

VANCOUVER, BC--(Marketwired - December 09, 2015) - [Almaden Minerals Ltd.](#) ("Almaden" or "the Company") (TSX: AMM) (NYSE MKT: AAU) is pleased to report positive results from an updated National Instrument (NI) 43-101 compliant Preliminary Economic Assessment ("PEA Update") on its 100% owned Ixtaca Gold-Silver deposit, Mexico which incorporates the benefits of the Company's recently announced option to purchase the Rock Creek Mill.

PEA UPDATE HIGHLIGHTS (all values shown are in \$US; base case uses \$1150/oz gold and \$16/oz silver prices):

- Initial Capital is \$100.2 million;
- After-tax payback of initial capital in 2.6 years.
- Pre-tax NPV(5%) of \$266 million and internal rate of return of 39%;
- After-tax (including new Mexican Mining Duties) NPV(5%) of \$166 million and internal rate of return of 30%;
- 36 million tonnes of mill feed averaging 0.76 g/t gold and 47 g/t silver (average head grade of 1.42 g/t gold equivalent using a 72:1 silver to gold ratio)
- Total LOM production of 724,000 ounces of gold and 49 million ounces of silver (1.4 million gold equivalent ounces, or 101 million silver-equivalent ounces at a 72:1 silver to gold ratio);
- Operating cost \$684 per gold equivalent ounce, or \$9.50 per silver equivalent ounce
- 97% of the PEA Update mill feed is in the Measured and Indicated categories of the resource model.

Past PEAs filed on the project and this PEA update have been prepared by Moose Mountain Technical Services ("MMTS") and Knight Pi&A sold Ltd. ("KP"). The conclusions and recommendations of past PEAs were that the Ixtaca deposit is potentially economically viable and the Company should proceed to a Pre-Feasibility study ("PFS"). Since that time work has commenced towards completion of a PFS, including a number of optimisation studies, and the Company has secured an option to purchase the Rock Creek Mill (see Almaden news release of October 19<sup>th</sup>, 2015).

The primary reasons for providing an update to previous PEA studies on the Ixtaca Project are to show the impact of significantly reduced initial capital cost on project economics and to demonstrate the viability of an alternate mine plan which focuses on the near surface high grade limestone hosted portions of the Ixtaca Zone deposit. This alternate mine plan is a smaller high grade scenario that still allows for expansion into a larger production scenario as described in previous Ixtaca PEAs (see Almaden news releases of April 16<sup>th</sup>, 2014 and September 3<sup>rd</sup>, 2014). In addition, this PEA Update incorporates results from various engineering studies related to the project which have been conducted since the September 2014 PEA report. This PEA Update incorporates:

- The same resource model as the maiden PEA;
- The Rock Creek Mill with average throughput of 7,500 tonnes per day;
- A smaller, near surface and payback focussed pit;
- Mine production schedule which targets higher grades earlier;
- Optimised waste placement and tailings management facilities;
- A 2% NSR held by [Almadex Minerals Ltd.](#) (TSX VENTURE: AMZ).

*This PEA UPDATE is preliminary in nature as it includes inferred mineral resources which are considered too speculative geologically to have the economic considerations applied that would enable them to be categorized as mineral reserves. There is no certainty that the PEA Update forecasts will be realized or that any of the resources will ever be upgraded to reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.*

J. D. Poliquin, Chairman of Almaden reported, "This PEA update shows material improvements to the potential economic viability of the Ixtaca project realised through the recently-optional Rock Creek Mill. At the same time a new mine plan is presented that optimises the mine plan for the lower metal price environment we find ourselves in by focussing on the near surface, quicker payback material. We now continue working on a PFS to further de-risk the project and initiate the permitting process."

#### Geology and Mineral Resources

The Ixtaca deposit is an epithermal gold-silver deposit, mostly hosted by veins in limestone and shale basement rocks with a minor component of disseminated mineralisation hosted in overlying volcanic rocks. In the September 2014 PEA the limestone host rock comprised 73% of the metal produced, volcanic 19% and blackshale 8%. In this PEA Update limestone comprises 91% of the metal produced, volcanic 7% and blackshale 2% on a gold-equivalent basis using a 72:1 silver to gold ratio.

On January 31, 2013 the Company announced a maiden resource on the Ixtaca Zone. Since that time drilling has been focused on expanding and infilling the known resource base for this PEA which utilised the NI 43-101 Compliant Updated Mineral Resource Estimate released January 22, 2014, performed by Gary Giroux, P.Eng., qualified person under the meaning of NI 43-101, and summarised in Table 3 below. The data available for the resource estimation consisted of 423 drill holes assayed for gold and silver. The estimate was constrained by three dimensional solids representing different lithologic and mineralized domains. Of the total drill holes 400 intersected the mineralized solids and were used to make the resource estimate. Capping was completed to reduce the effect of outliers within each domain. Uniform down hole 3 meter composites were produced for each domain and used to produce semi-variograms for each variable. Grades were interpolated into blocks 10 x 10 x 5 meters in dimension by Ordinary kriging. Specific gravities were determined for each domain from drill core. Estimated blocks were classified as either Measured, Indicated or Inferred based on drill hole density and grade continuity. Wireframes constraining mineralised domains were constructed based on geologic boundaries defined by mineralisation intensity and host rock type. Higher grade zones occur where there is a greater density of epithermal veining. These higher grade domains have good continuity and are cohesive in nature.

## MEASURED RESOURCE

AuEq Cut-off (g/t)	Tonnes > Cut-off (tonnes)	Grade > Cut-off			Contained Metal x 1,000		
		Au (g/t)	Ag (g/t)	AuEq (g/t)	Au (ozs)	Ag (ozs)	AuEq (ozs)
0.3	44,550,000	0.48	30.28	1.07	682	43,370	1,527
0.5	30,420,000	0.61	39.44	1.38	599	38,570	1,350
0.7	22,300,000	0.73	48.02	1.67	526	34,430	1,196
1.0	15,620,000	0.88	58.66	2.03	444	29,460	1,017
2.0	6,000,000	1.33	86.54	3.01	256	16,690	581

## INDICATED RESOURCE

AuEq Cut-off (g/t)	Tonnes > Cut-off (tonnes)	Grade > Cut-off			Contained Metal x 1,000		
		Au (g/t)	Ag (g/t)	AuEq (g/t)	Au (ozs)	Ag (ozs)	AuEq (ozs)
0.3	108,520,000	0.38	20.78	0.79	1,336	72,500	2,749
0.5	62,250,000	0.52	28.92	1.09	1,043	57,880	2,172
0.7	39,350,000	0.65	37.12	1.37	824	46,960	1,738
1.0	23,750,000	0.81	47.12	1.73	621	35,980	1,322
2.0	5,880,000	1.39	72.89	2.81	263	13,780	532

## INFERRED RESOURCE

AuEq Cut-off (g/t)	Tonnes > Cut-off (tonnes)	Grade > Cut-off			Contained Metal x 1,000		
		Au (g/t)	Ag (g/t)	AuEq (g/t)	Au (ozs)	Ag (ozs)	AuEq (ozs)
0.3	42,490,000	0.36	17.58	0.70	488	24,020	956
0.5	22,150,000	0.50	25.14	0.99	355	17,900	704
0.7	13,400,000	0.63	31.66	1.25	273	13,640	539
1.0	7,620,000	0.80	39.85	1.57	195	9,760	385
2.0	1,200,000	1.18	73.69	2.61	45	2,840	101

Table 1- Ixtaca Zone NI 43-101 Measured, Indicated and Inferred Mineral Resource Statement with the Base Case 0.5 g/t AuEq Cut-Off highlighted from January 22<sup>nd</sup> 2014 Resource Statement. Also shown are the 0.3, 0.7, 1.0 and 2.0 g/t AuEq cut-off results. AuEq calculation based on three year trailing average prices of \$1540/oz gold and \$30/oz silver.

## Production and Processing

The Ixtaca gold-silver project in the PEA Update is planned as an open pit mining operation using contractor mining. Estimated mining inventory is comprised of 179 million tonnes of rock and 36 million tonnes of mill feed with an average mill feed grade of 0.76 grams per tonne gold and 47 grams per tonne silver. A total of 724 thousand ounces of gold and 48.8 million ounces of silver would be produced over the 13 year mine life. The PEA Update includes the Rock Creek process plant to produce gold and silver doré on site. The process plant includes conventional crushing, grinding, gravity, flotation, and concentrate leaching. Process reagents will be removed from process plant tailings prior to placement in a tailings management facility ("TMF"). The following table summarizes the production and processing parameters:

Table 2 - Projected Production and Processing Summary

Total Mill Feed Material*	35.5 million tonnes**	
Average Processing Rate	7,500 tonnes per day	
Life of Mine (LOM) Strip Ratio	5 : 1***	
	Gold	Silver
Average Mill Feed Grade	0.76 g/t	47.5 g/t
Average Process Recoveries	84%	90%
Average Annual Production LOM (ounces)	55,660	3,754,000
Total Production (ounces)	723,580	48,806,000

\* The mill feed tonnes in the mine plan include Inferred Resources. The reader is cautioned that Inferred Resources are considered too speculative geologically to have economic considerations applied to them that would enable categorization as Mineral Reserves. There is no certainty that Inferred Resources will ever be upgraded to Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

\*\* The cut-off grade used to calculate the mill feed is NSR &percnt; 20. NSR is calculated using the following formula: NSR = [Au(g/t) \* Au recovery (%) \* 36.55] + [Ag(g/t) \* Ag recovery (%) \* 0.46]

\*\*\* The strip ratio includes 13 million tonnes of stockpiled material not processed in this PEA Update that averages 0.31 g/t Au and 45 g/t Ag as waste. Should this material be processed the ultimate strip ratio would be 3:1.

## Capital and Operating Costs

The total estimated initial capital cost for the Ixtaca gold-silver project is \$100.2 million and sustaining capital is \$24 million over the

LOM. The estimated LOM operating costs are \$26.99 per tonne mill feed.

The following tables summarize the cost components:

Table 3 - Initial Capital Costs (\$ millions)

Site Infrastructure	\$15.3
TMF and Water Management	\$9.6
Mining	\$25.1
Process Plant, DorÃ© Plant and Conveyor	\$28.0
Indirects, EPCM, Contingency and Owner's Costs	\$22.2
Total	\$100.2

Table 4 - Projected Operating Costs (\$)

Mining costs	\$2.19	\$/tonne mined
Mining costs	\$11.63	\$/tonne milled
Processing	\$13.73	\$/tonne milled
G&A	\$1.54	\$/tonne milled
Life of Mine TMF management	\$0.09	\$/tonne milled
Total	\$26.99	\$/tonne milled

## Economic Results and Sensitivities

A summary of financial outcomes comparing base case metal prices to two alternative metal price situations is presented below. The PEA base case prices are derived from a combination of spot prices and current common peer usage. The Alternate Case prices represent a discount to the lowest sustained metal prices over the previous three years. The 3 year trailing average prices represent the upside potential should metal prices regain their previous strength.

Table 5 - Summary of Ixtaca Gold-Silver Economic Results and Sensitivities (\$ million)

	Alternate Case		Base Case		3 Year Trailing Average	
	Pre-Tax	After-Tax	Pre-Tax	After-Tax	Pre-Tax	After-Tax
Gold Price (\$/oz)	\$1000		\$1150		\$1300	
Silver Price (\$/oz)	\$14		\$16		\$20	
Net Cash Flow	\$235	\$149	\$435	\$280	\$731	\$470
NPV (5% discount rate)	\$132	\$78	\$266	\$166	\$464	\$293
Internal Rate of Return (%)	24%	18%	39%	30%	57%	44%
Payback (years)	3.3	3.9	2.3	2.6	1.6	2.0

The economic results are based on the mill feed tonnages in the selected ultimate pit. The mill feed tonnages include Inferred Resources. The reader is cautioned that Inferred Resources are considered too speculative geologically to have the economic considerations applied to them that would enable categorization as Mineral Reserves. There is no certainty that Inferred Resources will ever be upgraded to Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

## Rock Management, Environment and Community

Almaden recognises the paramount importance of protecting the environment to facilitate the development of a sustainable project. Knight PiÃ©sol Ltd. ("KP") has been retained to help the Company with long lead item studies concerning environmental monitoring, assessment and permitting matters. Almaden established the following environmental objectives for the Project:

- Protect surface and ground water quality;
- Incorporate environmental enhancement opportunities into the mine and final reclamation plans;
- Minimize the project footprint.

In order to achieve these objectives Almaden and KP have instituted the following management strategies towards the submission of a Mexican Environmental Impact Statement.

**Water Management** - Almaden with KP has developed a comprehensive water monitoring strategy including the commencement of a hydrometric and climate monitoring program, and the drilling of water measurement wells. The latest assessment of regional weather patterns suggest that management of rainfall and runoff from within the project area will provide sufficient water for operations for the Ixtaca mine plan. Currently local communities use existing water supplies that come from natural springs located at higher elevations and upstream of the Ixtaca deposit. Stream flow upstream of the project will be either diverted around or

collected, potentially creating a new fresh water supply source for local use, or used for mining and milling processes and before any would be discharged it would be treated to meet environmental guidelines.

**Management of Rock** - The limestone host rock, which constitutes a large portion of the total waste rock, has buffering capacity. Geochemical characterization of site materials has confirmed that waste rock is not expected to be net acid producing.

**Environmental Monitoring** - Groundwater monitoring to ensure compliance with all applicable best management practice (BMP) technologies is a fundamental component of the Project. Flora and fauna studies have been completed.

**Community** - The Ixtaca deposit and any potential mining operation will be located in an area previously logged or cleared. Existing land use in the project area is minimal. The Company has employed up to 70 local people in its drilling program who live local to the Ixtaca deposit. Local employees have made up virtually all the drilling staff, and have been trained on the job. The Company has implemented a comprehensive science based and objective community relations and education program for employees and all local stakeholders to transparently explain the exploration program underway as well as the potential impacts and benefits of any possible future mining operation at Ixtaca. The Company regards the local communities to be major stakeholders in the Ixtaca deposit's future along with the Company's shareholders. Every effort is being made to create an open and clear dialogue with our stakeholders to ensure that any possible development scenarios that could evolve from the anticipated future studies are properly understood and communicated throughout the course of the Company's exploration and development program. The Company invites all interested parties to visit [www.almadenminerals.com](http://www.almadenminerals.com) to find out more about our community development, education and outreach programs.

#### Metallurgical Gold and Silver Test Work

Almaden has previously reported preliminary metallurgical test results (for details consult Almaden's news release of January 31, 2013, the 2013 Tuligtic Project NI 43-101 Technical Report filed on SEDAR, and Almaden's news releases of June 15<sup>th</sup> and September 14<sup>th</sup>, 2015). These test results show that standard gravity and flotation techniques could result in non-optimised gold and silver recoveries that are roughly equivalent for the limestone domain. This preliminary test work indicates that leaching the combined gravity/flotation concentrate can be used to produce a silver-gold doré on site. All geologic domains were tested using whole core composites selected to represent a range of grades.

Subsequent to the publication of the preliminary results, in 2014 and 2015, additional metallurgical work on new whole core composites, carried out at McClelland Laboratories Inc. in Reno, Nevada under the supervision of MMTS, focused on optimizing gravity, rougher flotation and leach results over a broader range of head grades in the limestone unit. This test work continues to indicate overall process recoveries to average 90% for gold and silver for limestone hosted mineralisation. Given the preliminary work to date on the minor volcanic and blackshale units, this PEA update report assumes recoveries of 90% for silver and 50% for gold. Additional testwork is underway to optimise recoveries for these domains, both minor units in the PEA Update mine plan.

#### Next Engineering and Development Steps

The Company has initiated work towards a Pre-Feasibility Study. Apart from further metallurgical studies (underway), the work completed includes geo-mechanical and geotechnical drilling, static geochemical test work to characterise rock chemistry and long lead time environmental and water monitoring. Other work underway currently includes environmental baseline monitoring such as flora and fauna studies, climate monitoring, water quality sampling and surface water hydrology monitoring. A NI 43-101 technical report for this Ixtaca Deposit PEA Update will be filed on SEDAR ([www.sedar.com](http://www.sedar.com)) within 45 days.

#### Qualified Persons, Quality Control and Assurance

The following companies have undertaken work in preparation of the PEA update:

- APEX Geoscience Ltd. (Exploration and Drill data QA/QC)
- Giroux Consultants Ltd. (Mineral Resource Estimation)
- Moose Mountain Technical Services (Overall Report Preparation, Mine Plan and Mineral Processing, Infrastructure and Financial Model)
- Knight PiÅold Ltd. (Geotechnical, Environmental, Rock and Tailings Management)

The independent qualified persons responsible for preparing the Ixtaca Preliminary Economic Assessment are; Jesse Aarsen, P.Eng. and Tracey Meintjes, P.Eng. of MMTS, Ken Embree, P.Eng. of KP, Kris Raffle, P.Geo. of APEX Geoscience Ltd., and Gary Giroux, M.A.Sc., P.Eng. of Giroux Consultants Ltd., all of whom act as independent consultants to the Company, are Qualified Persons as defined by National Instrument 43-101 ("NI 43-101") and have reviewed and approved the contents of this news release.

MMTS is an association of Geologists, Engineers and Technicians providing experienced knowledge in Geology, Mine Engineering, and Metallurgical Services and Support to the mining industry for over 15 years. Through their network of associates they provide an integrated team of experts and QP's. Services range from early grassroots exploration and development, block model builds, resource and reserve estimates, advanced planning and studies for mine proposals (including operational support), process design and permitting process guidance and support. MMTS has experience working on coal, gold, silver, copper, molybdenum, and tungsten deposits throughout North and South America and around the world. A list of specific projects worked on by MMTS can be found at [www.moosemmmc.com](http://www.moosemmmc.com).

KP is an international consulting firm and recognized leader in providing engineering and environmental services. KP's expertise

has been applied to hundreds of surface and underground mining projects in all stages of development and a broad range of environmental settings. KP provides industry leading services in water and waste management, tailings disposal, heap leach pads, rock mechanics and environmental services, and has been recognized for innovative services that meet high standards of reliability, security and cost effectiveness.

The analyses used in the preparation of the mineral resource statement were carried out at ALS Chemex Laboratories of North Vancouver using industry standard analytical techniques. For gold, samples are first analysed by fire assay and atomic absorption spectroscopy ("AAS"). Samples that return values greater than 10 g/t gold using this technique are then re-analysed by fire assay but with a gravimetric finish. Silver is first analysed by Inductively Coupled Plasma - Atomic Emission Spectroscopy ("ICP-AES"). Samples that return values greater than 100 g/t silver by ICP-AES are then re analysed by HF-HNO<sub>3</sub>-HClO<sub>4</sub> digestion with HCL leach and ICP-AES finish. Of these samples those that return silver values greater than 1,500 g/t are further analysed by fire assay with a gravimetric finish. Blanks, field duplicates and certified standards were inserted into the sample stream as part of Almaden's quality assurance and control program which complies with National Instrument 43-101 requirements. In addition to the in-house QAQC measures employed by Almaden, Kris Raffle, P.Geo. of APEX Geoscience Ltd., completed an independent review of Almaden's drill hole and QAQC databases. The review included an audit of approximately 10% of drill core analyses used in the mineral resource estimate. A total of 10,885 database gold and silver analyses were verified against original analytical certificates. Similarly, 10% of the original drill collar coordinates and down hole orientation survey files were checked against those recorded in the database; and select drill sites were verified in the field by Kris Raffle, P.Geo. The QAQC audit included independent review of blank, field duplicate and certified standard analyses. All QAQC values falling outside the limits of expected variability were flagged and followed through to ensure completion of appropriate reanalyses. No discrepancies were noted within the drill hole database, and all QAQC failures were dealt with and handled with appropriate reanalyses. The mineral resource estimate referenced in this press release was prepared by Gary Giroux, P.Eng., an independent Qualified Person as defined by NI 43-101. All drill sections and related assay data from the 2013 drilling program used in the resource estimate have been posted to the Company's website.

#### Exploration Opportunities

The Ixtaca deposit is one of several exploration targets on the wholly owned Tuligtic property. The Tuligtic claim covers an area of high level epithermal clay alteration. The project area is partially covered by volcanic ash deposits which mask underlying alteration, potential vein zones and associated soil responses. In areas devoid of this covering ash, soil sampling has defined several distinct zones of elevated gold and silver values and trace elements typically associated with epithermal vein systems. The Ixtaca zone is one of the largest areas of gold/silver soil response but it is also one of the areas with the least ash cover on the project. Management believes that the other altered and geochemically anomalous areas could represent additional zones of underlying quartz-carbonate epithermal veining like the Ixtaca zone.

The potential quantity and grade of these exploration targets is conceptual in nature. There has been insufficient exploration and/or study to define these exploration targets as a Mineral Resource. It is uncertain if additional exploration will result in these exploration targets being delineated as a Mineral Resource. The potential quantity and grade of these exploration targets has not been used in the PEA update.

#### Cautionary Note concerning estimates of Measured, Indicated and Inferred Mineral Resources

This news release uses terms that comply with reporting standards in Canada and certain estimates are made in accordance with Canadian National Instrument 43-101 ("NI 43-101"). NI 43-101 is a rule developed by the Canadian Securities Administrators that establishes Canadian standards for all public disclosure an issuer makes of scientific and technical information concerning mineral projects. These standards differ significantly from the requirements of the U.S. Securities and Exchange Commission ("SEC"), and mineral resource information contained herein may not be comparable to similar information disclosed by United States companies.

This news release uses the terms "measured mineral resources", "indicated mineral resources" and "inferred mineral resources" to comply with reporting standards in Canada. We advise United States investors that while such terms are recognized and required by Canadian regulations, the SEC does not recognize them. United States investors are cautioned not to assume that any part or all of the mineral deposits in such categories will ever be converted into mineral reserves under SEC definitions. These terms have a great amount of uncertainty as to their existence, and great uncertainty as to their economic and legal feasibility. Therefore, United States investors are also cautioned not to assume that all or any part of the "measured mineral resources", "indicated mineral resources" or "inferred mineral resources" exist. In accordance with Canadian rules, estimates of "inferred mineral resources" cannot form the basis of pre-feasibility or other economic studies. It cannot be assumed that all or any part of the "measured mineral resources", "indicated mineral resources" or "inferred mineral resources" will ever be upgraded to a higher category.

#### About Almaden

[Almaden Minerals Ltd.](#) is a well financed company which owns 100% of the Tuligtic project in Puebla State, Mexico. Tuligtic covers the Ixtaca Gold-Silver Deposit, which was discovered by Almaden in 2010.

#### On Behalf of the Board of Directors

*"Morgan Poliquin"*

Morgan J. Poliquin, Ph.D., P.Eng.  
President, CEO and Director

[Almaden Minerals Ltd.](#)

*Neither the Toronto Stock Exchange (TSX) nor the NYSE MKT have reviewed or accepted responsibility for the adequacy or accuracy of the contents of this news release which has been prepared by management. Except for the statements of historical fact contained herein, certain information presented constitutes "forward-looking statements" within the meaning of the United States Private Securities Litigation Reform Act of 1995 and Canadian securities laws. Such forward-looking statements, including but not limited to, those with respect to potential expansion of mineralization, potential size of mineralized zone, and size and timing of exploration and development programs, estimated project capital and other project costs and the timing of submission and receipt and availability of regulatory approvals involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievement of Almaden to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Such factors include, among others, risks related to international operations and joint ventures, the actual results of current exploration activities, conclusions of economic evaluations, uncertainty in the estimation of mineral resources, changes in project parameters as plans continue to be refined, environmental risks and hazards, increased infrastructure and/or operating costs, labour and employment matters, and government regulation and permitting requirements as well as those factors discussed in the section entitled "Risk Factors" in Almaden's Annual Information form and Almaden's latest Form 20-F on file with the United States Securities and Exchange Commission in Washington, D.C. Although Almaden has attempted to identify important factors that could cause actual results to differ materially, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such statements will prove to be accurate as actual results and future events could differ materially from those anticipated in such statements. Almaden disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, other than as required pursuant to applicable securities laws. Accordingly, readers should not place undue reliance on forward-looking statements.*

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