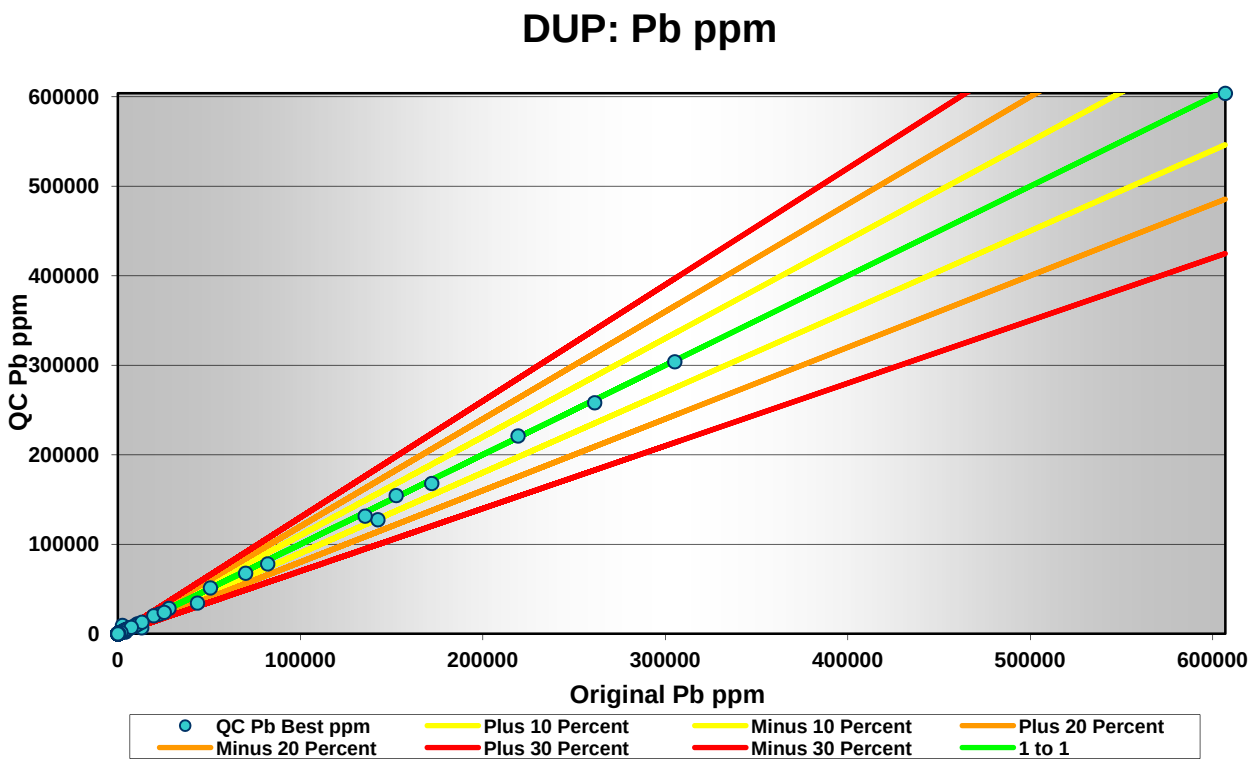


Figure 12.85: Scatter plot of lead data for coarse reject duplicate Flame & Moth samples

Time series plots for standard reference materials, PB131, PB137, PM1123, PM1128, and PM1133, can be found in Appendix A, Figures A1 to A8. Only four samples of PM1127, and three of PM1130 have been submitted to the laboratories and the results for these are not shown on time series plots. Standard reference material PM1127 consistently returned low values with two of the samples returning values greater than three standard deviations from the expected value even after re-assay, while values for PM1130 were either at or within the 2SD range.

Where a standard reference material sample returned values greater than three standard deviations from the expected value, the batches containing the failed standards were resubmitted to ALS for analysis until the variances were acceptable or otherwise explained, the Certificates reissued, and the new values used for estimation. In total there have been 11 instances of +/- 3SD standard failures over 434 determinations however only one of these has been of any significance.

In summary, the review of analytical quality control data produced by ALS, AGAT and Alexco, suggests that silver, gold, lead, and zinc grades can be reasonably reproduced, suggesting that the final, and in some cases replicated, assay results reported by ALS and AGAT are generally reliable for the purpose of resource estimation.

13 Adjacent Properties

There are no adjacent properties considered relevant to this technical report.

14 Mineral Processing and Metallurgical Testing

Metallurgical testwork is underway for the Flame & Moth deposit, however, for the purpose of this study, it was assumed that the deposit would have similar metallurgical properties to those of the Bellekeno deposit. Three separate metallurgical tests have been carried out on the mineralization at Bellekeno.

Test results from three testing programs indicate that the mineralization of the Bellekeno deposit responds well to a lead and zinc differential flotation process using a cyanide-free zinc mineral suppression regime. Silver minerals are intimately associated with lead minerals and are recovered as a silver-lead concentrate. A separate zinc concentrate is also produced from the Bellekeno operation.

Metallurgical performance estimated from test work and assumed for this report is based on test work completed by SGS Lakefield Research Ltd. in 2007 and by Process Research Associates Ltd. in 1996 and 2008 to 2009. Table 14.1 shows the average projected metallurgical performance.

Table 14.1: Summary of projected metallurgical recoveries

Product	Mass %	Grade				Recovery			
		Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)	Au (g/t)	Ag (g/t)	Pb (%)	Zn (%)
Head	100	0.42	871	9.47	5.6	100	100	100	100
Pb-Ag Con	13.1	1.5	6,185	70.3	2.3	47.7	92.7	96.9	5.4
Zn Conc	9.1	1.1	300	0.52	54.4	23.9	3.1	0.5	88.4

15 Mineral Resource Estimates

15.1 Introduction

This section is an update by GeoStrat to the previous mineral resource estimate for the Flame & Moth deposit produced in August 2012 by SRK for Alexco Resource Corp.

Total production at the Flame & Moth deposit is listed as 1,590 tons grading 18.3 opt Ag, 1.1% Pb, and 0.9% Zn. (Cathro, 2006).

The mineral resources presented in this report represent the second disclosure of mineral resource for the Flame & Moth deposit by Alexco.

15.2 Previous Work

A previous Mineral Resource was produced by SRK in 2012. The results were detailed in the previous Technical Report (SRK 2012) and are summarised in table 15.1 below.

Table 15.1: Mineral Resource Statement* for the Flame & Moth deposit, June 27, 2012.

Class	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)
Indicated**	759,000	453	0.39	1.73	6.97
Inferred**	387,000	312	0.26	1.18	4.06

15.3 Wireframe Construction

Wireframes were constructed for two portions of the Flame Vein offset along the Mill Fault in the geology model for the Flame & Moth prospect. The Flame Vein in the hangingwall of the Mill Fault was termed the Lightning Zone while the portion in the footwall of the Mill Fault was termed the Christal Zone (Figures 15.1 and 15.2). GeoStrat reviewed and validated the wireframes before resource estimation. GeoStrat concluded that the wireframes of the Flame & Moth deposit were fair representations of the mineralized veins and acceptable for resource estimation. The wireframes for resource modelling were constructed using Mintec's MineSight 3D software. All points of construction on the Flame Vein are from Alexco diamond drilling. Individual points were constructed on the hangingwall and footwall of each drill hole vein/structure intercept. These points were chosen based on the fault/vein structure where in most cases, the hangingwall and footwall contacts are clear and the mineralization is contained within a well-defined structure.

The Flame & Moth Vein has a strike of between 025^{o} and 027^{o} and a dip of between 62^{o} and 66^{o} to the southeast.

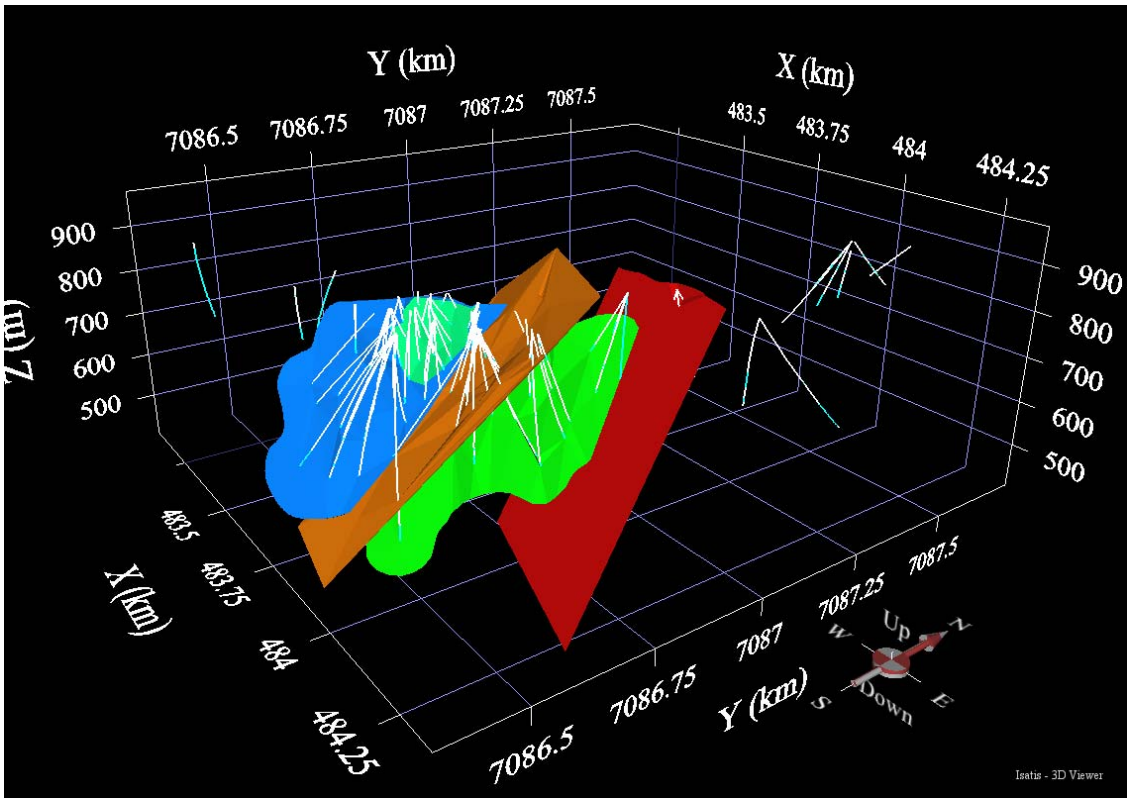


Figure 15.1: Oblique view of Flame & Moth wireframes looking north-northwest

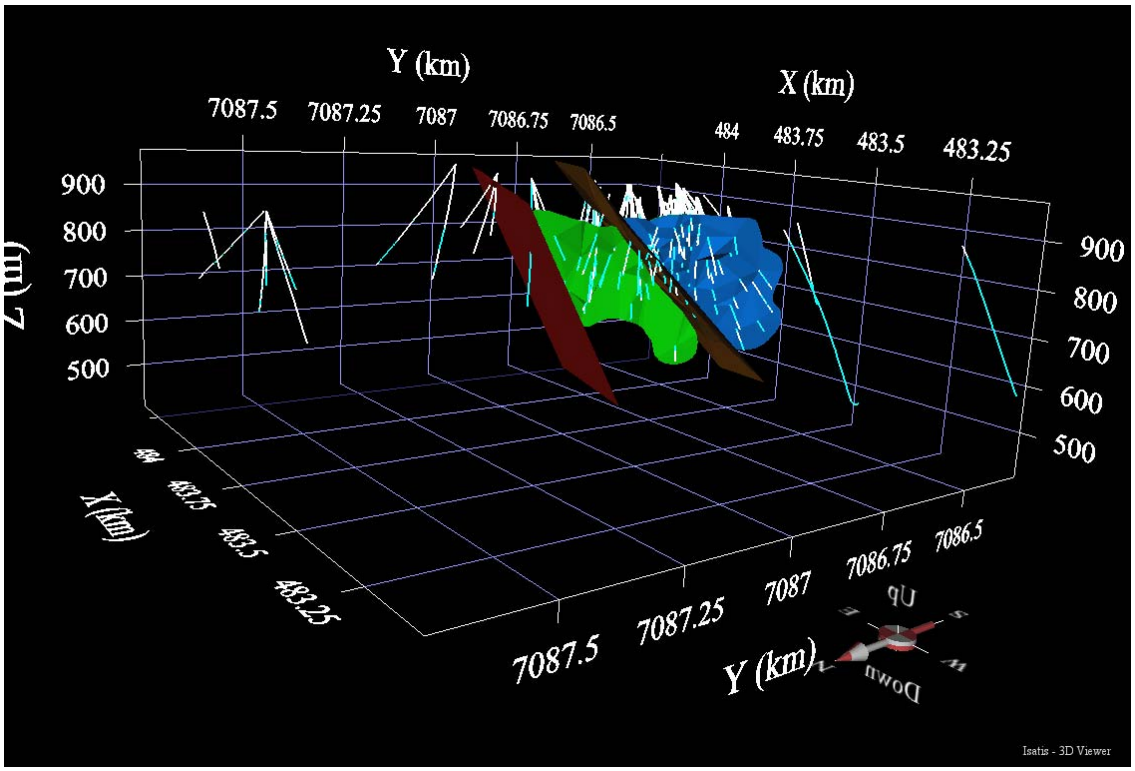


Figure 15.2: Oblique view of Flame & Moth wireframes looking south-southeast

15.4 Database

The Flame & Moth drill hole database comprises descriptive information and assay grades from exploration drilling carried out by Alexco from 2010 through 2012. The database was provided to Geostrat as an Excel format spreadsheet and contains 104 diamond drill holes (Table 15.2) drilled in the Flame & Moth area, of which 89 were used in the geological modelling in the resource area with 84 intercepts used in the resource estimation (Table 15.3).

Table 15.2: Flame & Moth deposit sample database

Drill Hole			Number
Type	**Number**	**Length (m)**	**Samples**
DDH	104	23,521	4,857

Table 15.3: Flame & Moth deposit diamond drill hole vein intercepts

Vein	Drill Hole		Number
	Number	**Length (m)**	**Samples**
Flame Vein-Christal Zone	26	124	178
Flame Vein-Lightning Zone 1	46	208	337
Flame Vein-Lightning Zone 2	12	25	63
TOTAL	**84**	**578**	**367**

The supplied mineral resource database was imported into the ISATIS database, and validated by checking for inconsistencies in naming conventions, analytical units, duplicate entries, length, distance values, or sample intervals less than or equal to zero, blank or zero-value assays, out-of-sequence intervals, intervals or distances greater than the reported drill hole length, inappropriate collar locations, and missing interval and coordinate fields. A few minor inconsistencies were noted and corrected by Alexco. No other significant validation errors were noted in the supplied database. Assay intervals marked as below detection limit were assigned nominal grades as per Table 15.4 prior to importing into ISATIS.

Table 15.4: Grades assigned to Flame & Moth sample assays below detection limit

Metal	Detection Limit	Assigned Value
Au ppm	-0.002	0.001
Au ppm	-0.01	0.005
Ag ppm	-0.5	0.25
Pb ppm	-2.00	1.00
Pb ppm	-1.00	0.5

15.5 Specific Gravity

The data supplied by Alexco for Flame & Moth included a total of 523 specific gravity measurements on core samples and 2,461 pulp specific gravity measurements, respectively 178 and 528 of which

fall within the modelled vein solids (Table 15.5). Specific gravity was measured on core samples by Alexco using a laboratory scale and recording the mass of drill hole core pieces in air and in water. Drill hole core was not covered by wax or plastic film prior to immersion. Pulp specific gravity measurements were measured by pynometer at ALS in North Vancouver. No strong correlation between specific gravity measurements and lead or zinc assay results was noted.

A linear regression of the core versus pulp specific gravity measurements for samples calculated by SRK (2012) was used, where:

Core Specific Gravity = Pulp Specific Gravity/1.0385

Core specific gravity measurements were used where available for interpolation of specific gravity into blocks. Because pulp specific gravity measurements often over estimate specific gravity, pulp specific gravity measurements were corrected using the above equation for those samples with no core specific gravity measurements and the corrected specific gravity measurements were used for interpolation of specific gravity into blocks.

Table 15.5: Flame & Moth Specific gravity measurements

Zone	Type SG Measurement	Total Samples	Minimum	Maximum	Average	Median
			Specific Gravity	Specific Gravity	Specific Gravity	Specific Gravity
			(g/cm^3)	(g/cm^3)	(g/cm^3)	(g/cm^3)
Christal	Pulp	120	2.53	4.93	3.70	3.66
	Core	53	2.62	4.66	3.67	3.74
Lightning V1	Pulp	337	2.65	5.71	3.53	3.45
	Core	110	2.62	5.24	3.51	3.51
Lightning V2	Pulp	71	2.84	4.6	3.47	3.39
	Core	16	2.87	4.23	3.53	3.49
Total	Pulp	528	2.53	5.71	3.56	3.49
	Core	178	2.62	5.24	3.56	3.54

15.6 Compositing

Alexco identified a total of 478 diamond drill hole assay intervals as vein intercepts. These assay intervals were imported into ISATIS, and assays were then composited to one metre length-weighted intervals within the defined vein wireframes. Histograms of sample length for the Christal and Lightning zones can be seen in Figures 15.3, 15.4 and 15.5 respectively.

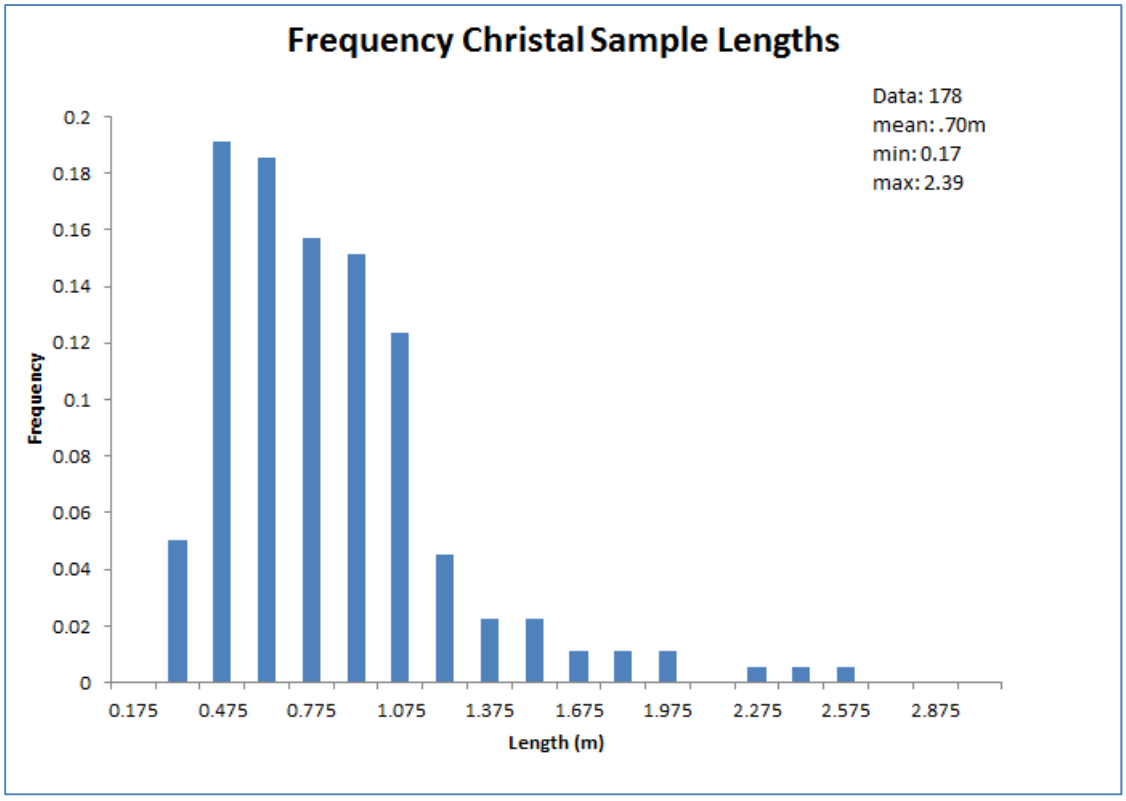


Figure 15.3: Histogram of Sample Length for the Christal Zone

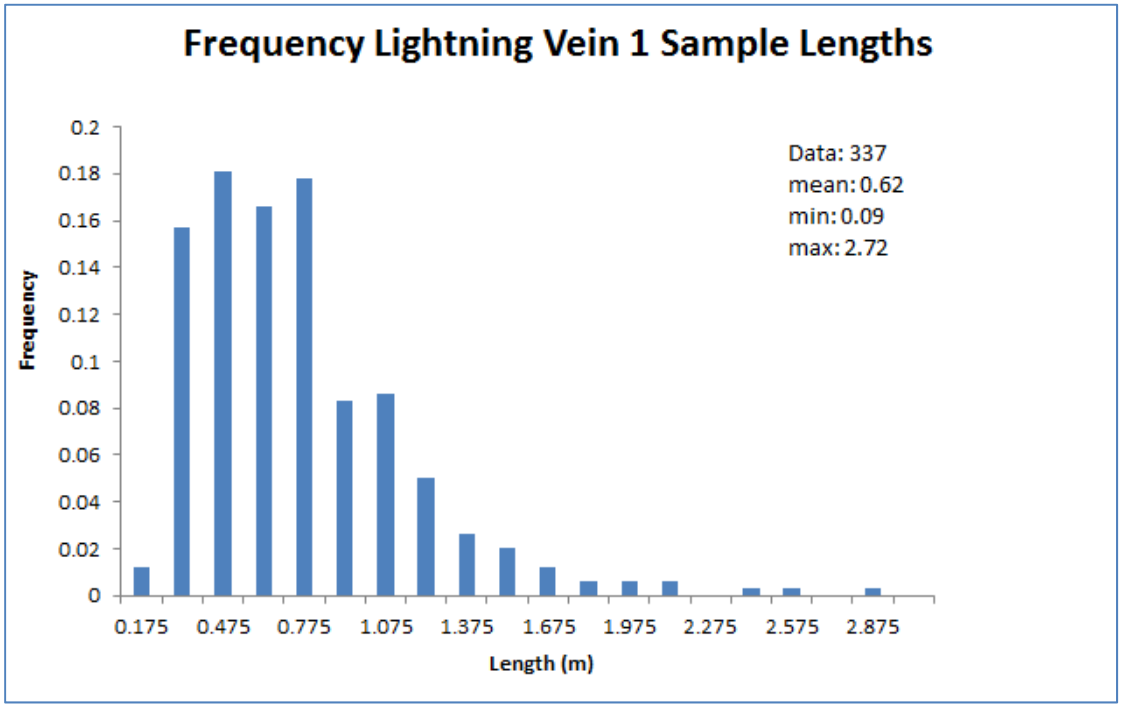


Figure 15.4: Histogram of Sample Length for the Lightning Zone Vein 1

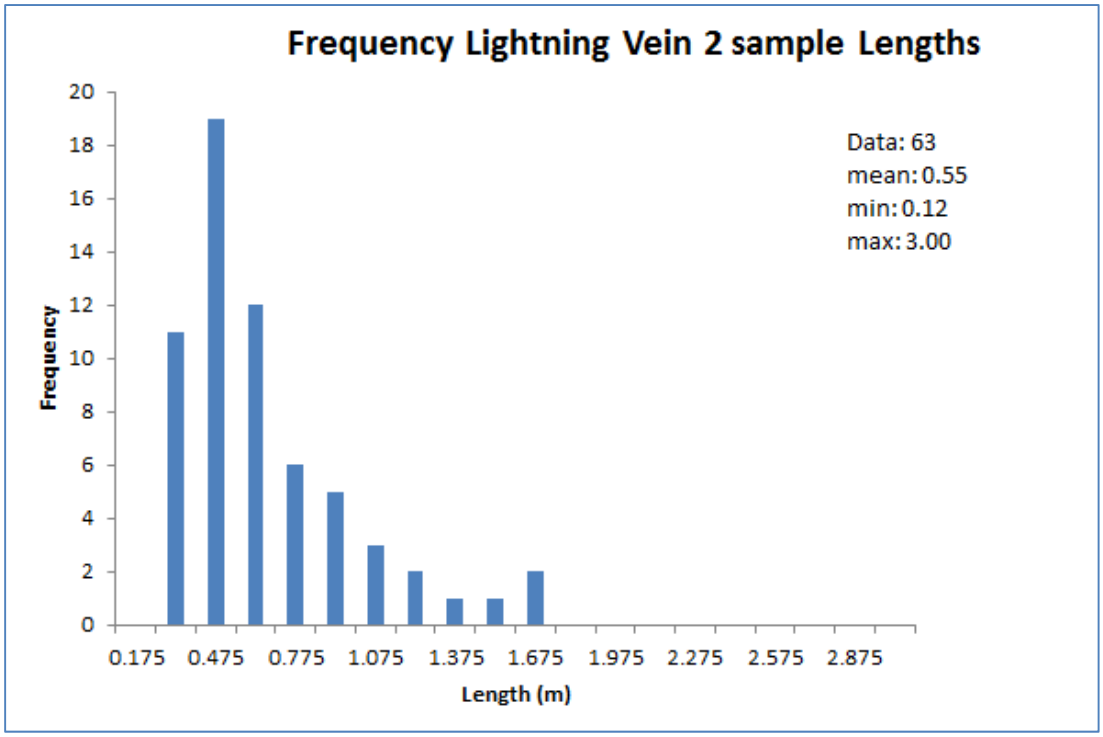


Figure 15.5: Histogram of Sample Length for the Lightning Zone Vein 2

15.7 Capping

Grade capping analysis was conducted on the domain-coded sample assay and composited assay data in order to limit the influence of extreme assay values during estimation. The assays from the Christal and Lightning zones were examined using histograms and cumulative frequency plots. Capping threshold values were selected that minimize changes in the sample distribution, and composited values were capped to these values prior to estimation (Table 15.6).

Table 15.6: Sample capping levels for Flame & Moth

Zone	Element	Maximum Value	Cap Value	Number Capped	Average	Average After Capping
Christal	Pb ppm	170,756	150,000	1	12,567	12,373
Lightning V1	Ag ppm	6,774.75	3000	3	489.94	458.38
	Pb ppm	247,700	150,000	2	16,791	16,321
	Zn ppm	299,000	200,000	7	59,321	57,984
Lightning V2	Ag ppm	3,156.28	3,000	1	502.28	498.80

15.8 Data Statistics

Summary statistics were compiled for the composite data for the Flame & Moth veins (Table 15.7). A total of 71 composites were derived for the Christal Zone, and 114 composites for the Lightning Zone.

Table 15.7: Composite data summary statistics for Flame & Moth

Zone	VARIABLE	Count	Mean	Minimum	Maximum	Std. Dev.	Variat.Coef.
Christal Composites	Ag ppm	105	372.93	3.4	2,955.0	523.3	1.40
	Au ppm	105	0.34	0.0	2.7	0.5	1.38
	Pb ppm	105	12,567.76	35.8	170,756.0	24,000.4	1.91
	Pb Capped	105	12,370.08	35.8	150,000.0	22,749.6	1.84
	Zn ppm	105	31,803.49	73.1	179,140.2	35,658.0	1.12
	Zn Capped	105	31,803.49	73.1	179,140.2	35,658.0	1.12
Lightning V1 Composites	Ag ppm	234	489.94	1.0	6,774.8	794.9	1.62
	Ag Capped	234	458.38	1.0	3000.0	601.99	1.31
	Au ppm	234	0.38	0.0	3.2	0.5	1.29
	Pb ppm	234	16,791.02	13.2	247,700.0	28,159.9	1.68
	Pb Capped	234	16,320.89	13.2	150,000.0	25,021.4	1.53
	Zn ppm	234	59,321.2	11.0	299,000.0	59,269.0	1.00
	Zn Capped	234	57,984.13	11.0	200,000.0	55,091.6	0.95
Lightning V2 Composites	Ag ppm	45	502.28	0.9	3,156.3	589.8	1.17
	Ag Capped	45	498.80	0.9	3000.0	574.41	1.15
	Au ppm	45	0.27	0.0	1.4	0.3	1.02
	Pb ppm	45	14,997.81	28.0	60,345.7	14,312.8	0.95
	Pb Capped	45	14,997.81	28.0	60,345.7	14,312.8	0.95
	Zn ppm	45	45,801.63	425.1	170,894.2	41,991.6	0.92
	Zn Capped	45	45,801.63	425.1	170,894.2	41,991.6	0.92

15.9 Block Model

A rotated block model was constructed to cover the entire extent of the mineralized veins as defined by Alexco. The block model includes separate sub-models for silver, lead, zinc, and gold grade estimates, as well as estimated specific gravity, classification criteria, validation estimates, and a calculated block NSR value. A block percentage model was used to accurately determine volume and tonnage values based on the supplied Alexco vein wireframes. The geometrical parameters of the block model are summarized in Table 15.8.

Table 15.8: Block model location and setup

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block Model Origin NAD 83	483550	7086370	920
Block Dimensions (metres)	3	5	5
Number of Blocks	115	165	90
Rotation (degree)	30° clockwise		

15.10 Variography

Due to the limited number of samples in each of the Christal and Lightning zones, experimental semi-variograms could not be generated for silver, lead, zinc, or gold from composite grade data for these veins.

15.11 Grade Interpolation

Grades were interpolated into blocks using the inverse distance squared (ID2) method and search ellipses were set up to parallel the strike and dip of the veins. For silver, lead, zinc, and gold, a two-pass series of expanding search ellipsoids was used for sample selection and estimation.

Composite data used for the estimation was restricted to samples located in the respective veins. Individual block grades were used to calculate a NSR block model. Estimation criteria for each vein zone are summarized in Table 15.9. Blocks were classified as Indicated mineral resources if at least two drill holes and six composites were found within a 60 by 60 m search ellipse. All other interpolated blocks were classified as Inferred mineral resource.

Table 15.9: Search ellipse parameters for Flame & Moth

Commodity	Search Pass	Model Rotations			Range			Number of Composites		Max. Samples per DDH
		Principal Azimuth	Principal Dip	Intermed. Azimuth	X-Rot	Y-Rot	Z-Rot	Min.	Max.	
Ag, Pb, Zn, Au	1	40	-35	0	60	60	20	6	12	4
	2	40	-35	0	100	100	40	6	12	4
Density	1	40	-35	0	60	60	20	4	8	3
	2	40	-35	0	100	100	40	4	8	3
	3	40	-35	0	100	100	40	2	8	1

15.12 Block Model Validation

The block model was validated visually by the inspection of successive section lines in order to confirm that the block model correctly reflects the distribution of high-grade and low-grade samples. The average composite sample grades for all blocks containing composite samples (informed blocks) were compared to the ID2 estimates using scatter plots. Due to the small number of informed blocks, both inferred and indicated blocks were plotted for both zones. The scatter plots for silver, lead, zinc, and gold for blocks in the Christal zones are displayed in Figure 15.6 and show an excellent correlation between informed and estimated blocks.

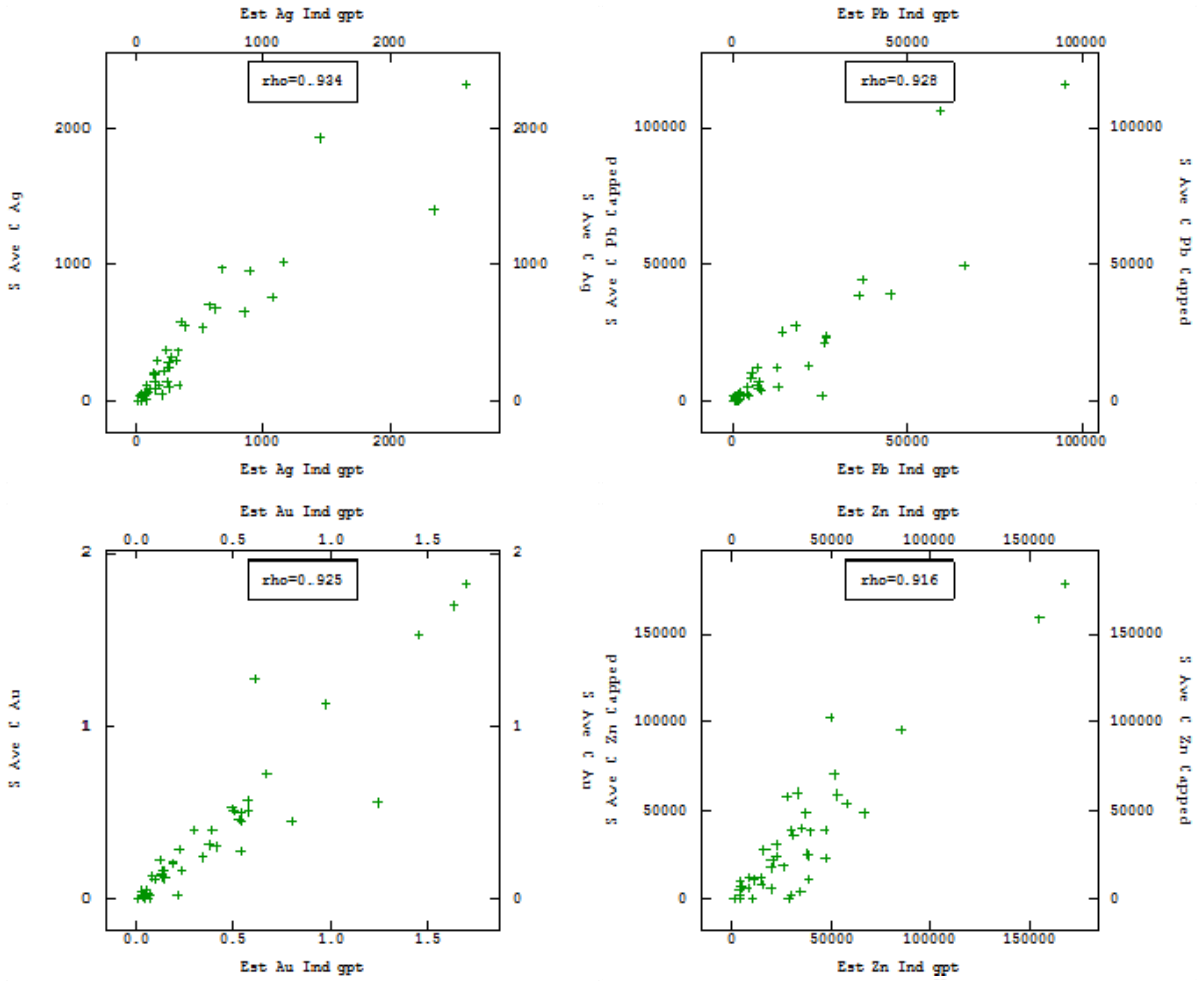


Figure 15.6: Comparison of ID2 and Average sample grades for Christal Zone.

15.13 Block Model Sensitivity Analysis

Table 15.10 tabulates global quantities and grade estimates at different cutoff grades for the Flame & Moth deposit. Table 15.11 tabulates the same at different silver grade cutoffs. Figure 15.7 presents the effects of increasing cut-offs on the tonnage and grade of the deposit. The reader is cautioned that these figures should not be misconstrued as a mineral resource. The reported quantities and grades are only presented as a sensitivity of the resource model to the selection of the cutoff grades.

Table 15.10: Flame & Moth inferred and indicated block model quantity and grade estimates* at various NSR cut-off values**

Contained Metal Value Cut-off	Class	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Ag (Troy Ounces)
130	Indicated	1,486,000	488	0.4	1.62%	5.45%	23,297,000
	Inferred	168,000	250	0.25	0.76%	3.34%	1,349,000
185	**Indicated**	**1,378,000**	**516**	**0.42**	**1.72%**	**5.70%**	**22,856,000**
	Inferred	**107,000**	**313**	**0.27**	**0.86%**	**4.21%**	**1,081,000**
230	Indicated	1,278,000	543	0.43	1.82%	5.91%	22,307,000
	Inferred	82,000	356	0.29	0.95%	4.72%	940,000
260	Indicated	1,213,000	561	0.45	1.88%	6.05%	21,884,000
	Inferred	71,000	379	0.3	0.99%	4.91%	866,000
300	Indicated	1,124,000	587	0.46	1.96%	6.22%	21,217,000
	Inferred	57,000	414	0.32	1.06%	5.17%	757,000

** The reader is cautioned that the figures presented in this table should not be misconstrued as a mineral resource statement. The reported quantities and grades are only presented to show the sensitivity of the resource model to the selection of cut-off grade.*

*** C$ values calculated at 1C$ = 0.96US$*

Table 15.11: Flame & Moth inferred and indicated block model quantity and grade estimates* at various Silver cut-off values**

Ag Cut-off (g/t)	Class	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Ag (Troy Ounces)
400	Indicated	710,000	747	0.55	2.38	6.34	17,060,000
	Inferred	28,000	513	0.37	1.1	4.55	469,000
500	Indicated	515,000	861	0.62	2.71	6.42	14,250,000
	Inferred	6,000	750	0.35	2.25	3.45	147,000
600	Indicated	388,000	964	0.68	3	6.44	12,015,000
	Inferred	4,000	838	0.37	2.7	4.02	114,000

** The reader is cautioned that the figures presented in this table should not be misconstrued as a mineral resource statement. The reported quantities and grades are only presented to show the sensitivity of the resource model to the selection of cut-off grade.*

*** C$ values calculated at 1C$ = 0.96US$*

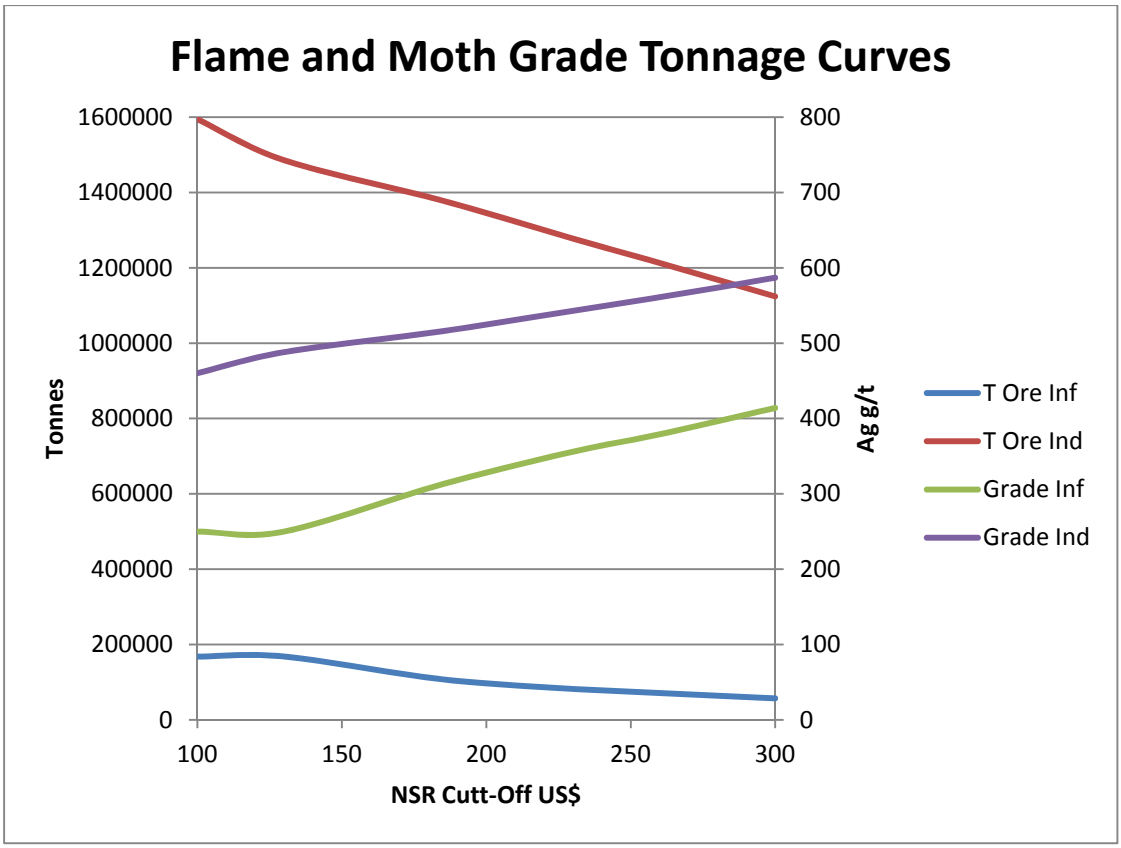


Figure 15.7: Grade tonnage curve for Flame & Moth

15.14 Mineral Resource Classification

Mineral resources were estimated in conformity with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserve Best Practices" guidelines. Mineral resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent resource estimates. Mineral resources may also be affected by subsequent assessments of mining, environmental, processing, permitting, taxation, socio-economic, and other factors.

Mineral reserves can only be estimated based on the results of an economic evaluation as part of a preliminary feasibility study or feasibility study. As such, no mineral reserves have been estimated by GeoStrat as part of the present assignment. There is no certainty that all or any part of the Mineral Resources will be converted into a mineral reserve. Confidence in the estimate of Inferred mineral resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure.

Mineral resources for the Flame & Moth project have been estimated and classified according to the "CIM Standards on Mineral Resources and Reserves: Definition and Guidelines" (December, 2005) by David Farrow, P.Geo., an "Independent Qualified Person" as defined by National Instrument 43-101. The commercial ISATIS software program was used for mineral resource modeling.

GeoStrat considers that the quality of the exploration data (confidence in the location and reliability of assaying results) acquired by Alexco is good and therefore is not a factor that would impact resource classification. The confidence in the underlying datasets support classification of Indicated and Inferred mineral resources within the meaning of the CIM Definition Standards. However, there

is insufficient information to confirm both the geological and grade continuity with the current level of sampling to support a Measured mineral resource classification within the meaning of the CIM Definition Standards.

Blocks were classified as Indicated mineral resources if at least two drill holes and six composites were found within a 60 by 60 m search ellipse. All other interpolated blocks were classified as inferred mineral resource.

15.15 Mineral Resource Statement

CIM Definition Standards for Mineral Resources and Mineral Reserves (December 2005) define a mineral resource as:

"A concentration or occurrence of diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge".

The "reasonable prospects for economic extraction" requirement generally implies that the quantity and grade estimates meet certain economic thresholds and that the mineral resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. GeoStrat considers that the silver mineralization evaluated in the Flame & Moth deposit is amenable for underground extraction.

Commodity prices were provided to GeoStrat by Alexco as representative of consensus long term strategic forecast. Economic parameters are summarized in Table 15.12.

Table 15.12: Dollar equivalent (NSR) calculation parameters

Commodity	Price	Recovery
Ag	US$ 24.00/oz.	96%
Pb	US$0.85/lb.	97%
Zn	US$0.95/lb.	88%
Au	US$1,400.00/oz.	72%

Mineral resources for the Flame & Moth deposit defined relative to a NSR cut-off of $185/tonne, using metallurgical recoveries as proposed in the Preliminary Economic Assessment for the Bellekeno project at Keno Hill (Wardrop, 2009), are listed in Table 15.13 on the following page.

Table 15.13: Mineral resource statement*, Flame & Moth deposit, Flame & Moth Property, GeoStrat Consulting Services Inc., January 30, 2013

Zone	Class	Tonnes	Ag g/t	Au g/t	Pb %	Zn %
Christal	Indicated	450,000	545	0.48	1.74%	3.64%
	Inferred	57,000	320	0.28	1.08%	2.38%
Lightning	Indicated	829,000	496	0.4	1.73%	7.02%
	Inferred	50,000	302	0.26	0.61%	6.27%
Lightning V2	Indicated	99,000	548	0.27	1.61%	3.97%
	Inferred	1,000	614	0.12	1.73%	4.54%
Total	**Indicated**	**1,378,000**	**516**	**0.42**	**1.72%**	**5.70%**
	Inferred	**107,000**	**313**	**0.27**	**0.86%**	**4.21%**

** Reported at a NSR cut-off grade of C$185.00/t using metal prices (USD) and recoveries of Ag US$24.00/oz, recovery 96%; Pb US$ 0.85/lb, recovery 97%; Zn US$ 0.95/lb, recovery 88%; Au US$ 1,400/oz, recovery 72%. All numbers have been rounded to reflect the relative accuracy of the estimates. Mineral resources are not mineral reserves and do not have demonstrated economic viability. Confidence in the estimate of Inferred mineral resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure*

The mineral resource is shown in long-section view in Figure 5.7 and Figure 5.8, showing the estimation extents within the wireframes at a $185 NSR cut-off and a 400 g/t Ag cutoff respectively.

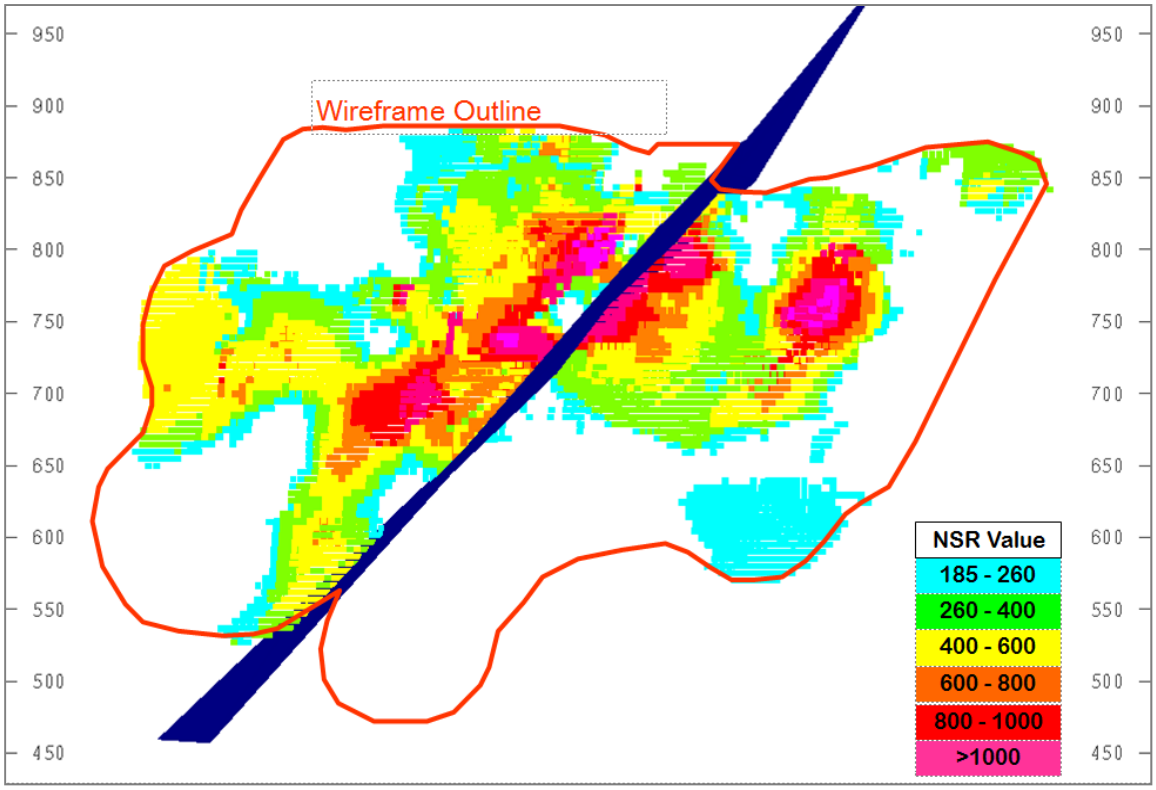


Figure 15.8: Long-section of the Flame mineral resource at a $185NSR cut-off, looking to the north-northwest.

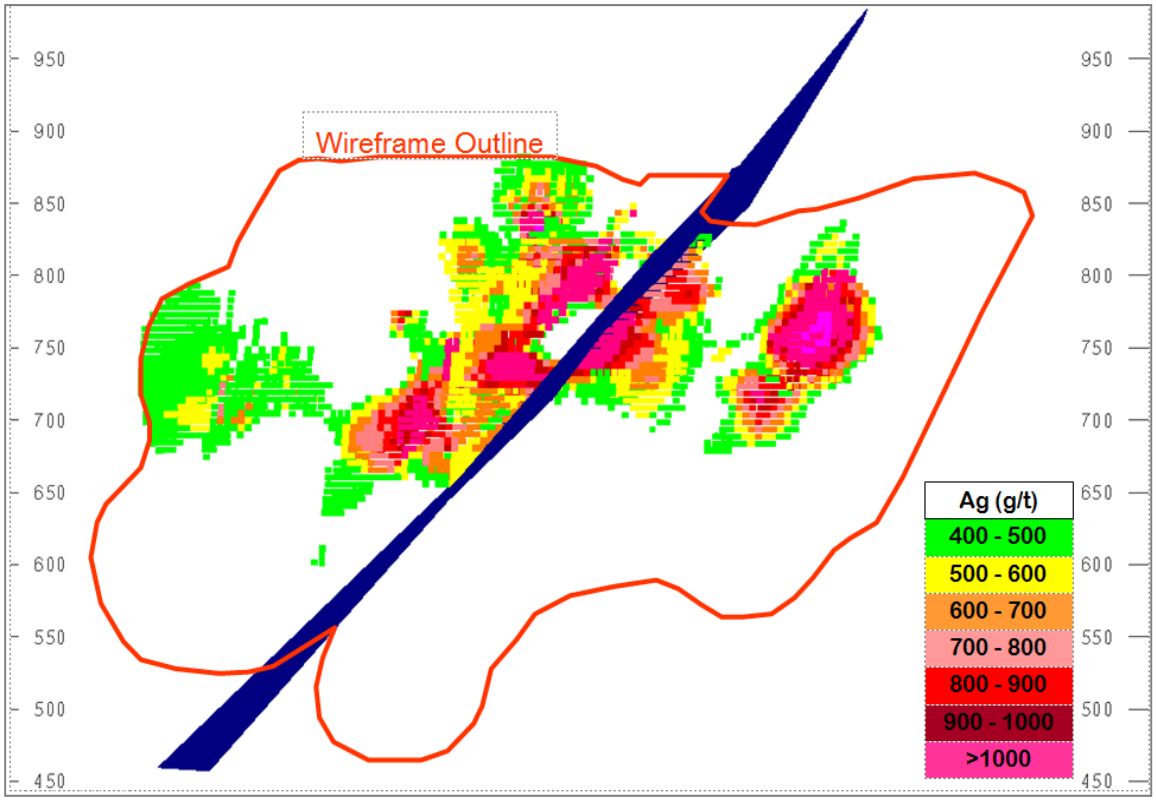


Figure 15.9: Long-section of the Flame mineral resource at a 400 g/t Ag cut-off, looking to the north-northwest.

16 Other Relevant Data and Information

The Flame & Moth deposit is situated on the Flame & Moth property, approximately 1.2 km west of Keno City adjacent to the site of the Alexco District Mill in the Keno Hill District.

Commissioning of the Alexco conventional flotation plant and Bellekeno underground mine, initiated in late September, 2010, was completed at the end of December, 2010, with both the mine and mill achieving an average throughput of 250 tonnes per day of ore for 30 days. The stated nameplate capacity of the District Mill as constructed is 407 tonnes per day. Alexco commenced commercial production at the Bellekeno mine on January 1, 2011.

In early December, 2010, Alexco announced the execution of lead and zinc off-take agreements for Bellekeno concentrate with Glencore Ltd., Stamford ("Glencore"); a branch of a wholly owned subsidiary of the Swiss-based international natural resources group Glencore International AG.

Total annual production from Bellekeno in 2012 came to 2.15 Moz Ag, 18.18 million lb of lead and 5.68 million lb of zinc from 94,810 tonnes of ore processed.

The District Mill currently processes output from the Bellekeno mine, and may in the future process output from other District mine sources as well. It is not currently determinable if resources mined from Flame & Moth would or even could be processed through the District Mill, until metallurgical testing has been carried out. Furthermore, until mining plans have been developed for Flame & Moth it is also not determinable if the District Mill will have sufficient capacity to process Flame & Moth mine output.

17 Interpretation and Conclusions

Between 2010 and 2012, Alexco conducted drilling programs on its Flame & Moth property, in the Keno Hill district, located in Central Yukon Territory. The drilling on the Flame & Moth deposit successfully outlined a significant polymetallic silver deposit in an area of limited historical exploration and production.

Surface geologic mapping combined with drill hole data has allowed for the construction of high quality geologic models for use in resource estimation and ongoing exploration.

The Flame Vein system is known to be developed over a 600 metre strike length to a depth of 350 metres and comprises two broadly north-northeast striking, southeast dipping mineralized wireframed segments - the Christal Zone and the Lightning Zone, offset by the northwest striking Mill Fault. The Christal Zone has a defined strike length of 280 m with a depth of 300 m, while the Lightning Zone extends 280 m in length and up to 350 m in depth. Mr. Farrow considers the modelled wireframes constructed by Alexco to be fair representations of the mineralized veins and acceptable for resource estimation.

The Alexco drilling information was acquired using procedures that meet or exceed industry best practices. Alexco personnel used diligence in monitoring quality control assaying results, investigating potential failures, and taking appropriate corrective measures when required. The quality control data collected by Alexco is considered comprehensive and the final, in some cases replicated, assay results delivered by ALS and AGAT Labs are generally reliable for the purpose of resource estimation.

The mineral resources presented in this report represent an update of the mineral resource for the Flame & Moth deposit by Alexco.The mineral resource for the Flame & Moth deposit, at a NSR cut-off of $185/tonne includes 1,378,000 tonnes at an average grade of 516 g/t silver classified as Indicated mineral resources and 107,000 tonnes at an average grade of 313 g/t silver classified as Inferred mineral resources.

18 Recommendations

It is recommended that Alexco continues exploration of the Flame Vein along strike and to depth. It is also recommended that Alexco initiates additional geotechnical, mineralogical, and metallurgical data collection and baseline environmental studies to support the preparation of a preliminary economic assessment. A detailed budget for the recommended exploration and development program is listed below (Table 18.1) with a total cost of $1.26 M.

Table 18.1: Budget for recommended exploration and development program

Activity	Quantity	Unit	Cost Estimate (CDN$)
Diamond drilling and assaying	3000	metres	$800,000
Preliminary metallurgical testing			$65,000
Geotechnical and mineralogical studies			$65,000
Hydrogeological studies and drilling			$250,000
Environmental Baseline Studies			$80,000
TOTAL			**$1,260,000**

19 Date and Signature Page

This technical report was written by the following "Qualified Persons" and contributing authors. The effective date of this technical report is March 15, 2013.

Qualified Person	Signature	Date
David Farrow	"original signed and sealed"	**March 15, 2013**
Alan McOnie	"original signed"	**March 15, 2013**

Authored by

"original signed and sealed"

David Farrow

Authored by

"original signed"

Alan McOnie

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

20 References

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APPENDIX A

Time Series Plots for Certified Reference Materials

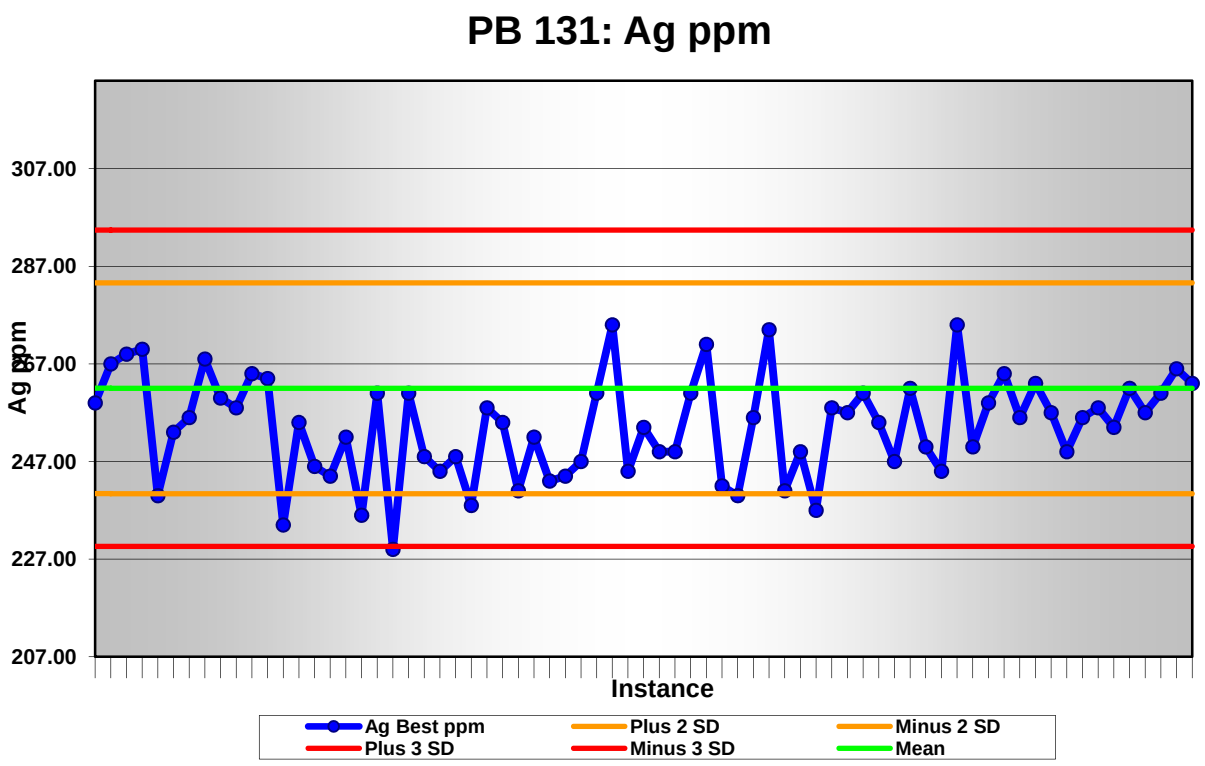

Figure A1: Analytical results for silver over time for standard reference material PB131 submitted with Flame & Moth deposit samples.

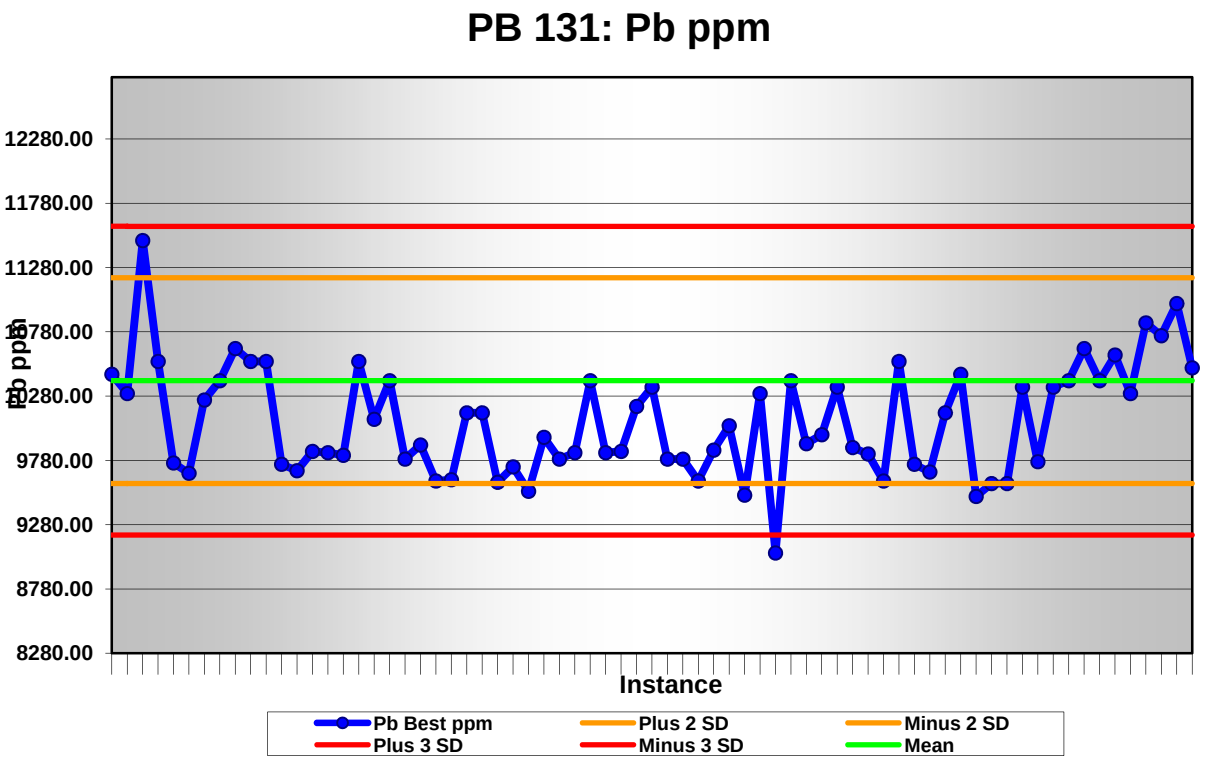

Figure A2: Analytical results for lead over time for standard reference material PB131 submitted with Flame & Moth deposit samples.

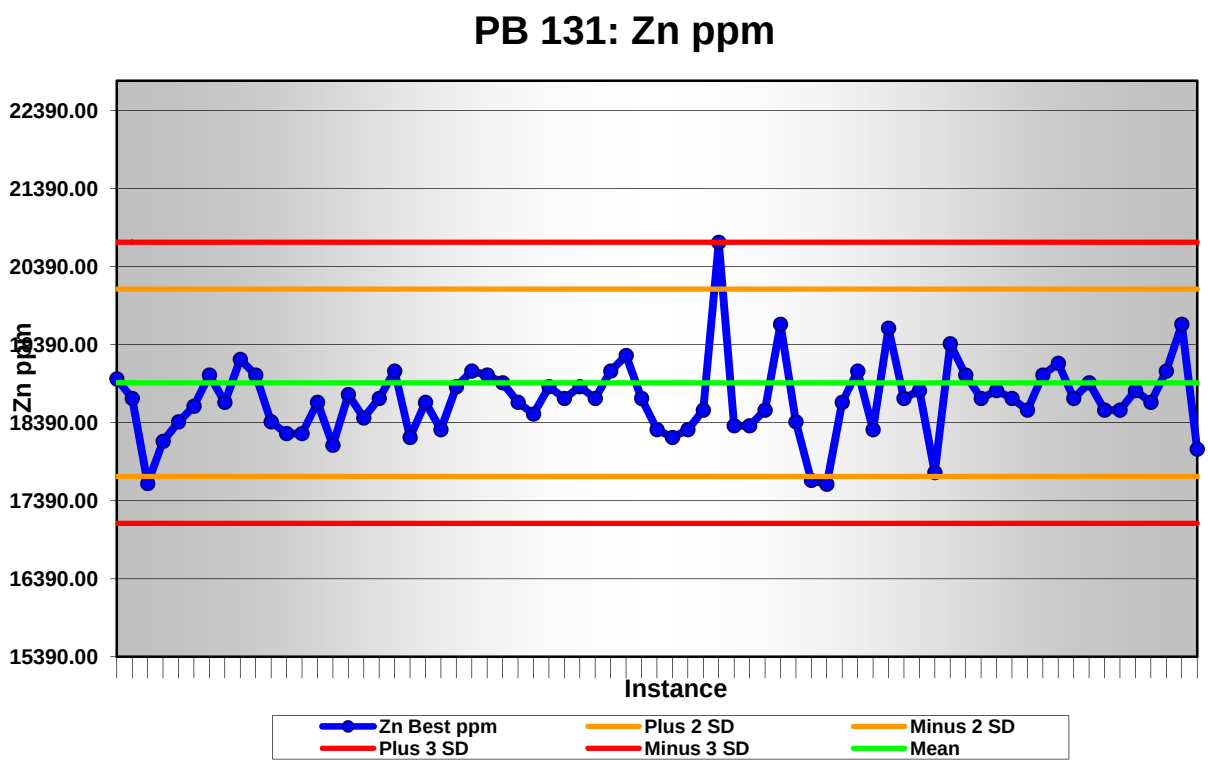

Figure A3: Analytical results for zinc over time for standard reference material PB131 submitted with Flame & Moth deposit samples.

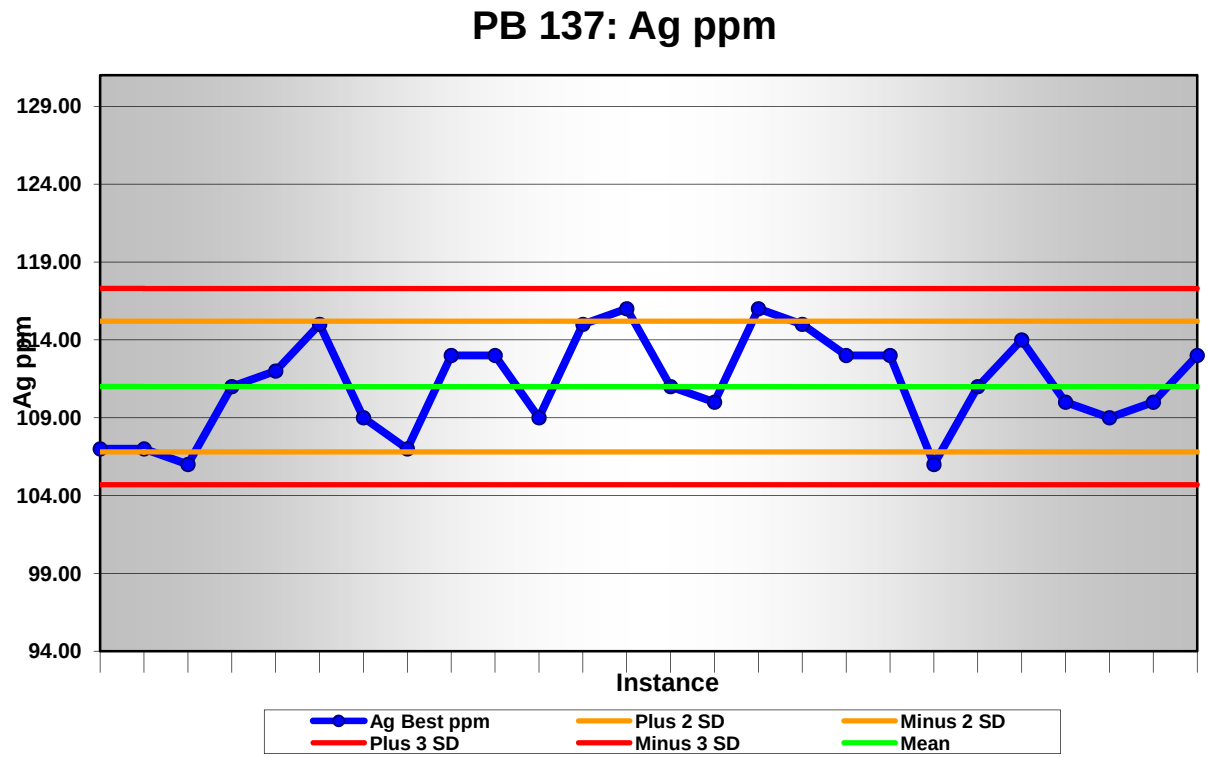

Figure A4: Analytical results for silver over time for standard reference material PB137 submitted with Flame & Moth deposit samples.

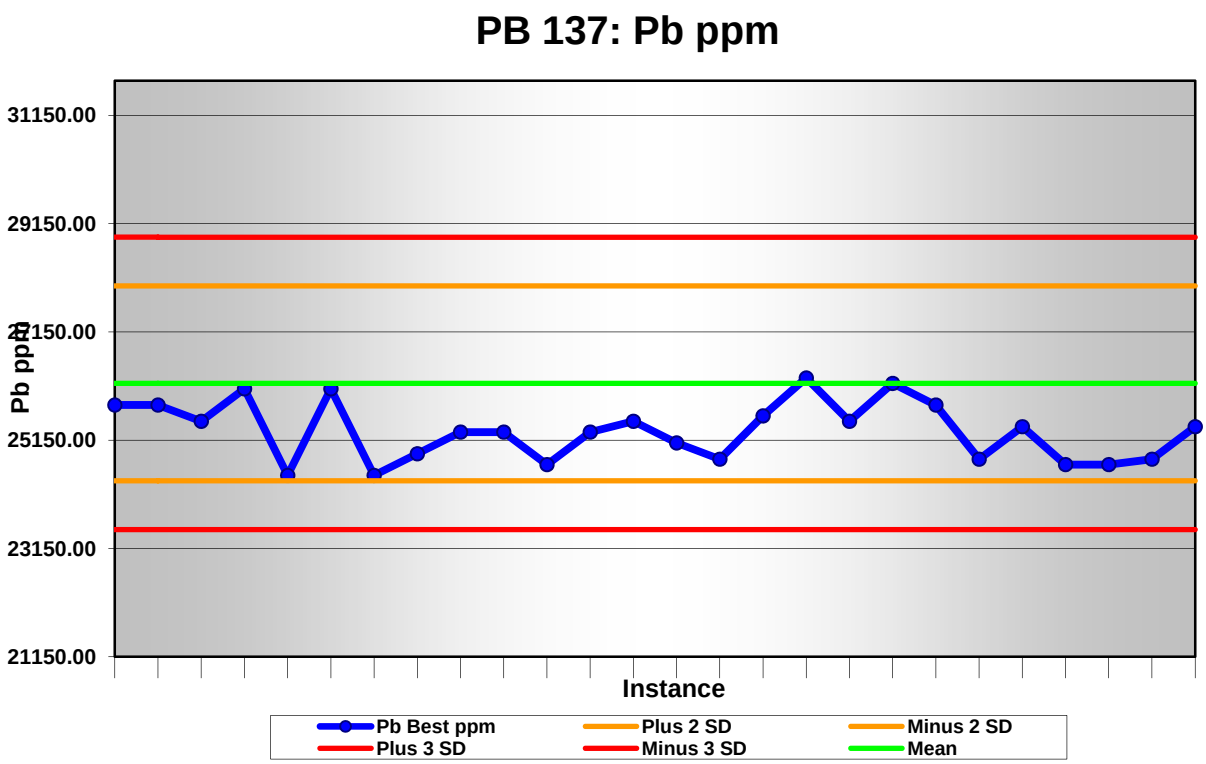

Figure A5: Analytical results for lead over time for standard reference material PB137 submitted with Flame & Moth deposit samples.

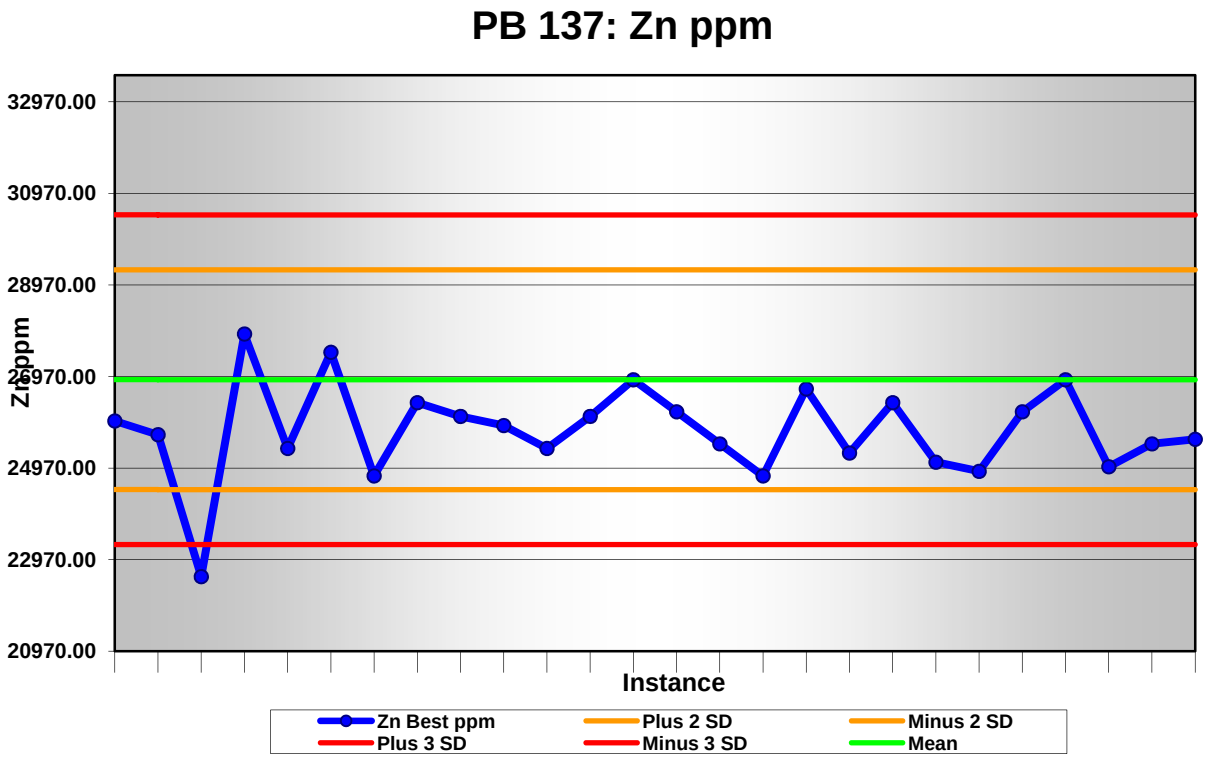

Figure A6: Analytical results for zinc over time for standard reference material PB137 submitted with Flame & Moth deposit samples.

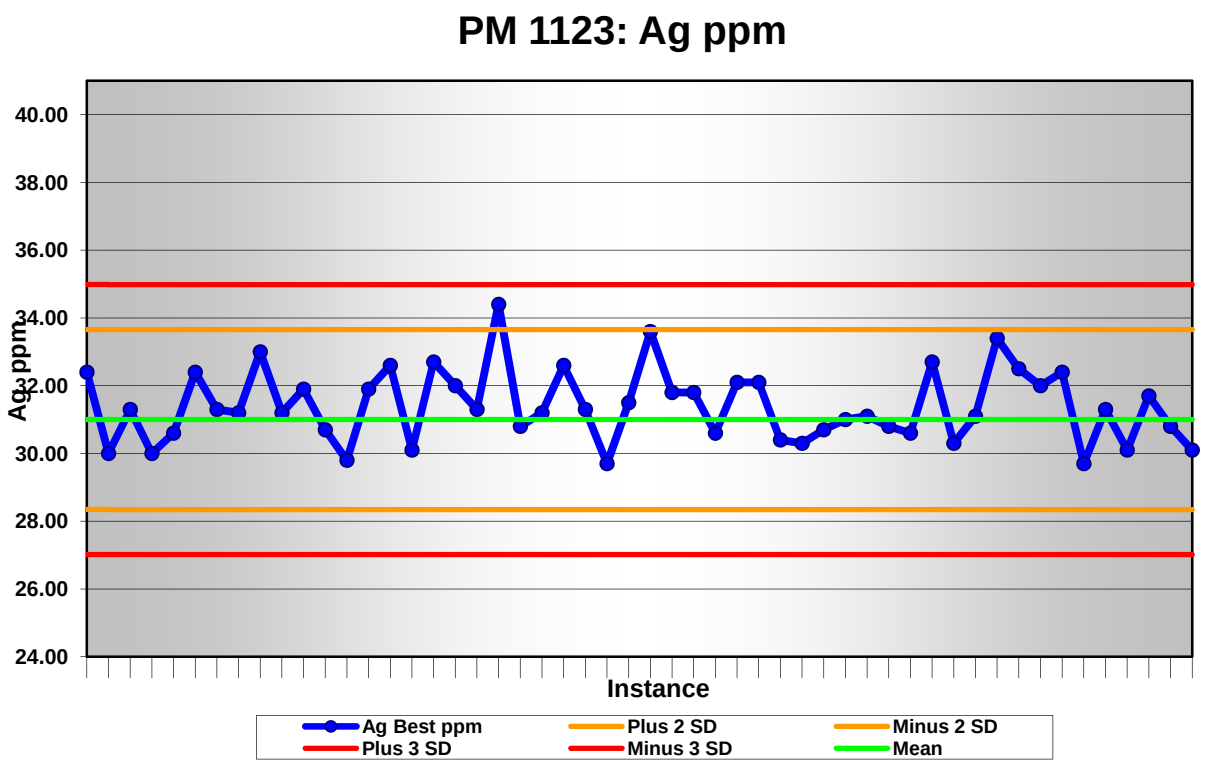

Figure A7: Analytical results for silver over time for standard reference material PM1123 submitted with Flame & Moth deposit samples.

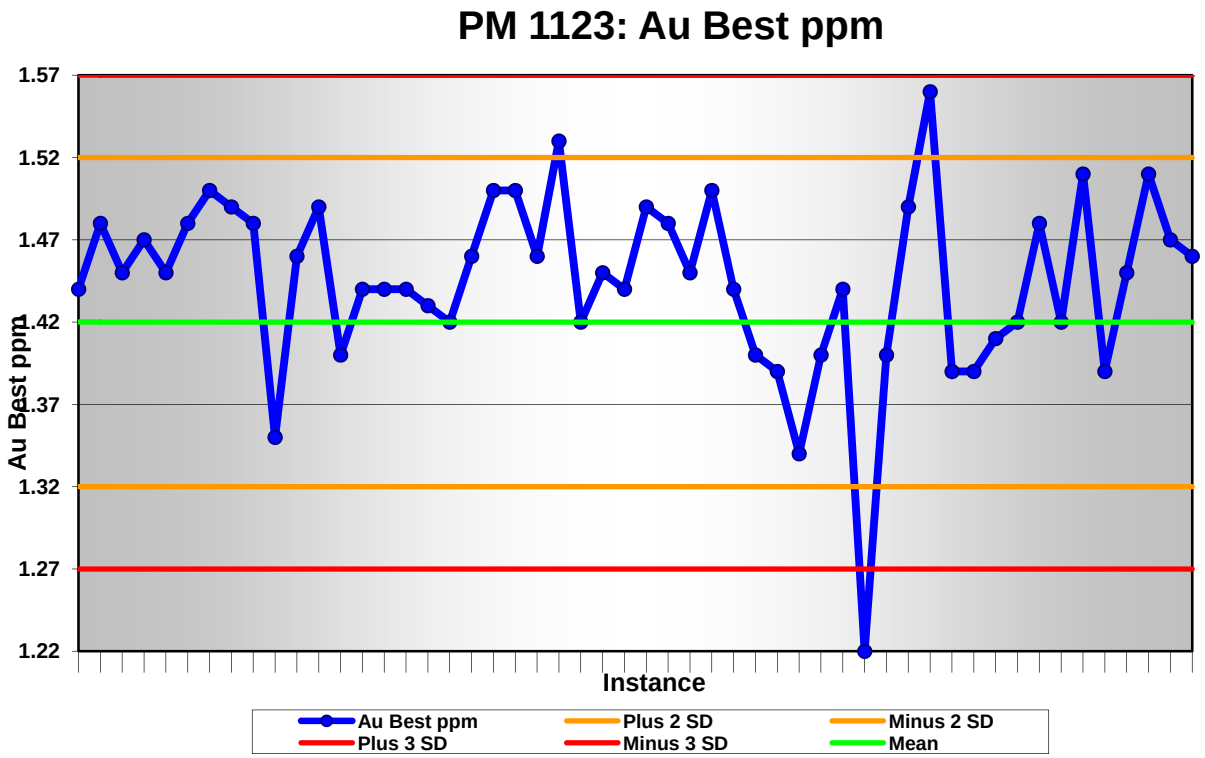

Figure A8: Analytical results for gold over time for standard reference material PM1123 submitted with Flame & Moth deposit samples.

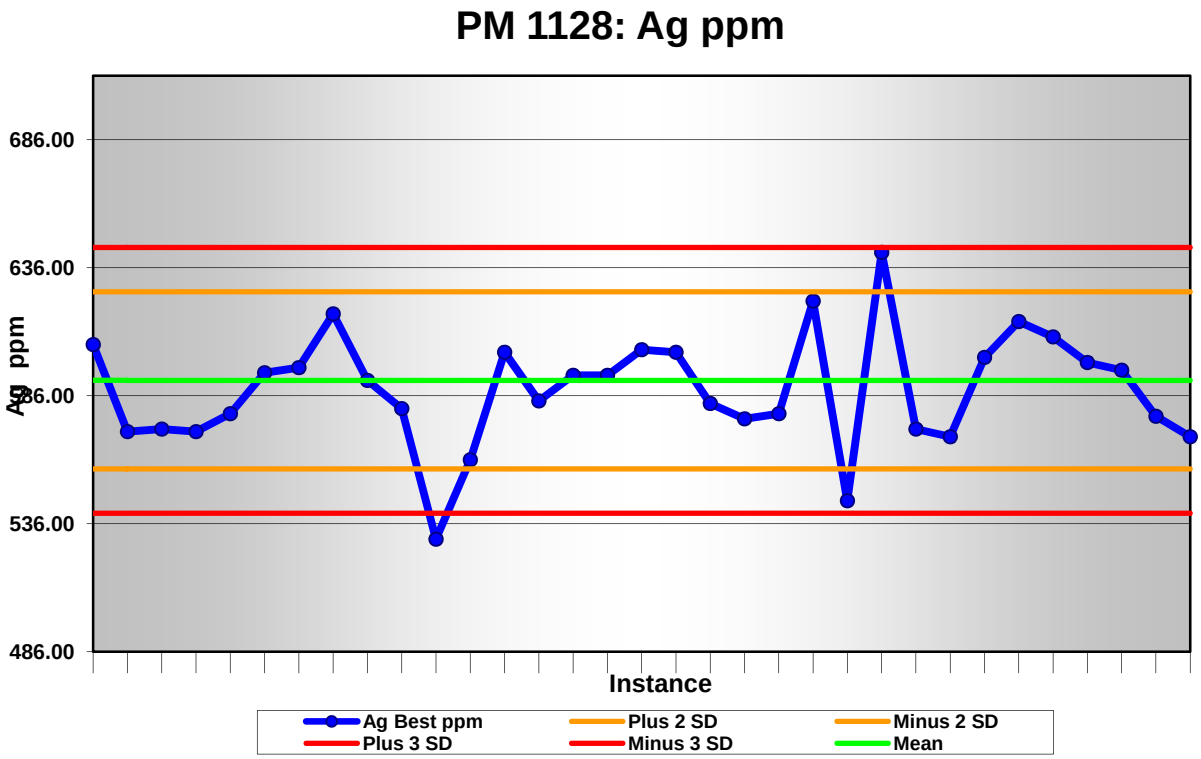

Figure A9: Analytical results for silver over time for standard reference material PM1128 submitted with Flame & Moth deposit samples.

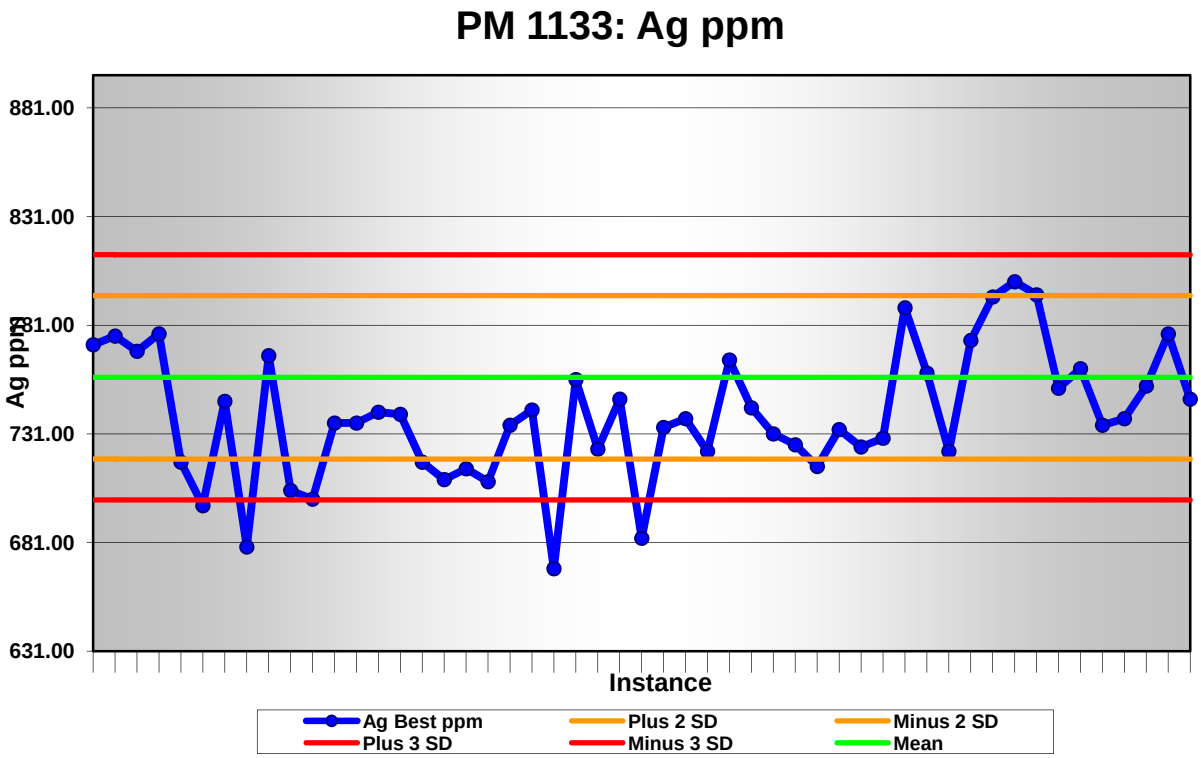

Figure A10: Analytical results for silver over time for standard reference material PM1133 submitted with Flame & Moth deposit samples.