Agnico Eagle Automation (Mining)



Open innovation













MIA

Intelligent and Autonomous Mine Programme de formation FONCER du CRSNG / Mine Intelligente et Autonome

> CHRISTIAN QUIRION AUGUST 30TH 2023





PRESENTATION DISCLAIMER



The information in this presentation has been prepared as of September 7, 2023. Certain statements contained in this presentation constitute "forward-looking statements" within the meaning of the United States Private Securities Litigation Reform Act of 1995 and "forward-looking information" under the provisions of Canadian provincial securities laws and are referred to herein as "forward-looking" statements". When used in this presentation, the words "anticipate", "could", "estimate", "expect", "forecast", "future", "plan", "potential", "will" and similar expressions are intended to identify forward-looking statements. Such statements include, without limitation; statements concerning the mining operations of Agnico Eagle Mines Limited (the "Company"), including, but not limited to its LaRonde, LZ5, Globex. Odyssey, Kittilä, Detour Lake, and Fosterville operations, including: the timing, progress, and achievement of, and expected benefits from, any automation project, equipment, or process; mining methods; and expected life of mine, tonnage, production, or mill capacity. Such statements reflect the Company's views as at the date of this presentation and are subject to certain risks, uncertainties and assumptions, and undue reliance should not be placed on such statements. Forward-looking statements are necessarily based upon a number of factors and assumptions that, while considered reasonable by Agnico Eagle as of the date of such statements, are inherently subject to significant business, economic and competitive uncertainties and contingencies. The material factors and assumptions used in the preparation of the forward looking statements contained herein, which may prove to be incorrect, include, but are not limited to, the assumptions set forth herein and in management's discussion and analysis ("MD&A") and the Company's Annual Information Form ("AIF") for the year ended December 31, 2022 filed with Canadian securities regulators and that are included in its Annual Report on Form 40-F for the year ended December 31, 2022 ("Form 40-F") filed with the SEC as well as: that there are no significant disruptions affecting operations; that production, permitting, development, expansion and the ramp-up of operations at each of Agnico Eagle's properties proceeds on a basis consistent with current expectations and plans; that the relevant metal prices foreign exchange rates and prices for key mining and construction inputs (including labour and electricity) will be consistent with Agnico Eagle's expectations: the ability to realize the anticipated benefits of the merger with Kirkland Lake Gold Ltd. (the "Merger") or implementing the business plan for the combined company, including as a result of difficulty in integrating the businesses of the companies involved; the ability to realize synergies from the Merger and the recent acquisition of Yamana Gold's canadian assets (the "Yamana Transaction") and cost savings at the times, and to the extent, anticipated; that Agnico Eagle's current estimates of mineral reserves, mineral resources, mineral grades and metal recovery are accurate; that there are no material delays in the timing for completion of ongoing growth projects; that seismic activity at the Company's operations at LaRonde. Goldex and other properties is as expected by the Company's efforts to mitigate its effect on mining operations are successful; that the Company's current plans to optimize production are successful; that there are no material variations in the current tax and regulatory environment; that governments, the Company or others do not take additional measures in response to the COVID-19 pandemic or otherwise that, individually or in the aggregate, materially affect the Company's ability to operate its business; that cautionary measures taken in connection with the COVID-19 pandemic do not affect productivity; and that measures taken relating to, or other effects of, the COVID-19 pandemic do not affect the Company's ability to obtain necessary supplies and deliver them to its mine sites. Many factors, known and unknown, could cause the actual results to be materially different from those expressed or implied by such forward looking statements. Such risks include, but are not limited to: the ability to realize the anticipated benefits of the Merger or implementing the business plan for Agnico Eagle following the Merger, including as a result of a delay or difficulty in integrating the businesses of the companies involved; the ability to realize the anticipated benefits of the Yamana Transaction; the volatility of prices of gold and other metals; uncertainty of mineral reserves, mineral resources, mineral grades and mineral recovery estimates; uncertainty of future production, project development, capital expenditures and other costs; foreign exchange rate fluctuations; inflationary pressures; financing of additional capital requirements; cost of exploration and development programs; seismic activity at the Company's operations, including the LaRonde Complex and Goldex mine; mining risks; community protests, including by First Nations groups; risks associated with foreign operations; governmental and environmental regulation; the volatility of the Company's stock price; risks associated with the Company's currency, fuel and by-product metal derivative strategies; the extent and manner to which COVID-19, and measures taken by governments, the Company or others to attempt to reduce the spread of COVID-19 may affect the Company, whether directly or through effects on employee health, workforce productivity and availability (including the ability to transport personnel to fly-in/fly-out camps), travel restrictions, contractor availability, supply availability, ability to sell or deliver gold dore bars or concentrate, availability of insurance and the cost thereof, the ability to procure inputs required for the Company's operations and projects or other aspects of the Company's business; and uncertainties with respect to the effect on the global economy associated with the COVID-19 pandemic and measures taken to reduce the spread of COVID-19, any of which could negatively affect financial markets, including the trading price of the Company's shares and the price of gold. and could adversely affect the Company's ability to raise capital. For a more detailed discussion of such risks and other factors that may affect the Company's ability to achieve the expectations set forth in the forward-looking statements contained in this presentation, see the AIF and MD&A filed on SEDAR at www.sedar.com and included in the Form 40-F filed on EDGAR at www.sec.gov, as well as the Company's other filings with the Canadian securities regulators and the SEC. Other than as required by law, the Company does not intend, and does not assume any obligation, to update these forwardlooking statements.

Further Information

For further details on Agnico Eagle's second quarter 2023 results, please see the Company's news release dated July 26, 2023.

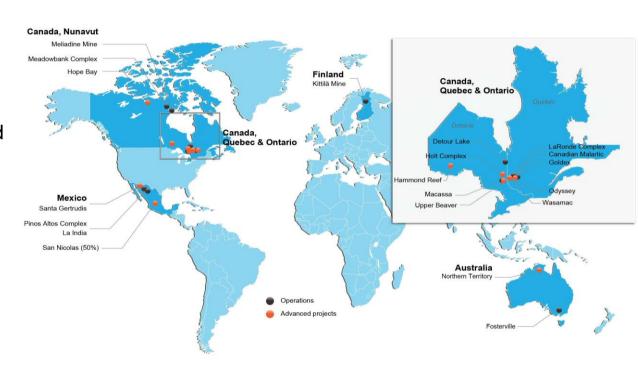


About Agnico Automation Eagle Mines Introduction **Execution Strategy Concept (Mining)** Limited **Agnico Eagle Automation Actual** Conclusion **Questions Appendix** State

ABOUT AGNICO EAGLE MINES



- Agnico Eagle is a senior Canadian gold mining company that produces precious metals since 1957
- 11 operating mines located in Canada, Australia, Finland and Mexico
- Third largest gold producer in the world
- Strategy of developing longterm regional platforms in premier jurisdictions
- Employs more than 16,000¹ people



INTRODUCTION - OBJECTIVE OF PRESENTATION

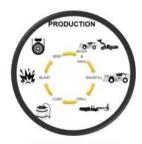


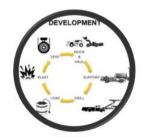
Knowledge Sharing

Showcase steps, strategies and challenges, of the journey towards achieving high levels of autonomy in mining.

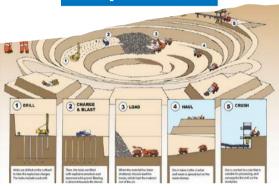
Underground





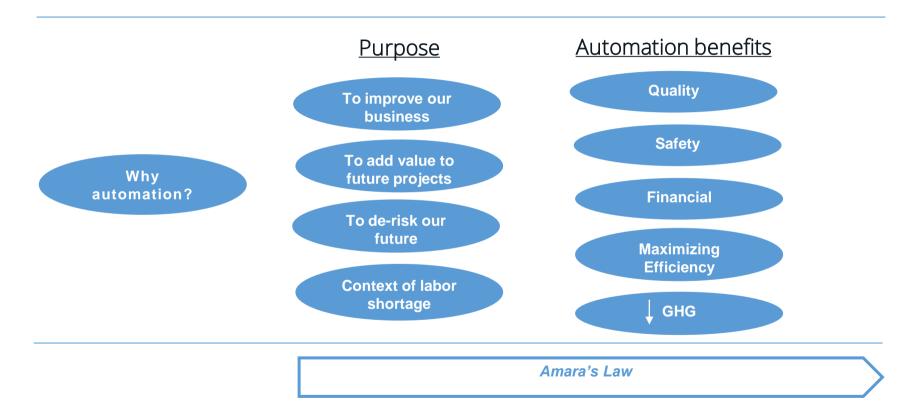


Open Pit



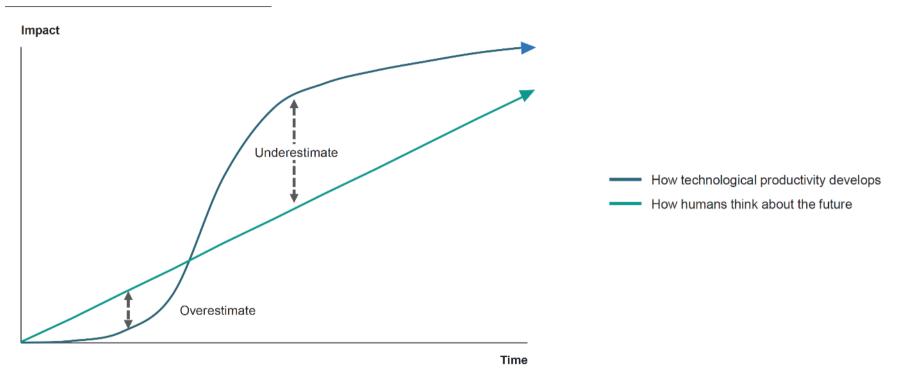
INTRODUCTION – PURPOSE OF AUTOMATION





APPENDIX A - AUTOMATION VISION - AMARA'S LAW





"We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run."

<u>Amara's Law</u> – Roy Amara



AUTOMATION CONCEPT

AUTOMATION CONCEPT



Holistic Approach

Combines cutting-edge technology & data-driven decision-making

Technologies

- Fleet Automation (Mining)
 - AHS (Automated Haul Trucks)
 - Automated/Tele-remote Scoops
 - Automated Drilling (Production & Development)
 - Automated Diamond Drilling
- Telematics and IoT
 - Connectivity (devices & systems)
 - Machine Data Source
 - Systems of Records
- Integrated Management Systems
 - SIC & FMS (ISA95 Level 2 -Monitoring & Supervising Systems)
 - PI & Databrick (ISA95 Level 3 Operation Management Systems)

Data-driven decision-making

- Data & Systems Integration (Digitalization Center of Excellence)
- Real-time Monitoring (MOC)
- Advanced Analytics (DAC)

BUSINESS IMPROVEMENT



Monitoring

Monitoring Operations Centre (Centre intégré opérations)

Reduce variability in operations Optimize, reduce costs, forecast

Automation

Automate for safety & productivity

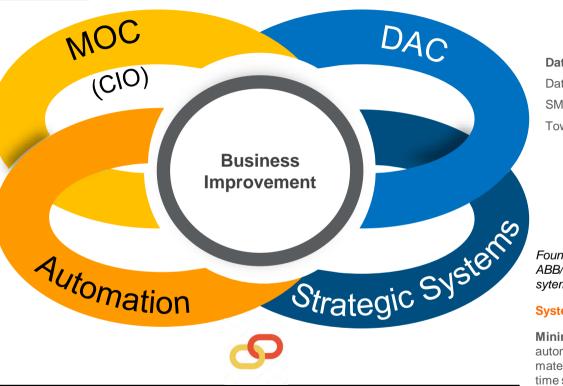
Fleet automation (mining)

Automation orchestrator (mapping, traffic management)

Integration of control & safety systems (visibility, collision avoidance)

Continuous mining (mine development)

Exploration / diamond drilling



Digitalization center of excellence

Analytics

Data Analytics Center

Data-based decision making SME (Subject Matter Experts) Towards machine learning & Al

Strategic Systems

Foundation to achieve future goals ABB/ABC, AI & Machine learning sytems, etc.

Systems synergy

Mining: mine planning/SIC,FMS automated data, logistics, safety, material management/ore tracking, time sheet (UKG)

Mill: controls, monitoring, APC

Environment: monitoring systems

Data: PI, Azure Databricks

10

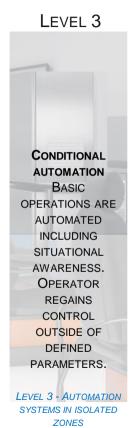
AUTOMATION LEVEL - SAE DEFINITIONS

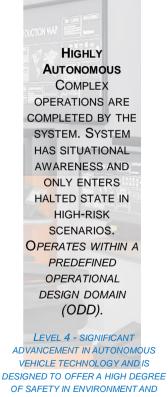






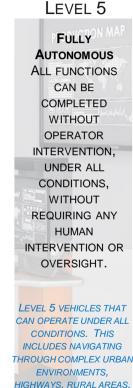






DRIVING TASKS WELL-UNDERSTOOD
AND WELL-DEFINED.

LEVEL 4



AND ADVERSE WEATHER

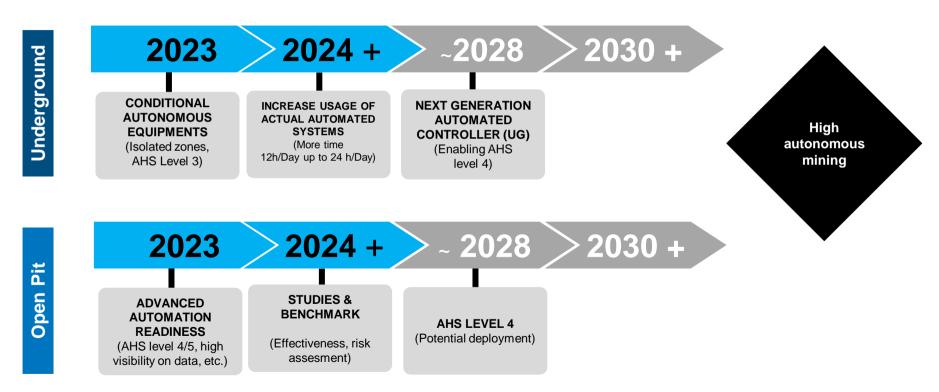
CONDITIONS.



EXECUTION STRATEGY

HIGH-LEVEL TIMELINE MINING FLEET AUTOMATION





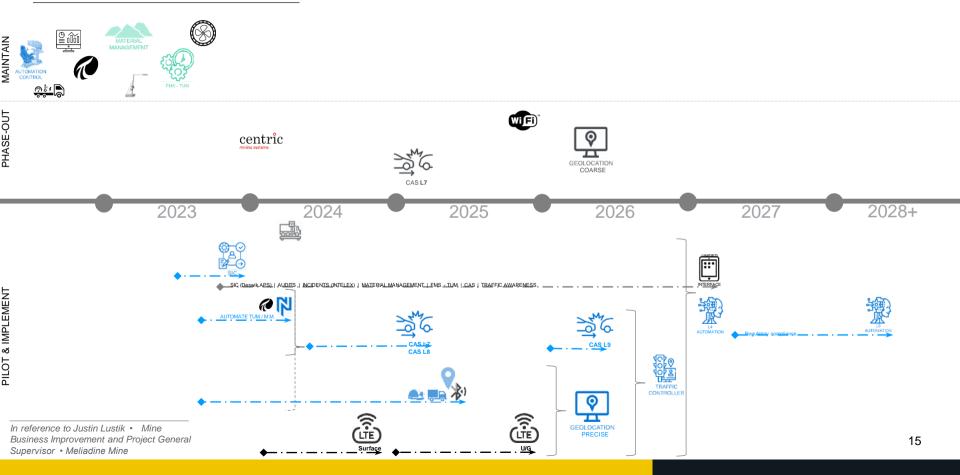
EXECUTION STRATEGY- PYRAMID ISA95 - MELIADINE MINE SYSTEMS





EXECUTION STRATEGY- STRATEGIC TIMELINE - MELIADINE MINE SYSTEMS





CHALLENGES



| ☐ Different perspectives | | | | | | |
|--|--|--|--|--|--|--|
| ☐ The economics of moving value chain bottleneck | is a second of the second of t | | | | | |
| □ Technology needs, are subject to change, based life of Mine) | on context (brownfield, green field, new zones, | | | | | |
| Systems capable of meeting required goals, effe mining via fixed mining automation) | ctively, in all operational contexts (dynamic | | | | | |
| ☐ Systems maturity (evolution) | | | | | | |
| □ Operationalization maturity (site projects) Key success factor: strong | | | | | | |
| Robustness/stability/availability | ownership by the operator (sites) | | | | | |
| Sustainability | | | | | | |
| Criticality of maintenance, troubleshooting, p | eople development & vendor support | | | | | |
| ☐ Continuing to improve performance & availability | remains critical | | | | | |
| Requires accurate measures & reports of system | ms performance (telemetry, KPI's, FMS, SIC) | | | | | |

- □ Leverage on market (systems evolving) OEM's & Specialized technology vendors
- ☐ Fleet electrification All fleet require redesign for electrification and redesign for automation
 - ❖ OEM's fleet technology roadmap till 2030 (in movement & varies)



AGNICO EAGLE AUTOMATION ACTUAL STATE

AGNICO EAGLE AUTOMATION - ACTUAL STATE SUMMARY



| | | ಹ 0 | ine | × | ey | ·m | ake | ille | 0 | | | E | Benefits | | |
|-----------------------------|---|------------------|-----------|--------|---------|---------|---------------------|-------------|--------|--------------------------|-------------------|--------|----------|---|---------------------------|
| Activity | Technology | LaRonde & LZ5 | Meliadine | Goldex | Odyssey | Kittilä | Detour Lake (OP) | Fosterville | Mexico | Process productivity | Mine productivity | Safety | Quality | Workforce reduction | Business case review |
| Development Surveying | MOSS & Total Station (per driller) | х | | | х | | | | | х | | х | x | | |
| Development Drilling | Automated Jumbo | х | x | х | x | х | | | | x | | x | x | | |
| Development Blasting | Avatel (Orica & Epiroc) | | | | | х | | | | | | х | | | |
| Development Bolting | Boom Bolter (mechanized only) | х | | х | | х | | | | | | х | | | |
| Development Cabling | Automated Epiroc Cableteck | | | | х | | | | | x | | х | x | | |
| Development Face Mucking | Tele-remote Scoop | х | | | x | | | | | х | X LaRonde Deep | | | | |
| Development into Paste Fill | Rock Header (mechanized only) | | PC | С | | x | | | | x | | | | | |
| Production Boring | Automated Rhino & Easer | | Project | | | x | | | | x | | | х | | |
| Production Drilling | Automated Production Drills | х | х | | 2024 | х | х | x | | Up to +2% between shifts | | | x | Multi-drills operation Detour & Kittilä | |
| Production Mucking | Tele-remote & Automated Scoops | х | х | х | x | х | | х | | X | х | х | | | |
| Production Hauling (AHS) | Automated Haul Truck | х | х | | | | | | | +10% between shifts | x | | | | Positive IRR at Meliadine |
| Rock Hammer | Tele-remote (autonomous in development) | х | | х | | | | | | | | | | | |
| Utility | Drones | Х | Х | Х | | | | | | | | | | | 18 |

PRODUCTION AUTOMATED MINING (LZ5, LARONDE COMPLEX)



✓ LZ5 schedule designed to allow maximum 30% fully automated hauling

✓ Achievements 172,000 tons 2021 (13%)

148,000 tons 2022 (lower availability)

270,000 tons 2023 target

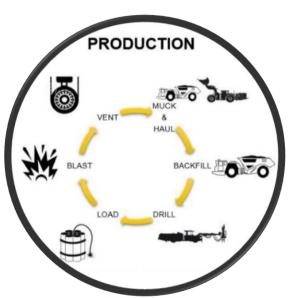
✓ Longitudinal stope LHD muck faster in Teleremote (graphic in Appendix)

✓ Automated drilling

- 95% in automation mode
- Up to 500 feet per shift (up to 20% more productive)

Current Schedule = 5 / 4 / 7 / 5 120h Manual vs 48h Auto

| | Lundi | Mardi | Mercredi | Jeudi | Vendredi | Samedi | Dimanche |
|---------------------|-------|-------|----------|-------|----------|--------|----------|
| Quart de Jour (10h) | | | Mar | nual | | | |
| # | | | | | | | |
| Quartde Nuit (10h) | | | | | | Αι | uto |
| 2h | | | | | | | |





1 Production ITH drill (DDU412)



3 LHD'S



7 Haul trucks Up to 10 2023 &14 2025

PRODUCTION AUTOMATED MINING (MELIADINE MINE)

AGNICO EAGLE

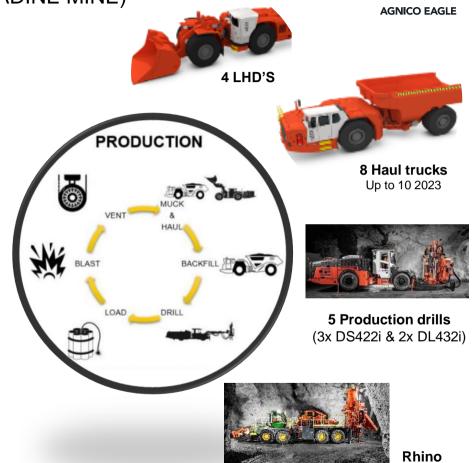
- ✓ Meliadine optimized schedule planned to allow maximum 14% fully automated hauling
 - FIFO crew change all UG production on same day (allows up to 10% automated hauling)
 - Improved gas clearance check procedure (will allow up to 14% automation time)

✓ Achievements 27,000 tons - end of 2022)

6,000 onces milled

40,000 tons - 2023 target

- ✓ Positive cashflow achieved by end of 2022
 - Business case based on production increase
- ✓ Automation utilization continue to increase
 - RP1 24h/24h automated mucking and hauling planned
 - Additional trucks
 - 24h/24 mucking in critical stopes
- Rhino (Boring drilling) automation planned in 2023
 - ✓ Technology transfer from Kittilä mine



LARONDE AUTOMATION MINING & TECHNOLOGY

New technologies to protect our workers and maintain our productivity

- √ Stope automated & tele-remote mining
 - 4 stopes per day in tele-remote
 - 1 Sandvik scoop dedicated for development (2023 project)
- ✓ Development mucking in tele-remote & semi-autonomous
 - Fast development rate achieved in track drift (2021)
 - Development contract executed by CMAC
- ✓ MOSS Surveying system
 - Surveying station & tablet
 - Intuitive system
 - · Each round surveyed
 - LTE connected
 - Require 10 to 20 minutes
- ✓ SSD program with Innovation group
 - Objective 5 meters away from the face
 - Workgroup improvement
 - Tesman explosive tele-remote loader Tech watch
 - Avatel explosive autonomous loader under test at Kittilä





4 LHD'S (CAT COMMAND)



DEVELOPMENT TECHNOLOGIES

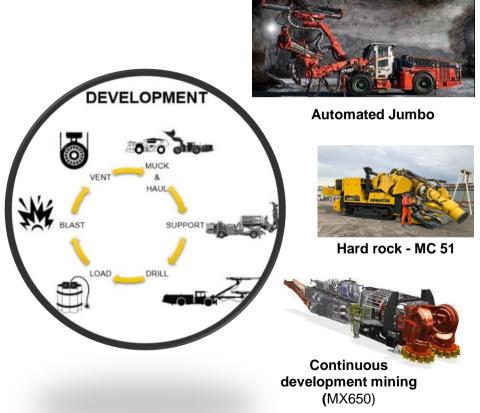


Automated boomer (Jumbo)

- ✓ In operation in our mines
- Automated support & explosive loading equipments Under development

Innovation

- Soft rock mechanical cutting (< 100 MPA)</p>
 - Geotech compatibility investigated
 - Partial compatibility
 - File still open, the technology is ready for favorable geotechnical conditions
- Hard rock mechanical cutting
 - Innovation & consortium (CMIC) collaborate to develop hard rock mechanical cutting technology
 - MX650 Gen 2 Continuous miner (including rock support)
 - Komatsu MC51



SERVICE VEHICLE TECHNOLOGIES



Under Development

- Autonomous military technology AXUS
 - Fully electric
 - Autonomous
 - Partnership via MISA MMA 2030
 - Use case : small service vehicles
- Maclean automated boom truck (OEM development)

CENTRE INTÉGRÉ DES OPÉRATIONS

MOC

















CHARGEMENT & DYNAMITAGE











SOUTIRAGE & TRANSPORT

















HISSAGE







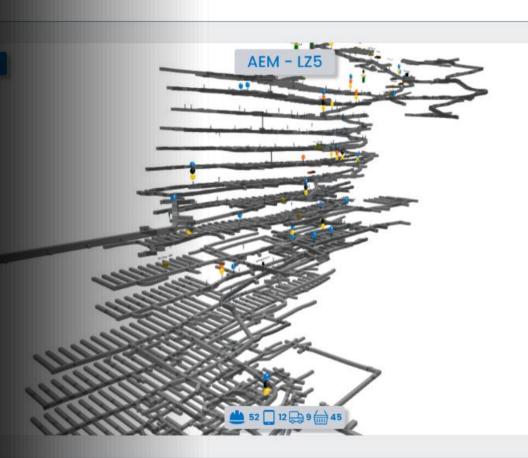
MONITORING OPERATION CENTER

CONNECTED MINE & AUTOMATION

WIRELESS NETWORK
+
GEOLOCATION

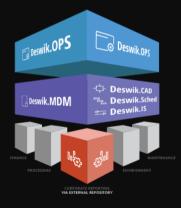
LZ5 (LARONDE COMPLEX)

- ✓ LTE
- ✓ BLE
- ✓ IoT



SICDeswik.OPS & APS

- ✓ An integrated and scheduling-driven approach to short interval control in mining
- Mine plan, long term planning, short term planning & execution tracking, seamless data flow





FMS OP & UG

(Meliadine mine)

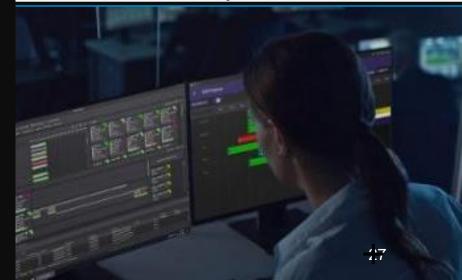
- Equipment time usage model (TUM)
- Material management (source, destination, grade, stockpiles)
- ✓ OP High precision shovels & Drills



A Fleet Management System (FMS) is a comprehensive software solution designed to help organizations manage and optimize their fleet of vehicles, machinery, or assets. These systems are commonly used by companies with a substantial number of vehicles, such as transportation, logistics, delivery, and construction companies, to improve efficiency, reduce operational costs, enhance safety, and streamline various aspects of fleet management.

Key features of a Fleet Management System often include:

- Vehicle Tracking and Monitoring: FMS provides real-time GPS tracking and monitoring of vehicles, allowing fleet managers to know the exact location and status of each vehicle at any given time.
- Route Planning and Optimization: FMS helps in planning the most efficient routes for vehicles, considering factors such as traffic conditions, fuel consumption, and delivery schedules. This can lead to cost savings and faster deliveries.





CONCLUSION



CONCLUSION

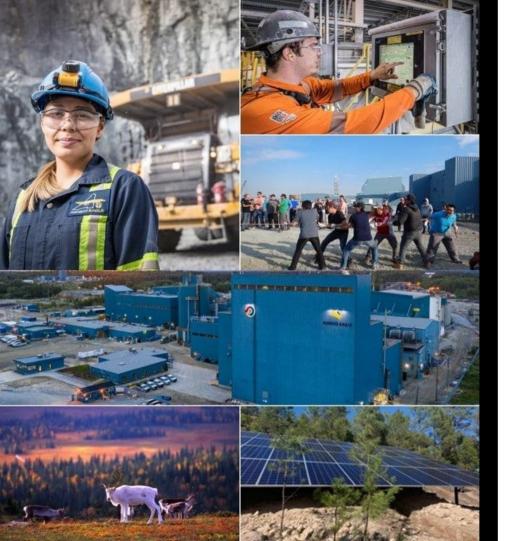
Agnico Eagle's approach to mining automation

- Fostering technological advancement through internal innovators and technology developers
- Enhance our employees' expertise and experiences, and facilitate effective shaping of our future mines





QUESTIONS



THANK YOU!

Trading Symbol: AEM on TSX & NYSE

Investor Relations: 416-847-8665 info@agnicoeagle.co m







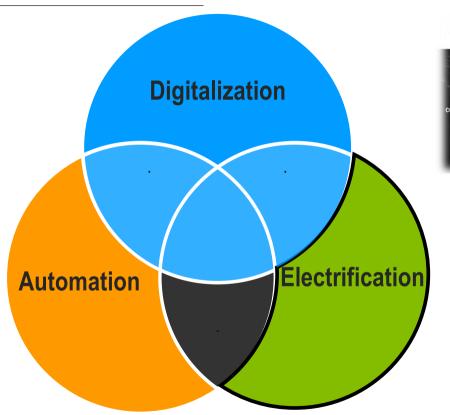




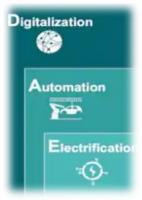
APPENDIX

APPENDIX A - TECHNOLOGY CONVERGENCE









APPENDIX B - NEW MINE (UG MINE) - BUILDING BLOCKS

(TECHNOLOGY / AUTOMATION)



- ✓ IOT

 ✓ MINE PLANNING &
 CONTROL DESWIK.OPS
- ✓ EQUIPMENT
 CONNECTED & READY
 FOR AUTOMATION

- ✓ FMS
- ✓ SIC DESWIK.OPS & APS
- ✓ CBM OSISOFT PI

✓ READY TO SCALE-UP

✓ ADVANCE DATA ANALYTICS, ML/AI

Mine development phase

- ✓ WIRELESS NETWORK (5G/LTE, BLE)
- ✓ TELE-REMOTE IN

 DEVELOPMENT FACE
 (REDUCED CYCLE TIME)
- ✓ AUTOMATED

 JUMBOS (QUALITY &
 READY FOR NEW
 WORKFORCE ON MARKET)

Production phase

- ✓ AUTONOMOUS TRUCK BETWEEN SHIFTS & IN CREW CHANGE (LEVERAGE ON BUSINESS CASE / TRADE OFF)
- ✓ TELE-REMOTE SCOOP (PRODUCTION STOPE & BACKFILL)
- ✓ AUTONOMOUS

 PRODUCTION DRILL

 (BETWEEN SHIFTS STILL

 ONE OPERATOR PER DRILL)

✓ 24 HOURS / DAY TELE-

<u>Optimization</u>

phase

✓ 24 HOURS / DAY
HAULING IN SPECIFIC
ZONES (FAVOURABLE FOR
AUTOMATION)

REMOTE MUCKING

- ✓ MULTI-DRILLS PER OPERATOR
- ✓ AUTOMATED SERVICES

High autonomous mining

- ✓ HIGH AUTONOMY ON PRODUCTION, DEVELOPMENT & SERVICE VEHICLES
- ✓ SITUATIONNAL AWARENESS / AUTONOMY ORCHESTRATOR (UG FINE GEOLOCATION)
- ✓ MIX MANUAL & AUTOMATED FLEET

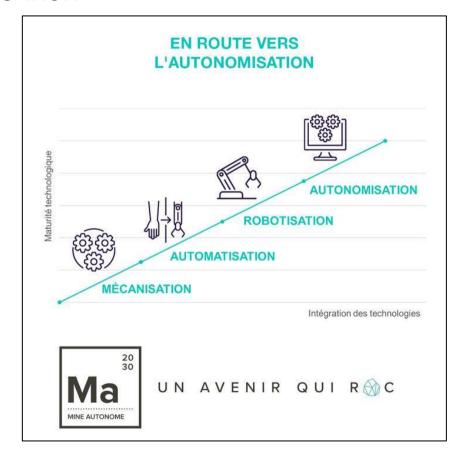
Building blocks

Proposed technologies are mature for mine development & production phases

- Leverage on market & strategic partnerships
- Change management, regulator & worker acceptance

APPENDIX C – VERS AUTONOMISATION









APPENDIX D AUTOMATION BENEFITS

AUTOMATION BENEFITS - MELIADINE AHS INVESTMENT REVIEW (2018-2022)



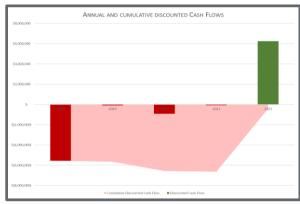
| RESULTS SUMMARY - YEAR <u>2022</u> | |
|--|--------------------|
| Total Project Cost Savings / Incr. Revenue | \$ 11,443,775 |
| Total Project Expenditures | \$ (10,766,319) |
| Net Project Savings / Income | \$ 677,456 |
| ROI | 6% |
| Net Present Value (NPV) | \$ (528,947) |
| Internal Rate of Return (IRR) | 2.65% |
| Payback Period | 4.05 |
| Breakeven Year | 2023 |

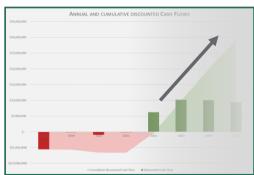
^{*} Wi-Fi Costs are included in business case (+-\$1.4M through 2022)

Project description 4 scoops & 6 haul trucks (UG)

Automation decline mine (dynamic mining) - Automated trucks from stopes to portal (surface)

Automated operations in blasting time & crew change increasing productivity





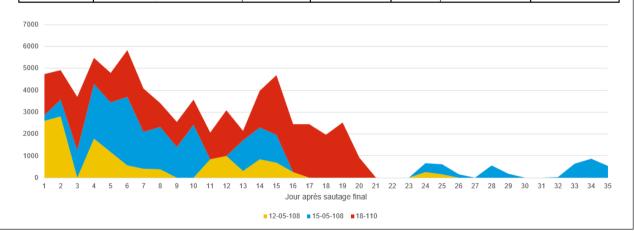
Unlocking Future Benefits and Opportunities

AUTOMATION BENEFITS – LZ5 LONGITUDINAL PRODUCTION STOPE MUCKING



PERFORMANCES CHANTIERS (LONGITUDINAL)

| | | Moy en | Moy soutirage | Tonne | Nombre de jour | Nombre jour |
|--------|-------------------------|-----------|---------------|-------|----------------|-------------|
| | Détail | soutirage | total | total | ouvert | soutirage |
| 12-108 | Pas d'automine 24/24 | 938 | 563 | 14065 | 25 | 15 |
| 15-108 | Automine 24/24 en début | 1165 | 732 | 25633 | 35 | 22 |
| 18-110 | Automine 24/24 | 1656 | 1656 | 36438 | 22 | 22 |



Longitudinal stope (mainly brow open)

20% to 40% Faster 24/24 tele-remote operation

Comments

Mucking open brow faster in tele-remote

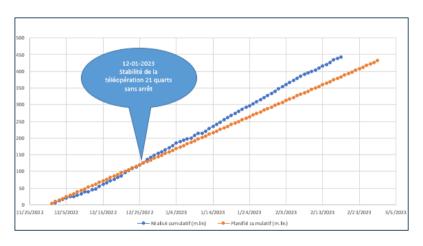
Manual mucking faster than automated

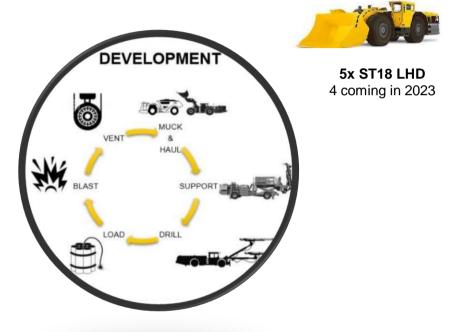
Overall automated mucking performance positive

ODYSSEY MUCKING



- ✓ **Development mucking in tele-remote** (autonomous & semi-autonomous included depends on cycle)
 - Fast development rate achieved (ramp down single face)
 - Development contract executed by CMAC
 - Up to 20% increase in development rate measured

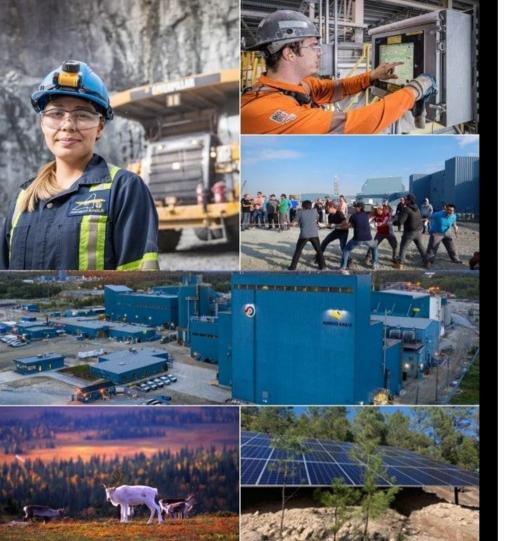




AUTOMATION BENEFITS - DRILLING



| ļ. | Automated ITH production drill (DDU412) | Up to 600 feet per shift (peak) LZ5 - Forward to more productivity (up to +20%) Best way to drill (precision, etc.) |
|----------------|---|---|
| kg kg | Kittilä - UG production drilling | Kittilä - Multi-drills per operator |
| | Open Pit production drilling | Detour Lake - Multi-drills per operator (no sampling with production drills) |
| | Automated Jumbo | Increased drilling accuracy, gallery quality, reduced "human factor", safer (miner away from face), reduced overbreak |
| ļ _a | Automated diamond drill (leaded per Eric Alexandre) | + 20% more productive Less operator per drill (1 per drill instead of 2) |



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