

EMPOWERING THE OPERATOR WITH REAL-TIME DATA TO ENHANCE METAL RECOVERY

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CAUTIONARY STATEMENT REGARDING CERTAIN MEASURES OF PERFORMANCE

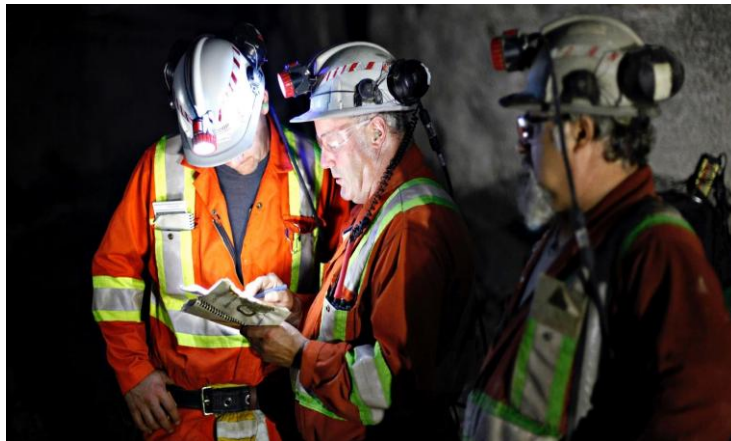
This presentation presents certain measures, including "total cash costs: by-product", "total cash costs: co-product", "all-in sustaining costs", "adjusted operating cash flow", "EBITDA", "adjusted EBITDA" and "adjusted net debt", that are not recognized measures under IFRS. This data may not be comparable to data presented by other gold producers. For a reconciliation of these measures to the most directly comparable financial information presented in the consolidated financial statements prepared in accordance with IFRS, see Non-GAAP Financial Performance Measures in the 2017 MD&A. The Company believes that these generally accepted industry measures are realistic indicators of operating performance and are useful in performing year over year comparisons. However, these non-GAAP measures should be considered together with other data prepared in accordance with IFRS, and these measures, taken by themselves, are not necessarily indicative of operating costs or cash flow measures prepared in accordance with IFRS. This MD&A also contains information as to estimated future all-in sustaining costs. The estimates of future all-in sustaining costs are not based on total production cash costs calculated in accordance with IFRS, which forms the basis of the Company's cash costs: by-product. The estimates of future all-in sustaining costs are anticipated to be adjusted to include sustaining capital expenditures, corporate administrative expense, exploration and evaluation costs and reclamation cost accretion and amortization, and exclude the effects of expansionary capital, tax payments, dividends and financing costs. Projected IFRS total production cash costs for the full year would require inclusion of the projected impact of future included and excluded items, including items that are not currently determinable, but may be significant, such as sustaining capital expenditures, reclamation cost accretion and amortization and tax payments. Due to the uncertainty of the likelihood, amount and timing of any such items, the Company does not have information available to provide a quantitative reconciliation of projected all-in sustaining costs to a total production cash costs projection.

GOLDCORP

Business

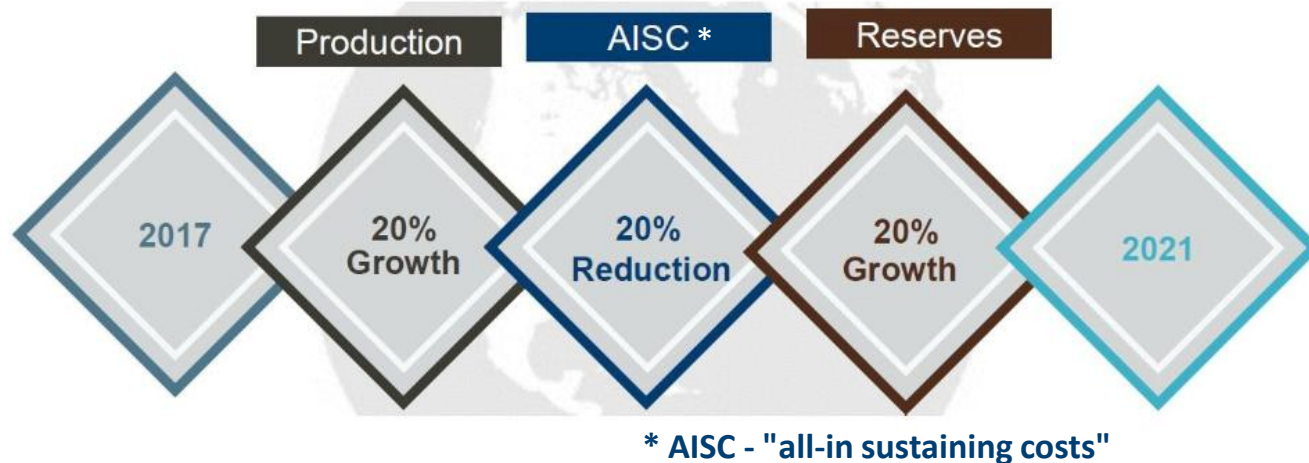
Goldcorp is a **leading gold producer** focused on **responsible mining practices**, with production from a portfolio of long-life, high quality assets throughout the Americas that it believes position the Company to deliver long-term value.

Goldcorp has optimized its portfolio of assets and is reinvesting in a strong pipeline of organic opportunities to drive **increasing margins and returns on investment**.



* Q4 – 2017 https://s22.q4cdn.com/653477107/files/doc_financials/2017/Q4/Q4-2017-Earnings-release_FINAL.pdf

** Q4 – 2016 <http://csr.goldcorp.com/2016/our-people/our-workforce>



In 2016, the Company outlined its 20/20/20 growth plan that is expected to deliver a 20% increase in gold production, a 20% increase in gold reserves and a 20% reduction in AISC by 2021.

PI System History at Goldcorp



PI System had been in use at Peñasquito since **2012** and deployed with moderate success, **integrating and historizing various data sources** across the mine site.

In **2016**, and as part of the 20/20/20 initiatives, Corporate IT sponsored an **Business Impact Workshop and POV with OSIsoft using Peñasquito** as the host testing grounds.

- One-week workshop was kicked off gathering various representatives from Peñasquito
- Technical specialists from OSIsoft were onsite to explore how PI could be used more effectively across the organization.



OSIsoft®

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PEÑASQUITO

Business Impact Workshop

During 2017 OSIsoft and Goldcorp executed a Business Impact Workshop at Peñasquito site, where its main objective was:

- Gather different operations areas and **Identify business value opportunities**
- **Define initiatives** associated to the business opportunities.
- All the above activities executed by **leveraging OSIsoft services**.
- Deliver value in **less than 1 year**.



**WATER
MANAGEMENT**



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MANAGEMENT**



**MINE TO PLANT
INTEGRATION**



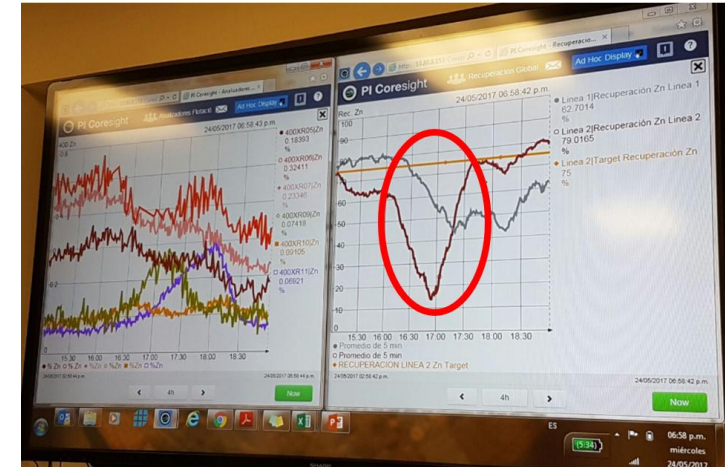
**METAL
RECOVERY**

Metal Recovery



Metal Recovery

- The nature of the operation and deposit at Peñasquito leads to significant **variations in the ore blend within the process plant feed.**
- **Feed grades and mineralogy can change significantly on an hourly basis**, requiring operators to maintain a high degree of diligence and care to react to these changing process conditions.
- Variable polymetallic feed grades are **difficult to determine the expected plant performance and identifying appropriate operational changes.**
- The impacts of variations in feed can be so significant as to obscure **opportunities for process improvement.**



The graph showed that the recovery had a down trend for 2 hours until corrective actions were taken in place, returning to objective levels 30 minutes later. Therefore there was loss for a 2.5 hrs period.

Metal Recovery

CHALLENGE



- **Recovery based on fixed recovery targets** and not on the ever-changing feed grades.
- **Inconsistent operating practices** between shifts and operators.
- **Limited use of performance analysis** to improve operational performance



Metal Recovery

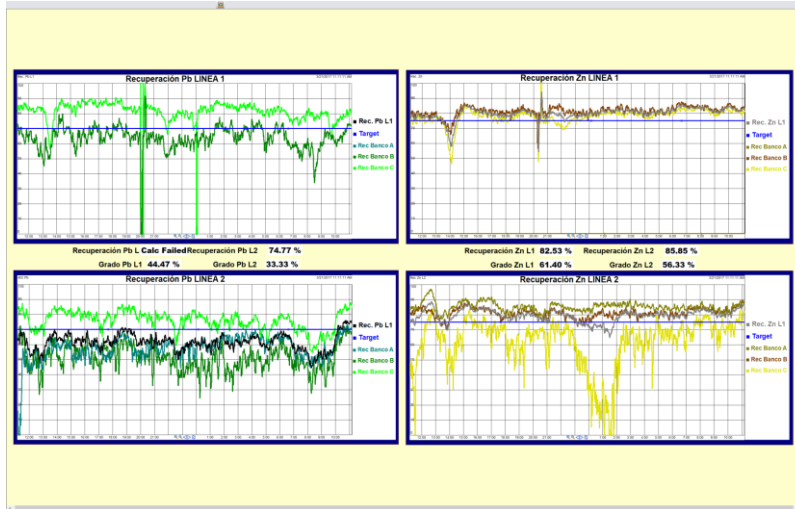
SOLUTIONS

- Implemented **real-time targets** using PI Calculations
 - Utilizing head feed grades from onstream analyzers to determine a dynamic baseline on recovery performance
- **Created trends** with real time recovery targets model in PI
 - Shifts, daily, weekly and monthly timeframes
- **PI Vision dashboards** were placed on the plant operating floor and in the control room
 - Increased focus on data-based decision-making



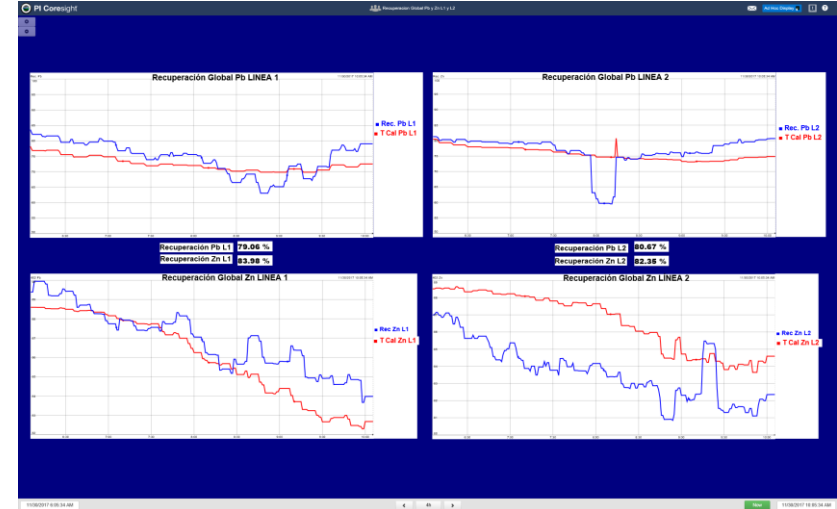
Providing key information at the right time

BEFORE – NO SIMULATOR



- Flotation operator had a fixed target (70%)
- Target was entered manually
- Target was rarely updated
- Operators ignored dashboards

AFTER – WITH SIMULATOR



- Flotation operator dynamic target based on feed grades
- Target is updated automatically
- Enables Flotation operator to increase recovery
- Operators depend on current dashboards.

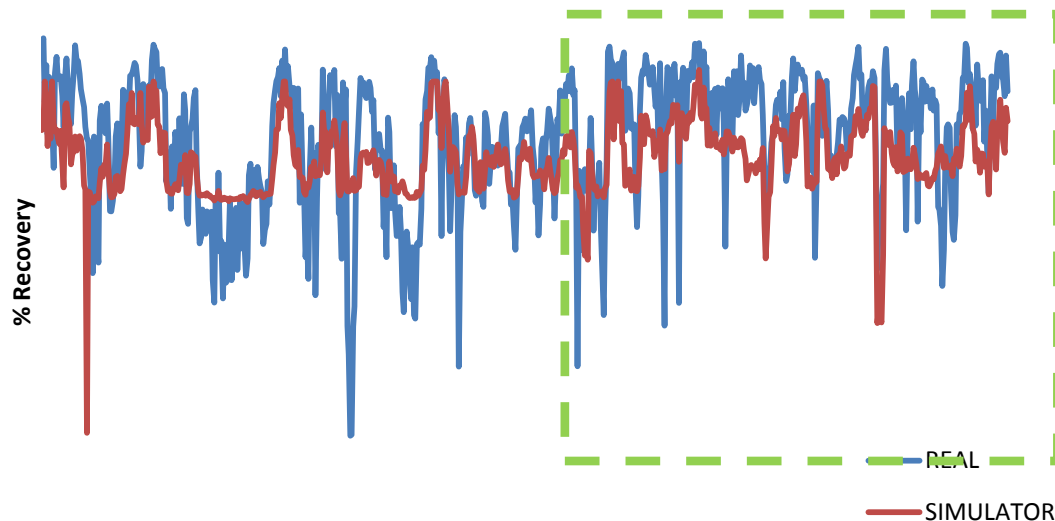
Metal Recovery

BENEFITS



- **Improved stability** in operational performance
- **Reduction of variations**
- **Greater accountability** of operator actions
- Overall **improvement in metal recoveries** for both base metals Pb and Zn
- **Additional 4% recovery** of contained zinc in the feed in only 6 months since the activation of the Dynamic simulator.

SIMULATOR ONLINE



2017

IMPROVING METAL RECOVERIES

Although not directly attributable to any one factor, the visualization of real-time recovery rates have resulted in a tangible improvement in metal recoveries at Peñasquito's Flotation circuit. Recoveries have not only been able to follow the calculated predictions, but exceed those numbers. Recovery results from a typical operating month were as follows:

Recovery			
% Recovery	Real (%)	Simulator (%)	Difference - Real vs Simulator (%)
Au / Pb	58.5	52.0	12.5
Ag / Pb	71.0	66.3	7.1
Pb	79.2	67.2	17.8
Au / Zn	10.0	11.1	-10.6
Ag / Zn	14.9	12.1	22.7
Zn	85.7	79.4	8.0

SUMMARY

- The Dynamic Simulator provides **real-time targets** based on feed grades and other on-stream measurements.
- Operators now **depend on this tool to improve actual recoveries**.
- The equivalent of **4 to 5 days of additional production** has been achieved in past months since the simulator was implemented.
- Use of **PI real-time data for decision making** has changed the philosophy and operating culture within the control room.
- Leveraging on **PI Infrastructure has become critical to operations**, and has made other plant areas to engage in new initiatives.

This presentation was brought to you by:



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Questions

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Merci

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Спасибо

Danke

Gracias

Thank You

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Grazie

Obrigado

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