



News Release

Alexco Updates Positive Preliminary Economic Assessment for Expanded Silver Production from Keno Hill Silver District, Yukon

December 23, 2014 – Alexco Resource Corp. (NYSE-MKT:AXU, TSX:AXR) today released an updated National Instrument 43-101 compliant Preliminary Economic Assessment (PEA) for its 100% owned Keno Hill Silver District in Canada's Yukon Territory. This PEA consolidates into one report updated information related to construction and operation of a new underground mine at the Flame & Moth silver deposit, and includes current resource statements for the Bellekeno, Lucky Queen, Onek and Bermingham deposits. The PEA was compiled by SRK Consulting (Canada) Inc. (SRK) with contributions from a team of qualified persons, and assesses an operations expansion for production of silver, lead, zinc and gold in the Keno Hill Silver District (KHSD). Note that all dollar amounts in this news release are in Canadian dollars unless indicated otherwise.

The PEA reflects one of a number of production strategies being considered in the eastern Keno Hill Silver District. Alexco President and Chief Executive Officer Clynt Nauman said, "We are continuing to optimize our work in the KHSD, which is anticipated to lead to a further technical report for Keno Hill with updated resource statements for the Flame & Moth and Bermingham deposits based on surface-related exploration work completed in 2014, results which are not yet available and therefore not reflected in this PEA."

Relative to the prior PEA released in December 2013 (see news release dated December 5, 2013 entitled "Alexco Releases Positive Preliminary Economic Assessment for Expanded Silver Production from Eastern Keno Hill Silver District, Yukon"), changes and additions to the updated PEA include:

- Incorporation of Alexco's Amended Silver Purchase Agreement with Silver Wheaton, including impact on potential mining blocks and overall economics, and reflecting the effect of the payment to Silver Wheaton of US\$20 million that will be required to bring the streaming agreement amendment into effect.
- Slightly revised mining plans, including increased overall silver grade, resulting from the combination of reduced silver prices and the impact of the revised silver purchase agreement on individual mining blocks.
- Adjusted initial capital to incorporate projects completed in 2014.
- A reduction of 23% in silver price and 7% in foreign exchange rates to US\$18.50 and US\$0.89 respectively.
- A slightly revised Onek resource incorporating underground drilling completed in 2012 and 2013.

Highlights of the revised PEA include:

- A production strategy comprising an initial nine-month construction period, followed by a 5.75 year period of silver production anchored by the Flame & Moth deposit.
- Annual delivery of an average 3.0 million ounces of payable silver, 6.6 million pounds of lead, 6.1 million pounds of zinc and 1,020 ounces of gold from approximately 140,000 tonnes per year of consolidated mine and mill production.
- An after tax internal rate of return (IRR) of 22.1%, an after tax net present value (NPV) (5%) of \$23.3 million and a 3.75 year payback. Initial capital requirements of approximately \$45 million, of which US\$20 million is slated for the Silver Wheaton payment prior to commercial production. Of the remainder, roughly half the initial capital would be deployed to drive a decline and establish underground infrastructure at the Flame & Moth deposit, which is planned to deliver 72% of the tonnes in the current

Head Office

T. 604 633 4888

Alexco Resource Corp.
200 Granville Street, Suite 1150
Vancouver, BC V6C 1S4
Canada

F. 604 633 4887



plan. The balance of the initial capital is planned for minor mill upgrades, additional surface facilities, recommissioning of the Bellekeno mine and working capital and inventory buildup.

- Importantly, approximately 15% or 143,000 tonnes of potentially mineable tonnes, primarily at Bellekeno and Flame & Moth, were not included in the PEA mine plan and remains to be considered in the event underlying costs and obligations are further optimized.

Nauman said, "Earlier in 2013, in the face of declining silver prices and reduced operating margins, we elected to suspend winter operations at our Bellekeno mine and mill facilities at Keno Hill. We did so with the knowledge that we had a rapidly growing silver resource at the Flame & Moth deposit, and that a revised operations strategy was required to integrate production from known and previously developed deposits (i.e. Bellekeno, Lucky Queen) with the new and larger but as yet undeveloped Flame & Moth deposit. In addition, simple economics drove us to develop a plan that fully utilized our mill capacity when re-initiating silver production. To do that, the PEA outlines a strategy to firstly develop the Flame & Moth mine and then initiate silver production with ore feed from Flame & Moth and Bellekeno, and later in the plan replace Bellekeno supplemental ore feed with ore from the Lucky Queen deposit."

Nauman continued, "Subsequent to the publication of the initial PEA last December, in 2014 Alexco mobilized an expanded exploration program to further evaluate extensions to the Flame & Moth deposit. Results of this work will be incorporated in further optimization studies. Clearly, the Flame & Moth deposit is emerging as a cornerstone asset in the Keno Hill Silver District and will potentially anchor future production well into the 2020's. Furthermore, our recent exploration successes in the Bermingham area give us more encouragement that the potential resource pipeline in the KHSD will continue to grow as our work and understanding of the ore controls in the District become more sophisticated."

Key PEA metrics and assumptions are as follows:

Consolidated production	812,900 tonnes (t)
Consolidated production grade	754 grams per tonne (gpt) silver (Ag), 0.4 gpt gold (Au), 2.7% lead (Pb), 4.5% zinc (Zn)
Mill throughput	Average 398 tonnes per day (tpd)
Mill recoveries	Ag 93.7%, Au 71.3%, Pb 83.6%, Zn 60.3%
Concentrate produced (6% moisture)	29,299 tonnes Pb con, 47,179 tonnes Zn con
Total payable metal production	Ag 17.1Moz, Au 5,900oz, Pb 38.2Mlb, Zn 35.2Mlb
Production cost (mining, milling and G&A)	\$255 per tonne of ore
Net Smelter Return (NSR) per tonne of ore (after incorporation of Silver Purchase Agreement)	\$444 per tonne of ore
Total capital (life of mine)	\$96 million, including \$22.4 million Silver Wheaton agreement payment and \$36 million underground development
Initial capital to achieve positive cash flow	\$45 million including \$22.4 million Silver Wheaton payment
Net Cash Contribution Pre-Tax	\$54.4 million
IRR Pre-tax	30%
NPV Pre-tax (5%)	\$38.9 million
Net Cash Contribution After Tax	\$35.6 million
IRR After Tax	22%
NPV After Tax (5%)	\$23.3million
Prices Used in PEA	Ag US\$18.50/oz, SLW Ag US\$17.14/oz, Pb US\$0.98/lb, Zn US\$1.00/lb, Au US\$1,210/oz, USD/CDN 0.89



The 812,900 tonnes of the consolidated mine production is primarily derived from indicated mineral resources, though approximately 6% is derived from inferred mineral resources. *Readers are cautioned that mineral resources are not mineral reserves and do not have demonstrated economic viability. Furthermore, the PEA is preliminary in nature; it includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves; and there is no certainty that the PEA will be realized.*

The PEA contemplates an initial development and construction period of approximately nine months, at which time commercial production would commence. Commencement of development and construction remains dependent on Alexco making a development decision, which would be dependent on a number of factors, including receiving all appropriate permits, Alexco's expectations regarding market prices for silver, lead, zinc and gold as well as the US-Canadian dollar exchange rate, and the availability of development capital. Additionally, a production decision which is made without a feasibility study of mineral reserves demonstrating economic and technical viability carries additional potential risks which include, but are not limited to, the risk that additional detailed work may be necessary with respect to mine design and mining schedules, metallurgical flow sheets and process plant designs, and the inherent risks noted above pertaining to the inclusion of approximately 6% inferred mineral resources in the mine plan.

Revised Onek Resource Statement

The mineral resources for the Onek Mine were revised in 2014 using a combination of original resource data, new drilling, and revised pricing and recoveries. A revised mineral resource statement for the Onek deposit is tabulated below and is reported relative to a cut-off value of C\$185/tonne.

Mineral Resource Statement*, Onek Deposit, SRK Consulting (Canada) Inc., October 15, 2014

Zone	Class	Tonnes	Ag (gpt)	Pb (%)	Zn (%)	Au (gpt)	Ag Oz
Vein 1	Indicated	580,000	182	1.08%	13.07%	0.63	3,397,000
	Inferred	198,000	128	1.03%	9.51%	0.47	820,000
Vein 1 FW	Indicated	8,000	347	5.42%	4.18%	0.60	89,000
	Inferred	5,000	156	4.89%	4.97%	0.46	25,000
Vein 2	Indicated	66,000	339	2.73%	6.55%	0.48	720,000
	Inferred	32,000	157	2.04%	5.33%	0.28	163,000
Total	Indicated	654,000	200	1.29%	12.30%	0.62	4,206,000
	Inferred	234,000	134	1.24%	8.86%	0.44	1,008,000

* Reported at a cut-off value of C\$185.00/t considering metal prices of US\$20.00/oz for Ag, US\$0.90/lb for Pb, US\$0.95/lb for Zn, and US\$1,250.00/oz for Au; and recovery of 96% for Ag, 97% for Pb, 88% for Zn, and 72% for Au. All numbers have been rounded to reflect the relative accuracy of the estimates. **Mineral resources are not mineral reserves and have not 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.**

While the resource estimate has been revised, the Onek deposit was not considered in the mine planning portion of the PEA.

Mining

The PEA lays out a mine plan centered on Flame & Moth production with supplemental mine production coming from the Bellekeno deposit early in the production period followed by Lucky Queen mine production later in the



period. The life of mine (LOM) production schedule averages 398 tpd for 5.75 years. Nominal production rates are 250 tonnes per day (tpd) for Bellekeno, 100 tpd for Lucky Queen and 320 tpd for Flame & Moth which also supplies about 72% of the mill feed over the study period. In designing the production schedule, approximately 143,000 tonnes of potentially mineable tonnes were not included in the plan for various reasons, but remain as future potentially mineable resource.

In production, mined resources from underground will be extracted using a combination of mining methods depending on the characteristics of the resource zone and ground control conditions. The PEA anticipates a variety of mining methods based on deposit characteristics: Lucky Queen would be primarily a mechanized cut and fill mining operation, whereas Bellekeno would be mined primarily by long-hole stoping and mechanized cut and fill mining. Flame & Moth would use a combination of mechanized cut and fill, long-hole stoping and drift and fill methods.

Processing and Infrastructure

The Keno District Mill Facility has a nameplate capacity of 407 tonnes per day and employs conventional crushing, grinding, differential flotation and dewatering processes to produce a lead concentrate, a zinc concentrate and a filtered tailings product for storage in an established Dry Stacked Tailings Facility. Silver and lead minerals are recovered together in the silver-lead bulk concentrate and zinc minerals in a separate zinc concentrate.

The current process flowsheet includes the following main unit operations:

- a crushing unit consisting of a jaw crusher, cone crusher and screen
- primary grinding circuit
- silver-lead flotation circuit
- zinc flotation circuit
- concentrate dewatering circuit
- tailings dewatering

Prior to resumption of concentrate production, an additional 1.8 meter x 3 meter, 130kW ball mill will be retrofitted to provide expanded grinding capacity ahead of the flotation circuit.

Metallurgical recoveries in the PEA were estimated by SRK using a combination of historical performance and test work from each of the deposits slated for production in the KHSD project.

All of the regulatory approvals required for mining activities associated with the Bellekeno and Lucky Queen deposits are currently in place. Preliminary mine planning has been completed for the Flame & Moth deposit, and permitting for development and production from the deposit is underway.

In terms of infrastructure, the KHSD project is supported by an already established modern camp with capacity for approximately 150 people. The project is on the Yukon electric grid and is serviced by all-weather roads. Concentrates are shipped in sealed aluminum containers by road to the Port of Skagway in Alaska and transloaded to southbound tug and barge service for ultimate delivery to smelter facilities.

Next Steps

The PEA reflects one of a number of Keno Hill production strategies being considered by Alexco. Work is ongoing to optimize various aspects of this project, taking into account new pricing and costing bases in combination with emerging exploration results. As with most relatively smaller, higher grade deposits, consolidated mine economics are sensitive to commodity price, foreign exchange, the tenor and grade of ore delivered to the mill, and the



efficiency with which the mill operates. Equally important, the Company plans to continue its successful exploration strategy to expand resource inventory in the District as a whole.

National Instrument 43-101 and Qualified Persons

The PEA has been prepared in compliance with National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* (NI 43-101), and was compiled by SRK Consulting (Canada) Inc. (SRK) with contributions from a team of Qualified Persons as defined by NI 43-101. The Onek resource estimate update has been completed by Gilles Arseneau, P.Geo, SRK Associate Consultant. The mineral resources are classified following the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resource and Mineral Reserves (2014), in accordance with the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and with NI 43-101 guidelines. The updated PEA technical report is being filed on SEDAR, with an effective date of November 15, 2014 and is entitled “Updated Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada”.

The disclosure in this news release of scientific and technical information about the PEA has been reviewed and approved by Qualified Persons Ken Reipas, P.Eng, SRK Principal Mining Engineer, and Gilles Arseneau, P.Geo, SRK Associate Consultant. The disclosure in this news release of all other scientific and technical information regarding exploration projects on Alexco's mineral properties has been reviewed and approved by Alan McOnie, FAusIMM, Vice President, Exploration, a Qualified Person as defined by NI 43-101.

About Alexco

Alexco Resource Corp. owns the Bellekeno silver mine, one of several mineral properties held by Alexco which encompass substantially all of the historical Keno Hill Silver District located in Canada's Yukon Territory. Bellekeno, which commenced commercial production at the beginning of calendar year 2011, was Canada's only operating primary silver mine from 2011 to 2013. Alexco is currently undergoing an interim suspension of operations at Bellekeno in order to decrease costs and reposition the District for long-term, sustainable operations. The Keno Hill Silver District lies within the traditional territory of the First Nation of Na-Cho Nyak Dun who have a fully settled land claim agreement with the Government of Canada and the Yukon, and Alexco operates within the District under a comprehensive cooperation and benefits agreement with the First Nation. Alexco's primary near-term exploration objective is to unlock value in the silver-rich Keno Hill District, and is focused on growth by advancing its promising District properties to development decisions. Employing a unique business model, Alexco also provides mine-related environmental services, remediation technologies and reclamation and mine closure services to both government and industry clients through the Alexco Environmental Group, its wholly-owned environmental services division.

Keno Hill Silver District History

Between 1921 and 1988, the Keno Hill Silver District was a world-class silver producer, with more than 217 million ounces of silver produced at average grades of 40.5 ounces per ton silver, 5.6% lead and 3.1% zinc (Yukon Government's Minfile database). These historical production grades would rank Keno Hill in the top 3% by grade of today's global silver producers.

Contact

Clynton R. Nauman, President and Chief Executive Officer
Vicki Veltkamp, Vice President Investor Relations
Phone: (604) 633-4888
Email: info@alexcoresource.com

Please visit the Alexco website at www.alexcoresource.com



ALEXCO

Some statements ("forward-looking statements") in this news release contain forward-looking information concerning the Company's anticipated results and developments in the Company's operations in future periods, planned exploration and development of its properties, plans related to its business and other matters that may occur in the future, made as of the date of this news release. Forward-looking statements may include, but are not limited to, statements with respect to the amendment to the Silver Purchase Agreement, its impact on Alexco and the Keno Hill Silver District and the parties' rights, obligations and conditions thereunder, including Alexco's condition to pay Silver Wheaton \$20 million and obtain regulatory approvals for any financing related thereto, future remediation and reclamation activities, future mineral exploration, the estimation of mineral reserves and mineral resources, the realization of mineral reserve and mineral resource estimates, future mine construction and development activities, future mine operation and production, the anticipated timing of making a production decision in the Eastern Keno Hill Silver District including recommencement of production at the Bellekeno mining operation, the timing of activities and reports, the amount of estimated revenues and expenses, the success of exploration activities, permitting time lines, requirements for additional capital and sources and uses of funds. Forward-looking statements are subject to a variety of known and unknown risks, uncertainties and other factors which could cause actual events or results to differ from those expressed or implied by the forward-looking statements. Such factors include, among others, risks related to the parties' performance under the amendment to the Silver Purchase Agreement, including Alexco's ability to raise additional capital to make the \$20 million payment to Silver Wheaton to meet its condition thereunder; success and timing of regulatory approvals; actual results and timing of exploration and development activities; actual results and timing of mining activities; actual results and timing of environmental services activities; actual results and timing of remediation and reclamation activities; conclusions of economic evaluations; changes in project parameters as plans continue to be refined; future prices of silver, gold, lead, zinc and other commodities; possible variations in mineable resources, grade or recovery rates; failure of plant, equipment or processes to operate as anticipated; accidents, labour disputes and other risks of the mining industry; First Nation rights and title; continued capitalization and commercial viability; global economic conditions; competition; and delays in obtaining governmental approvals or financing or in the completion of development activities. Forward-looking statements are based on certain assumptions that management believes are reasonable at the time they are made. In making the forward-looking statements included in this news release, the Company has applied several material assumptions, including, but not limited to, the assumption that the Company will be able to raise additional capital to make the \$20 million payment to Silver Wheaton under the amendment, that regulatory approval will be obtained in a timely fashion, that the proposed exploration and development will proceed as planned, and that market fundamentals will result in sustained silver, gold, lead and zinc demand and prices. There can be no assurance that forward-looking statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements. The Company expressly disclaims any intention or obligation to update or revise any forward-looking statements whether as a result of new information, future events or otherwise, except as otherwise required by applicable securities legislation.