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JAGUAR MINING INC.

TECHNICAL REPORT ON THE TURMALINA MINE, MINAS GERAIS STATE, BRAZIL

NI 43-101 Report

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1 SUMMARY

EXECUTIVE SUMMARY

Roscoe Postle Associates Inc. (RPA) was retained by Jaguar Mining Inc. (Jaguar) to assist in preparation of an update of the Mineral Reserves and Mineral Resources for the Turmalina Mine, located in Minas Gerais state, Brazil, and to prepare an independent Technical Report. The purpose of this report is to support disclosure of the updated Mineral Reserves and Mineral Resources at the Project. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects. RPA visited the property several times in 2014, with the most recent site visit on November 20, 2014. All currency in this report is US dollars (US$) unless otherwise noted.

Jaguar is Canadian mining company listed on TSX Venture Exchange. Jaguar's current gold operations, Turmalina and Caeté, are located in the Iron Quadrangle region, a prolific greenstone belt near the city of Belo Horizonte in the state of Minas Gerais, Brazil.

The Turmalina Mine consists of seven contiguous mineral concessions that cover an area of approximately 5,000 ha. In Brazil, large sizes of mining concessions are common, and as a result, a given mine or project may have numerous related mineralized zones extending over many kilometres of strike length, which may eventually have individual mining operations. They may all be grouped under the single mine name, which is often the first operation put into production. Along with the Turmalina Mine, the Turmalina Mine property includes two satellite deposits, Faina and Pontal.

Jaguar acquired the Turmalina Mine from AngloGold Ashanti Ltd. (AngloGold) in September 2004, and commenced mining operations in late 2006. The mine utilizes a longhole stoping mining method with backfill and the ore is processed at the adjacent 2,000 tonne per day (tpd) carbon-in-pulp (CIP) processing plant.

The Mineral Resource estimate for the Turmalina Mine with an effective date of December 31, 2015 is summarized in Table 1-1. The Mineral Resources are estimated for the Turmalina Mine (Orebodies A, B, and C) and Faina and Pontal deposits, and conform to Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards for Mineral Resources and

Mineral Reserves dated May 10, 2014 (CIM definitions). A cut-off grade of 2.11 g/t Au was used to report the Mineral Resources for the Turmalina Mine, and cut-off grades of 3.8 g/t Au and 2.9 g/t Au were used to report the Mineral Resources for the Faina and Pontal deposits, respectively. The Mineral Resources are inclusive of the Mineral Reserves.

TABLE 1-1 SUMMARY OF MINERAL RESOURCES – DECEMBER 31, 2015
Jaguar Mining Inc. – Turmalina Mine

Deposit	Category	Tonnes (000)	Grade (g/t Au)	Contained Au Ounces (000)
Turmalina	Measured	912	5.10	150
	Indicated	1,157	4.64	172
Faina	Measured	72	7.39	17
	Indicated	189	6.66	42
Pontal	Measured	251	5.00	40
	Indicated	159	4.28	22
	Total M&I	**2,739**	**5.01**	**442**
Turmalina	Inferred	1,385	5.35	238
Faina	Inferred	1,542	7.26	360
Pontal	Inferred	130	5.03	21
	Total Inferred	**3,057**	**6.30**	**619**

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources include the Turmalina Mine, Faina deposit, and Pontal deposit.
3. Mineral Resources are estimated at a cut-off grade of 2.11 g/t Au at Turmalina, 3.8 g/t Au at Faina, and 2.9 g/t Au at Pontal.
4. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
5. Mineral Resources are estimated using an average long-term foreign exchange rate of 2.5 Brazilian Reais: 1 US Dollar.
6. A minimum mining width of approximately 2 m was used.
7. Bulk density is 2.76 t/m^3 for Orebodies A and B and 2.95 t/m^3 for Orebody C at the Turmalina Mine.
8. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples.
9. Mineral Resources are inclusive of Mineral Reserves.
10. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
11. Numbers may not add due to rounding.

Mineral Reserves are estimated for Orebodies A and C only and are summarized in Table 1-2.

TABLE 1-2 SUMMARY OF MINERAL RESERVES – DECEMBER 31, 2015
Jaguar Mining Inc. – Turmalina Mine

Orebody	Classification	Tonnes (000)	Grade (g/t Au)	Contained Au Ounces (000)
A	Proven	387	5.70	71
A	Probable	440	5.92	84
C	Proven	73	2.51	6
C	Probable	180	4.13	24
Total	**Proven & Probable**	**1,080**	**5.31**	**185**

Notes:
1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves were estimated at a break-even cut-off grade of 2.57 g/t Au. Some stopes were included using an incremental cut-off grade of 1.38 g/t Au.
3. Mineral Reserves are estimated using an average long-term gold price of US$1,150 per ounce, and a US$/BRL exchange rate of 3.80.
4. A minimum mining width of 3 m was used.
5. Bulk density is 2.7 t/m^3.
6. Numbers may not add due to rounding.

CONCLUSIONS

The Turmalina plant has processed approximately 5.0 million tonnes of ore to produce a total of approximately 530,000 ounces of gold at an average recovered grade of 3.29 g/t Au. Both open pit and underground mining methods have been employed on the property, however, only the underground mine is currently operating.

GEOLOGY AND MINERAL RESOURCES

- The mineralization at the Turmalina Mine consists of a number of tabular bodies. These tabular bodies are grouped together according to spatial configuration and gold content into three Orebodies (Orebodies A, B, and C). The Faina and Pontal deposits are satellite deposits that are located to the northwest of Orebodies A, B, and C. Orebody D is located in close proximity to the northwest strike extension of Orebody C. At present, the Faina, Pontal, and Orebody D deposits are viewed as being refractory using the existing plant configuration.

- The main production of the underground mine has been from Orebody A, which is a folded, steeply northeast dipping tabular deposit with a steep southeasterly plunge, located in a biotite schist host rock. The mineralization in this deposit has been outlined along a strike length of approximately 250 m to 300 m and to depths of 900 m below surface. The down-plunge limit of the gold mineralization in Orebody A has not been defined. Additional tonnage is supplied from Orebody C. Mining activities were discontinued in Orebody B in 2015.

- Collection of bulk density data through 2015 has confirmed that the average bulk density of the mineralized material in Orebody A is slightly higher and the average bulk density of the mineralized material in Orebody C is slightly lower than was presented in Clow and Valliant (2006).

- On-going drilling programs carried out in 2015 have targeted the immediate down-plunge areas of Orebody A, below the current active mining area. A number of the drill holes that targeted this area were successful in demonstrating that the gold grades persist to a depth of approximately 150 m below the bottom of the ramp. The down-plunge limits of the gold grades have not been defined by the drilling completed to date. In RPA's opinion, it is clear that down-plunge continuation of Orebody A warrants a program of in-fill drilling in support of Mineral Resource estimates and detailed mine planning.

- Similarly, the down-plunge limits of the gold grades in portions of Orebody C have not been defined by the drilling completed to date. Drilling programs and analysis by Jaguar staff have been successful in outlining local trends of the mineralized shoots in this Orebody. In RPA's opinion, it is clear that down-plunge continuation of the mineralized shoots within Orebody C warrants a program of in-fill drilling in support of Mineral Resource estimates and detailed mine planning.

- Contouring of gold grades from channel samples and available drill holes have highlighted a series of pronounced steeply plunging high grade mineralized shoots throughout Orebody A. Contouring activities of the gold grades in Orebody C have highlighted a number of less pronounced shoots of higher grade mineralization.

- The updated Mineral Resource estimate for the Turmalina Mine was prepared based on drilling and channel sample data using a data cut-off date of December 31, 2015. The database comprises 2,700 drill holes and 12,679 channel samples. The estimate was generated from a block model constrained by three-dimensional (3D) wireframe models that were constructed using a minimum width of two metres. Raw assays were capped to 50 g/t Au for all three Orebodies. The gold grades are interpolated using the inverse distance cubed (ID^3) interpolation algorithm using the capped composited assays.

- Updated Mineral Resource estimates were prepared for the Faina and Pontal deposits, incorporating higher cut-off grades to reflect a revised conceptual operating scenario for the refractory mineralization and a mining method appropriate to the style of mineralization at each deposit. The estimation methodology for these two deposits was similar to that used in the preparation of the Turmalina Mineral Resource estimates.

- Reconciliation studies on a monthly basis show a wide variance in the block model versus mine production (F1') tonnage data throughout much of the year, with a reduction in the variance occurring in the last quarter. The grade data show a low degree of variance for most of the year with the block model grades generally being lower than the mine production grades. The monthly mine production versus plant production (F2') results show a very good correlation between the mine and the plant data throughout most of the year. The monthly block model versus plant production (F3') results show a similar behaviour in the tonnage and grade variances as were observed in the F1' reconciliation results.

- In RPA's opinion, the observed variance in the monthly tonnage data can be ascribed to two factors. Firstly, given the relatively small volumes that are involved and the slight time delays that are inherent in the mining process, in some cases the mined volumes from a given stope may be ascribed to a different monthly period between the planning and production departments. Secondly, it must be noted that the 2015 block model was not implemented until the second half of the period. Therefore, analysis of the block model performance for the January to June period is not appropriate. Similarly, conclusions drawn from analysis of the annual block model performance must be regarded with caution.

- Reconciliation studies on a quarterly basis show a wide variance in the F1' tonnage data for the first three quarters of the year, with a reduction in the variance occurring in the last quarter. The grade data show an increasing variance for the first three quarters with the block model grades generally being lower than the mine production grades. Improvement is noted in the fourth quarter. The quarterly F2' results show a very good correlation between the mine and the plant data throughout the year. The quarterly F3' results show a similar behaviour in the tonnage and grade variances as were observed in the F1' reconciliation results. Improvement is noted in the fourth quarter with the tonnage, grade, and gold contents all being within or close to a variance of 10%.

- As discussed with the monthly reconciliation results, RPA believes that it is important to note that the revised block model was not implemented until the second half of the year; consequently, conclusions drawn from the data of the first two quarters and from the annual data must be regarded with caution. The improvement noted in the data for the fourth quarter is encouraging.

- RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other factors that could materially affect the Mineral Resource estimates.

- It is RPA's opinion that the Turmalina Mineral Resource estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014).

MINING AND MINERAL RESERVES

- Proven and Probable Mineral Reserves total 1.08 million tonnes at a grade of 5.31 g/t Au, containing 184,502 ounces. Mineral Reserves are limited to Orebodies A and C.

- Mineral Reserves support a mine life of three years.

- The thicker portions of Orebody A, now considered for transverse mining in a primary/secondary sequence, comprise the highest grade, most productive portion of the Mineral Reserves.

- Comparing Levels 7, 8, 9 and 10 shows that the thicker, high-grade portion of Orebody A is increasing in lateral extent with depth.

- There is good potential for increasing Mineral Reserves by completing infill drilling of Inferred Resources at depth in Orebody A.

- RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimates.

- It is RPA's opinion that the Turmalina Mineral Reserve estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014).

METALLURGY AND PROCESSING

- The plant at the Turmalina Mine is well run and achieves consistent recoveries.

- Production capacity for the plant exceeds the ability of the mine to deliver ore.

CAPITAL AND OPERATING COSTS

- Life of Mine operating costs are forecast to average $83/t. Recent strengthening of the US dollar against the BRL has had a significant impact in reducing US$ unit costs. Jaguar used an exchange rate of US$1.00 = 3.8 BRL for 2016, and assumed a 6% annual devaluation of the BRL. Although current exchange rates have improved from recent lows (over 4.1, now 3.6), the exchange rate assumptions are consistent with forecasts.

- Sustaining capital costs are estimated to be $32 million, including reclamation and closure costs of $5.1 million. Due to struggles with profitability in recent years, Jaguar has elected to defer capital spending, to the extent possible, on areas such as mobile equipment rebuilds and replacements. In RPA's opinion, this is a short-term solution, and higher expenditures will be necessary at some point in the future.

- All-In Sustaining cost (as defined by the World Gold Council) for the Turmalina Mine is $791/oz, including reclamation and closure.

RECOMMENDATIONS

GEOLOGY AND MINERAL RESOURCES

General

- Complete updating the written procedures for the collection of geological and sampling information. Conduct a training session to present the procedures to all geological staff. The written procedures for entry of this data into the central database and its management should also be completed.

- Continue with database validation exercises focusing specifically on reducing the error rates for the collar and survey tables in the drill hole database.

- Make a slight modification to the logging procedures whereby detailed information regarding the mineralized intervals will be brought forward from the remarks column and inserted as a major level entry in the drill logs to assist in preparation of future updates to the Mineral Resources.

Assay Laboratory

- The Quality Assurance/Quality Control (QA/QC) results should be disseminated to all relevant parties.

- The data collected from programs implemented by the site geologists is entered into the Jaguar internal database (the BDI database), which is set up to automatically validate the results. However, the database does not have the functionality to easily extract the data and prepare control charts. The database should be amended as a minimum to improve the data extraction functionality so that standard control charts can be prepared.

- The QA/QC program should be amended to include the channel samples.

- Analysis of the QA/QC results should be carried out on a regular and timely basis to permit correction of any out-of-bounds results.

- At present, the pulverizers are cleaned with compressed air and a polyester fiber brush, after each sample. As a minimum, the pulverizers should be cleaned with a wire brush. No special protocols are in place to clean the pulverizers after passing a sample of known high gold grade (e.g., Orebody A). The pulverizers should be cleaned with silica sand after processing each known high grade sample (e.g., Turmalina quartz veins).

- All gold grades are determined by fire assay (FA)–atomic absorption (AA). The AA unit is currently calibrated to direct-read gold values up to 3.3 g/t. Any samples containing gold values in excess of this are analyzed by diluting the solute. High grade samples should be determined using a gravimetric method.

- The assay laboratory automatically re-assays all samples containing gold grades greater than 30 g/t Au, and the average of the re-assays are reported to the sites. All sample results should be reported to the site, without averaging.

- The threshold of 30 g/t Au is high. Re-assay thresholds of 10 g/t Au to 15 g/t Au are commonly used in other gold operations.

- The certificate number for each assay batch should be included into the central BDI database.

- The central BDI database should be updated to store drill core recovery, channel sample recovery, and sample tracking (lost sample) information. This will assist in deciding how to address null values in future resource estimates.

Mineral Resources

- The property-scale geological units should be incorporated into the resource block model.

- High gold grades in Orebody A are associated with narrow quartz veins that have been deformed. The site geologists collect structural data, however, this data does not seem to be incorporated as part of the Mineral Resource estimation process. The structural data should be entered into the BDI database.

- For future updates of the Mineral Resource estimates, mineralization wireframes should be created using a stope incremental grade that is closer to the reporting cut-off grade. This will allow improvement of the measurement of the amount of planned and unplanned dilution.

- Sample information for Orebody C should be extracted and used to estimate block grades for each lens individually.

- The average bulk density used to estimate the ore tonnes for Orebody A should be amended to 2.86 tonnes/m^3 while the average bulk density used to estimate the ore tonnes for Orebody C should be amended to 2.90 tonnes/m^3. The average bulk density of the waste materials should be amended to 2.82 tonnes/m^3 and 2.87 tonnes/m^3, respectively.

- Condemnation drilling should be carried out for the planned area where the cross-cuts to the hangingwall ventilation raise or hangingwall exploration drift intersect Orebody A to assist in planning the location of the cross-cut. Contouring of gold grades from channel samples and available drill holes should be implemented on a routine basis to identify the location of high grade plunging shoots. This information will assist the mine planning staff to maximize profitability, by locating pillars away from the wide, high-grade areas.

- Contouring of grade, thickness, and the grade-thickness product on Orebody B will be useful in identifying trends on gold distribution as well as potential areas where mining activities may be resumed.

- Reconciliation activities should continue to monitor the block model performance through to at least the second half of 2016 to provide sufficient information for determining whether changes to the estimation procedures are required.

- Reconciliation studies should be carried out at least on a quarterly basis, or more frequently as required.

- Slight revisions should be made to the workflow followed in preparation of reconciliation studies. For the revised work flow, the block model tonnes and grade are derived using the planned excavation shapes (drifts and stopes) while the mined tonnes are determined using the actual excavated volumes.

- Consideration should be given towards a program of taking muck samples from the stope draw points as an additional method of determining the as-mined stope grades.

- Detailed, in-fill, and exploration drilling of the down-plunge and along-strike projection of Orebody A with the goal of increasing the Mineral Resources and supporting detailed mine planning is warranted and justified.

- In-fill and step-out drilling on selected portions of Orebody C to upgrade the status of, and increase, the Mineral Resources is warranted.

MINING

- Review costs separately for Orebodies A and C, at up-to-date exchange rates, to determine if incremental cut-off grades can be lower and excess processing capacity more fully utilized.

- Monitor geotechnical performance of primary/secondary mining as it progresses.

- Assess planned and unplanned dilution performance separately for development and stoping, by comparing resource wireframes, planned excavation outlines, and surveys of the resulting excavations.

MINERAL PROCESSING AND METALLURGICAL TESTING

- It may be possible to reduce costs by reducing fineness of grind.
- According to the information provided, the metallurgical testwork on samples from the Faina, Pontal, and Orebody D deposits has been carried out to a preliminary level only. While these deposits are considered as refractory, a full set of testwork has not been completed for these deposits. Metallurgical testing should continue on these deposits and should include mineralogical characterization of the tailings samples from the testing programs.
- Options for processing refractory mineralization from Faina and/or Pontal should be investigated.
- Options for the use of excess processing capacity for toll milling should be investigated.

TECHNICAL SUMMARY

PROPERTY DESCRIPTION AND LOCATION

The Turmalina Mine is located in the Conceição do Pará municipality in the state of Minas Gerais, approximately 120 km northwest of Belo Horizonte and six kilometres south of Pitangui, the nearest important town.

The property comprises seven contiguous mineral rights concessions granted by the National Department of Mineral Production (DNPM) that cover an area of 4,907.60 ha. The mine is centred at approximately 19°44’36” south latitude and 44°52’36” west longitude.

Jaguar has 100% ownership subject to a 5% net revenue interest up to $10 million and 3% thereafter, to an unrelated third party. In addition, there is a 0.5% net revenue interest payable to the surface landowner.

EXISTING INFRASTRUCTURE

The Turmalina Mining Complex includes a nominal 2,000 tpd processing plant and tailings disposal area. Electrical power is obtained from the national grid. There is no infrastructure related to the Faina and Pontal historic open pit operations.

HISTORY

Gold was first discovered in the area in the 17th century, and through the 19th century, intermittent small-scale production took place from alluvial terraces and outcropping quartz veins. Gold production exploited alluvium or weathered material, including saprolite and saprolite-hosted quartz veins.

AngloGold controlled the Turmalina mineral rights from 1978 to 2004 through a number of Brazilian subsidiaries. It explored the area extensively between 1979 and 1988 using geochemistry, ground geophysics, and trenching, which led to the discovery of the Turmalina, Satinoco (later renamed as Orebody C), Faina, Pontal, and other mineralized zones. In 1992 and 1993, it mined 373,000 t of oxide ore from open pits at these zones recovering 35,500 oz of gold using heap leach technology. Jaguar acquired the Turmalina properties in 2004.

GEOLOGY AND MINERALIZATION

The Turmalina deposits are located in the western part of the Iron Quadrangle, which was the principal region for the Brazilian hard rock gold mining until 1983 and accounted for approximately 40% of Brazil's total gold production. Gold was produced from numerous deposits, primarily in the northern and southeastern parts of the Iron Quadrangle, mostly hosted by Archean or Early Proterozoic-aged banded iron formations (BIF) contained within greenstone belt supracrustal sequences.

The Turmalina deposit is located in the Pitangui area, which is underlain by rocks of Archaean and Proterozoic age. Archaean units include a granitic basement, overlain by the Pitangui Group, a greenstone belt sequence of ultramafic to intermediate volcanic flows and pyroclastics and associated sediments. The Turmalina deposit is hosted by chlorite-amphibole schist and biotite schist units within the Pitangui Group. A sequence of sheared, banded, sulphide iron formation and chert lies within the stratigraphic sequence. The stratigraphy locally strikes to azimuth 135º.

The Turmalina deposits are believed to be typical examples of mesothermal, epigenetic deposits that are enclosed by host rocks that have undergone amphibolite-grade metamorphism.

Gold mineralization at Turmalina occurs in fine grains associated with sulphides in sheared schists and BIF sequences. Gold particles are mostly associated with arsenopyrite, quartz, and micas (sericite and biotite).

EXPLORATION STATUS

Initial exploration efforts by Jaguar in 2004 focused on the re-interpretation of the AngloGold data (trenches, soil geochemistry, and drilling) to better understand the local geology. In 2006 to 2008, Jaguar completed trenching and channel sampling, followed by three phases of drilling. Based on results of this drilling, Jaguar prepared a Mineral Resource estimate for the Turmalina Mine in 2007.

Current drilling and sampling practices involve the initial delineation of the mineralized lenses using surface-based drill holes. Once sufficient primary underground access has been established, the mineralized lenses are further outlined by underground-based drill holes at a nominal spacing of 25 m to 50 m. As development of the underground access progresses on the ore, a series of channel samples are taken in two locales (one set on the face and one set along the back) for each round. While several exploration targets are present on the mine property, the focus of Jaguar's 2015 diamond drilling program was on the conversion of existing Mineral Resources to Mineral Reserves and testing of the down-dip extension of Orebodies A and C for the continuation of the gold-bearing zones.

MINERAL RESOURCES

TURMALINA MINE

The database for the Turmalina Mine comprises 2,700 drill holes and 12,679 channel samples. The estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of approximately two metres. A capping value of 50 g/t Au was applied for all three Orebodies. The gold grades were interpolated by the inverse distance cubed (ID^3) interpolation algorithm using capped composited assays. Solid models of the underground excavations have been prepared using available survey data as of December 31, 2015. These solid models were used to code the block model for the mined out portions of the deposit.

The mineralized material for each Orebody was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and previous production experience with these Orebodies.

Reconciliation studies were completed by RPA on both monthly and quarterly periods using source data provided by Jaguar following the general outline described in Parker (2014).

FAINA DEPOSIT

The database for the Faina deposit comprises 3,992 drill holes and channel samples for an aggregate length of 52,474 m. The estimate was generated from a block model constrained by a total of 39 3D wireframe models that were constructed using a minimum width of approximately two metres. Two topography models were created, one representing the limit of open pit excavation and the second representing the current topography where a portion of the open pit has been backfilled. A solid model of the underground excavation volume was created using existing centre-line survey data and a general cross section profile. A capping value of 30 g/t Au was applied to channel samples and a capping value of 25 g/t Au was applied to drill hole samples. The gold grades were interpolated using several interpolation algorithms using capped composited assays. The Mineral Resources are reported using the gold grades estimated by the ID^3 method.

The mineralized material for each wireframe was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and the presence of underground access.

The Mineral Resources for the Faina Deposit have been prepared under the conceptual scenario that the contained refractory gold-bearing material will be excavated by means of underground mining methods and transported to the Turmalina plant for processing. A gold-rich flotation concentrate is envisioned to be generated after appropriate upgrades have been made to the existing plant. The gold-rich flotation concentrate would then be shipped or sold to a domestic source for recovery of the gold.

PONTAL DEPOSIT

The database for the Pontal deposit comprises 3,590 drill holes and channel samples for an aggregate length of 19,283 m. The estimate was generated from a block model constrained by a total of 16 3D wireframe models that were constructed using a minimum width of approximately two metres. Two topography models were created that covered the local area of each of the two deposits at Pontal, LB1 and LB2. An approximation of the underground excavation volume was created by digitizing the outlines in plan view from historical underground mapping and sampling programs carried out at the LB1 deposit. The digitized plan view strings were projected upwards by a constant distance of 2.5 m to create the solid model of the underground excavations. A capping value of 30 g/t Au was applied to samples at the LB1 deposit and a capping value of 10 g/t Au was applied to samples at the LB2 deposit. The gold grades were interpolated using several interpolation algorithms using capped composited assays. The Mineral Resources are reported using the gold grades estimated by the ID^3 method.

The mineralized material for each wireframe was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and the presence of underground access. The Mineral Resources for the Pontal deposit have been prepared under the conceptual scenario that the contained refractory gold-bearing material will be excavated by means of underground mining methods and transported to the Turmalina plant for processing. A gold-rich flotation concentrate is envisioned to be generated after appropriate upgrades have been made to the existing plant. The gold-rich flotation concentrate would then be shipped or sold to a domestic source for recovery of the gold.

MINERAL RESERVES

The Mineral Reserves consist of selected portions of the Measured and Indicated Resources that are within designed stopes and associated development, designed by MCB Serviços E Mineração (MCB), a Brazilian consulting group.

Dilution was applied to the designed stopes as planned dilution (portions of the stopes that project outside the resource wireframes) and unplanned dilution (a factor to account for overbreak). Dilution estimates average approximately 25%, consistent with recent operating results.

Extraction (mining recovery) is assumed to be 100%. Although some losses are encountered during blasting and mucking, they are minimal, and reconciliation to mill results indicates that high dilution/high extraction assumptions match up well.

A break-even cut-off grade of 2.57 g/t Au was estimated for Mineral Reserves, using a gold price of US$1,150/oz, an average gold recovery of 90%, and 2015 cost data for the Turmalina Mine. Gold prices used for reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources.

Cost data was stated in US dollars, using the exchange rate at the time (approximately 3.8 BRL to the US dollar).

An incremental cut-off grade of 1.38 g/t Au was estimated using variable costs only. Some stopes with diluted grades between 1.38 g/t Au and 2.57 g/t Au were included in Mineral Reserves. Approximately 10% of Mineral Reserves can be considered as incremental ore.

MINING

The Turmalina Mine consists of a number of tabular bodies known as Orebodies A, B, and C.

The main production of the mine has been from Orebody A, which is folded, steeply east dipping, with a strike length of approximately 250 m to 300 m and an average thickness of six metres. Mineralization has been outlined to depths of 900 m below surface. The southern portion of Orebody A is composed of two parallel narrow veins. The northern portion of Orebody A is much the same as the southern, however, the two parallel zones nearly or completely merge and therefore the zone is much wider overall (up to 10 m).

Orebody B includes three thinner, lower grade lenses parallel to Orebody A. Two of the lenses are located approximately 50 m to 75 m in the structural hangingwall and are accessed by a series of cross-cuts that are driven from Orebody A. The third lens is located possibly along the axial plane. The mineralization in this deposit has been outlined along a strike length of approximately 350 m to 400 m and to depths of 900 m below surface. Orebody B is narrow along its entire strike length.

Orebody C is a series of 14 lenses that are located to the west in the structural footwall of Orebody A and are generally of lower grade. They strike northwest and dip steeply to the northeast. A minor amount of production has been achieved from these lenses to date. The mineralization in this deposit has been outlined along a strike length of approximately 800 m to 850 m and to depths of 400 m to 450 m below surface.

Orebodies A and C are the primary structures being mined, while mining in Orebody B was halted in 2015. Orebody A is located in the footwall of the shear zone and Orebody B in the hangingwall of the shear structure.

Orebody A is closest to the main ramp and is accessed first. Development is currently progressing to Level 10 in Orebody A.

Orebody C is a secondary system being mined to the west of the portal. It is of lower grade than Orebodies A and B. Orebody C is accessed from the main ramp at Level 02. A separate ramp to surface was completed in 2015, which reduces the haul distance to the run-of-mine ore stockpile.

MINING METHOD

The mining method currently in use is longhole sublevel stoping with delayed backfill.

The mine is accessed from a primary decline located in the footwall of the deposit. The mine is divided into 75 m levels. Five sublevels, spaced 15 m apart vertically, are driven from the main ramp. A five metre thick sill pillar is left below each main level.

At each level and sublevel, drifts are developed in the mineralized zone to expose the hangingwall contact. The drift is extended in both directions along strike, under geological control for alignment, continuing to expose the contacts until the limits of the orebody are reached.

Past mining used a longitudinal retreat sequence for Orebodies A and B – stope extraction began at the ends of the levels and retreated back towards the access. Stopes were mined from several individual levels simultaneously in order to provide the required number of active workplaces needed to meet production targets.

The retreat sequence, and the need to complete Orebody B mining before cutting off access by mining Orebody A, reduced productivity by limiting the number of stopes available for mining at a given time.

The current Life of Mine plan (LOMP) does not consider mining of Orebody B, and involves a change in mine design. Starting with Level 9, Orebody A is mined in a primary/secondary sequence via transverse access to the thick centre portion, requiring additional accesses developed in waste. Each primary or secondary stope is 15 m along strike, with no pillars. The design change has the effect of increasing the number of available workplaces, and de-links the narrow, lower-productivity ends from the centre.

In RPA's opinion, this innovation is critical to improving the mine's ability to fill the mill to capacity with high grade ore.

Development waste is used for backfill, on an unconsolidated basis in secondary stopes, and with the addition of cement in primary stopes. Paste fill is used to tight fill the stopes immediately below the sill pillars, where consistent product is critical. The paste fill product is prepared from detoxified CIP tailings in a shear mixer and batch plant located near the mill.

Although Orebody B is not in the LOMP, and no longer included in Mineral Reserves, future access is possible, either by mining through cemented paste fill and supporting appropriately, or by mining concurrently with the thinner ends of Orebody A.

LIFE OF MINE PLAN

The production schedule covers a mine life of three years based on Mineral Reserves, and it is summarized in Table 1-3.

TABLE 1-3 LOMP PRODUCTION SCHEDULE
Jaguar Mining Inc. – Turmalina Mine

Item	Units	2016	2017	2018	Total
Total Mill Feed	Tonnes (000)	376	408	296	**1,080**
	g/t Au	5.76	5.36	4.68	**5.31**
Recovery	%	90.0%	90.0%	90.0%	**90.0%**
Gold Produced	Ounces (000)	63	63	40	**166**

Scheduling was based on productivities achieved in recent operations. Development was limited to 60 m per month on the main ramp and 30 m per month on any single heading elsewhere. Stope scheduling follows the primary/secondary sequence, and includes delays for backfilling and cement curing.

MINERAL PROCESSING

The plant has a nominal processing capacity of 2,000 tpd, or 610,000 tpa. Since inception, the plant has been achieving annual overall recoveries of between 87% and 92%. The process flowsheet includes tw0-stage crushing and screening to minus 3/8", grinding using ball mills, thickening, cyanide leaching, CIP, elution, electrowinning, and smelting. The tailings are conveyed to a detoxification unit for arsenic removal and cyanide destruction and then are pumped to the paste fill plant to be used either for mine backfill or deposited on a dry-stack storage area. Process tailings have also been dry-stacked in completed open pits on the mine site.

ENVIRONMENTAL AND PERMITTING CONSIDERATIONS

Jaguar has all permits necessary for continuing operation of the Turmalina Mine.

As of December 31, 2015, Jaguar maintained progressive rehabilitation and reclamation provisions of BRL$20.3 million which represent the undiscounted, uninflated future payments for the expected rehabilitation costs.

CAPITAL AND OPERATING COST ESTIMATES

Costs for the LOMP were estimated in BRL, based on recent operating results and Jaguar budgets.

Recent strengthening of the US dollar against the BRL has had a significant impact in reducing US$ unit costs. Jaguar used an exchange rate of US$1.00 = 3.8 BRL for 2016, and assumed a 6% annual devaluation of the BRL. Although current exchange rates have improved from recent lows (over 4.1, now 3.6), the exchange rate assumptions are consistent with forecasts.

A summary of capital requirements anticipated over the LOMP is summarized in Table 1-4.

TABLE 1-4 LOMP CAPITAL COST SUMMARY
Jaguar Mining Inc. –Turmalina Mine

Capital Cost	Units	Total	2016	2017	2018	2019+
Primary Development	US$ '000	8,769	6,728	2,023	19	
Raise	US$ '000	599	397	202	-	
Exploration	US$ '000	1,981	932	562	487	
Engineering	US$ '000	2,646	2,225	226	195	
Mine Equipment	US$ '000	10,734	5,470	2,821	2,443	
Plant Equipment	US$ '000	2,376	1,007	733	635	
G&A Sustaining Capital	US$ '000	75	-	40	35	
Reclamation and Closure	US$ '000	5,073	59	65	30	4,919
Total	**US$ '000**	**32,251**	**16,818**	**6,671**	**3,843**	**4,919**

Operating costs for the LOMP are shown in Table 1-5.

TABLE 1-5 LOM OPERATING COST SUMMARY
Jaguar Mining Inc. – Turmalina Mine

Unit Costs	Unit	Total	2016	2017	2018
Mining (Underground)	US$/t milled	**61.50**	61.86	61.06	61.64
Processing	US$/t milled	**21.87**	21.38	21.28	23.31
Total Unit Operating Cost	**US$/t milled**	**83.37**	**83.24**	**82.34**	**84.95**

Total Costs	Unit	Total	2016	2017	2018
Mining (Underground)	US$ '000	**66,425**	23,277	24,887	18,261
Processing	US$ '000	**23,625**	8,047	8,673	6,905
Total Operating Cost	**US$ '000**	**90,050**	**31,324**	**33,560**	**25,166**

Operating cost estimates include mining, processing, and general and administration (G&A) expenses. Operating costs are budget cost projections based on actual costs incurred over the past year.

There are additional corporate overhead costs associated with the Belo Horizonte and Toronto offices, as well as royalties and refining costs, which are not included in the operating cost estimate.

2 INTRODUCTION

Roscoe Postle Associates Inc. (RPA) was retained by Jaguar Mining Inc. (Jaguar) to carry out an audit of the 2015 Mineral Reserves and Mineral Resources for the Turmalina Mine, located in Minas Gerais state, Brazil, and to prepare an independent Technical Report. The purpose of this report is to support disclosure of the updated Mineral Reserves and Mineral Resources. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects.

Jaguar was formed on March 1, 2002 for the purpose of developing small and medium sized mineral properties in Brazil that have well defined gold resources and reserves with upside exploration potential. Mineração Serras do Oesto (MSOL) is a Brazilian company holding numerous properties in Minas Gerais state, and was formed by ex-AngloGold Ashanti Ltd. (AngloGold) geologists and engineers who believed that many of the small gold properties in Minas Gerais had mining potential if run separately as small coordinated operations. MSOL was acquired by Jaguar as its Brazilian subsidiary in 2002. Jaguar’s first operation was the Sabará deposit, a small oxide gold heap leach operation which was in production for four years until resource exhaustion.

Jaguar's current gold operations, Turmalina and Caeté, are located in the Iron Quadrangle region, a prolific greenstone belt near the city of Belo Horizonte in the state of Minas Gerais, Brazil. Jaguar is a Canadian-chartered entity with its principal executive office in Toronto, Ontario, Canada and administrative office in Belo Horizonte, Brazil. The common shares of Jaguar are currently listed on the TSX Venture Exchange under the symbol JAG.

SOURCES OF INFORMATION

A site visit to the Turmalina Mine was carried out by Mr. Jason Cox, P. Eng., RPA Principal Mining Engineer, and Mr. Reno Pressacco, P. Geo., RPA Principal Geologist, on November 20, 2014. Messrs. Cox and Pressacco were accompanied by Mr. Jean-Marc Lopez, Director – Mine Geology, and Mr. Albertino Francisco da Silva, Metallurgy Manager. The site visit comprised stops at selected underground locations in Orebodies A and C to review the ground conditions and mining methods, and to examine examples of the gold mineralization.

Discussions on the various aspects of the operation were held with the following personnel:

Name	Position	Company
Neil Hepworth	VP of Technical Services	Jaguar
Jim Healy	VP of Development Projects	Jaguar
Jean-Marc Lopez	VP – Geology and Exploration	Jaguar
Marcos Dias Alvim	Project Development Manager	Jaguar
Helbert Taylor Vieira	Senior Geologist	Jaguar
Carlos Ribeiro Luiz	Geology Manager - Turmalina	Jaguar
Colbert Hovadick Rodrigues Silva	Production Supervisor	Jaguar
Deborah Alves	Mine Planning Coordinator	Jaguar
Manoel Batista dos Santos	Mine Shift Supervisor	Jaguar
Williams Pinto dos Santos	Mine Geologist	Jaguar
Alessandra Gracietti Teixeira	Database Manager	Jaguar
John Wells	Consulting Metallurgist	Independent
Name	Position	Company
Neil Hepworth	VP of Technical Services	Jaguar
Jim Healy	VP of Development Projects	Jaguar
Jean-Marc Lopez	VP – Geology and Exploration	Jaguar

Mr. Cox and Mr. Pressacco are the Qualified Persons taking responsibility for this Technical Report. A summary of the individual contributions of each of the authors to this report is provided in Section 29 Certificate of Qualified Person.

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 27 References.

LIST OF ABBREVIATIONS

Units of measurement used in this report conform to the metric system. All currency in this report is US dollars (US$) unless otherwise noted.

a	annum
A	ampere
Acfm	actual cubic feet per minute
bbl	barrels
btu	British thermal units
°C	degree Celsius
C$	Canadian dollars
cal	calorie
cm	centimetre
cm^2	square centimetre
d	day
dia	diameter
dmt	dry metric tonne
dwt	dead-weight ton
°F	degree Fahrenheit
ft	foot
ft^2	square foot
ft^3	cubic foot
ft/s	foot per second
g	gram
G	giga (billion)
Gal	Imperial gallon
g/L	gram per litre
Gpm	Imperial gallons per minute
g/t	gram per tonne
gr/ft^3	grain per cubic foot
gr/m^3	grain per cubic metre
ha	hectare
hp	horsepower
hr	hour
Hz	hertz
in.	inch
in^2	square inch
J	joule
k	kilo (thousand)
kcal	kilocalorie
kg	kilogram
kgf/cm^2	kilogram force per square cm
km	kilometre
km^2	square kilometre
km/h	kilometre per hour
kPa	kilopascal
kVA	kilovolt-amperes
kW	kilowatt
kWh	kilowatt-hour
L	litre
lb	pound
L/s	litres per second
m	metre
M	mega (million); molar
m^2	square metre
m^3	cubic metre
µ	micron
MASL	metres above sea level
µg	microgram
m^3/h	cubic metres per hour
mi	mile
min	minute
µm	micrometre
mm	millimetre
mph	miles per hour
MVA	megavolt-amperes
MW	megawatt
MWh	megawatt-hour
oz	Troy ounce (31.1035g)
oz/st, opt	ounce per short ton
ppb	part per billion
ppm	part per million
psia	pound per square inch absolute
psig	pound per square inch gauge
R$ or BRL	Brazilian Real
RL	relative elevation
RPM	revolutions per minute
s	second
st	short ton
stpa	short ton per year
stpd	short ton per day
t	metric tonne
tpa	metric tonne per year
tpd	metric tonne per day
US$	United States dollar
USg	United States gallon
USgpm	US gallon per minute
V	volt
W	watt
wmt	wet metric tonne
wt%	weight percent
yd^3	cubic yard
yr	year

3 RELIANCE ON OTHER EXPERTS

This report has been prepared by RPA for Jaguar Mining Inc. (Jaguar). The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to RPA at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by Jaguar and other third party sources.

For the purpose of this report, RPA has relied on ownership information provided by Jaguar. RPA has not researched property title or mineral rights for the Turmalina Mine and expresses no opinion as to the ownership status of the property.

RPA has relied on Jaguar for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from Turmalina mining operation.

Except for the purposes legislated under provincial securities laws, any use of this report by any third party is at that party's sole risk.

4 PROPERTY DESCRIPTION AND LOCATION

The Turmalina Mine is located in the state of Minas Gerais approximately 120 km northwest of Belo Horizonte and six kilometres south of Pitangui, the nearest important town (Figure 4-1). The Turmalina Mining Complex is located in the Conceição do Pará municipality.

Jaguar, like other Brazilian mining companies, has large mining concessions, which typically range upwards of 10,000 ha per concession. As a result, a given mine or project may have numerous related mineralized zones extending over many kilometres of strike length, which may eventually have individual mining operations. They may all be grouped under the single mine name, which is often the first operation put into production. To assist in the definition of the location of the primary operation, the geographic coordinates of this primary operation are listed by latitude and longitude. The Turmalina Mine has geographic coordinates of 19°44'36.96" south latitude and 44°52'36.45" west longitude.

MINERAL TENURE

Jaguar acquired the Turmalina Mine from AngloGold in September 2004. Jaguar has 100% ownership subject to a 5% net revenue interest up to $10 million and 3% thereafter, to an unrelated third party. In addition, there is a 0.5% net revenue interest payable to the surface landowner.

Turmalina comprises seven contiguous mineral rights concessions granted by the National Department of Mineral Production (DNPM) that cover an area of 4,907.60 ha, as summarized in Tables 4-1 and 4-2. A summary of the surface rights holdings is provided in Table 4-3. The location of the mineral rights and surface rights are illustrated in Figures 4-2 and 4-3, respectively.

TABLE 4-1 SUMMARY OF MINERAL RIGHTS HOLDINGS
Jaguar Mining Inc. – Turmalina Mine

DNPM Registry No.	Local	Municipality	Area (ha)	Status
833.584/12		Conceição do Pará	120.46	Application for Exploration Licence
812.003/75	Casquilho	Conceição do Pará / Pitangui/Onça do Pitangui	980.43	Mining Concession
812.004/75	Casquilho	Conceição do Pará / Pitangui	880.00	Mining Concession
803.470/78	Rio S.João	Conceição do Pará / Pitangui	952.00	Mining Concession
830.027/79	Pontal	Conceição do Pará / Pitangui	120.00	Mining Concession
831.617/03	Rio S.João	Conceição do Pará	858.71	Final Exploration Report submitted to DNPM
832.203/03	Rio S.João	Conceição do Pará / Pitangui	996.00	Final Exploration Licence
TOTAL			**4,907.60**	

TABLE 4-2 SUMMARY OF MINERAL ROYALTIES, CONCESSION NO. 812.003/1975
Jaguar Mining Inc. – Turmalina Mine

Mineral Rights Royalties:

Holder	Royalty	Orebody	Payment Status in R$	
			Status	Paid in 2015
Eduardo C. de Fonseca			Inactive	-
Carlos Andraus / Mirra Empreend. e Participações Ltda.	5% of the Production Gross Profits until reaching US$10 million during current fiscal year, then 3% of the Production Gross Profit	A, B and C	Active (30%)	1,741,000
Vera A. Di Pace / Vermar Empreend. e Participações Ltda.			Active (30%)	1,741,020
Paulo C. de Fonseca / Sandalo Empreend. E Participações Ltda.			Active (16%)	928,533
Clara Darghan/Mocla Empreend. E Participações Ltda.			Active (12%)	696,400
Eduardo Camiz de F. Junior / Agro Pecuária Aldebaram Empreend. Ltda.			Active (12%)	696,400

Surface Rights Royalties:

Holder	Refers to	Orebody	Payment Status in R$	
			Base Value	Paid in 2015
José Laeste de Lacerda	Surface	A, B and C	6,868	80,371
Wilson Clemente de Faria	Building rent		1,627	94,239
	Surface		6,420	
EPAMIG	Surface	Faina	27,250	327,000
Familia Freitas	Water pipe	A, B and C	2,574	69,498
	Water well		2,143	
	Road access		6,866	

TABLE 4-3 SUMMARY OF SURFACE RIGHTS HOLDINGS
Jaguar Mining Inc. – Turmalina Mine

Name	Registry Number	Location	Area (ha)	Status	20% Area Forest Legal Reserve
FAZENDA CAIAMAL (FAZENDA JOSÉ MARIA, ESPÓLIO)	Mat. R-01-13.321 – Livro 2 – Área: 40 ha / Mat. R-02-5.873 – Livro 2 – Área: 31.5 ha	Tailings Dam (partial)	71.5	Active	The legal reserve of a total of 18.81 ha is in good standing but the registration at the public notary is still pending.
FAZENDA CAIAMAL (FAZENDA BARBIERE)	Mat. 32.288 – Livro 2	Processing Plant, Fill Plant, Tailings Dam and Core shack	96	Active	Legal Reserve is in good standing. Area of 19.50 ha.
FAZENDA IRMÃOS FREITAS (CACA / ANTÔNIO CARLOS ALVES DE FREITAS)	Mat. 30.108 – Livro 2	Orebodies C and D	30	Active	Legal reserve established in name of IBDF (Instituto Brasileiro de Florestas), according to AV – 1 - 30108-03/07/2003, Registration of Legal reserve in name of Jaguar pending.
FAZENDA CASQUILHO (ALEXANDRE FERREIRA DA SILVA)	-	Office, Mess, Mechanic Shop and Decline Portal	3	Active	No Forest legal reserve registered as the area has no more available forest
FAZENDA TANQUE	Pending	Down Dip Projection of Orebodies A & B	25		

May 2016

Figure 4-1

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Location Map

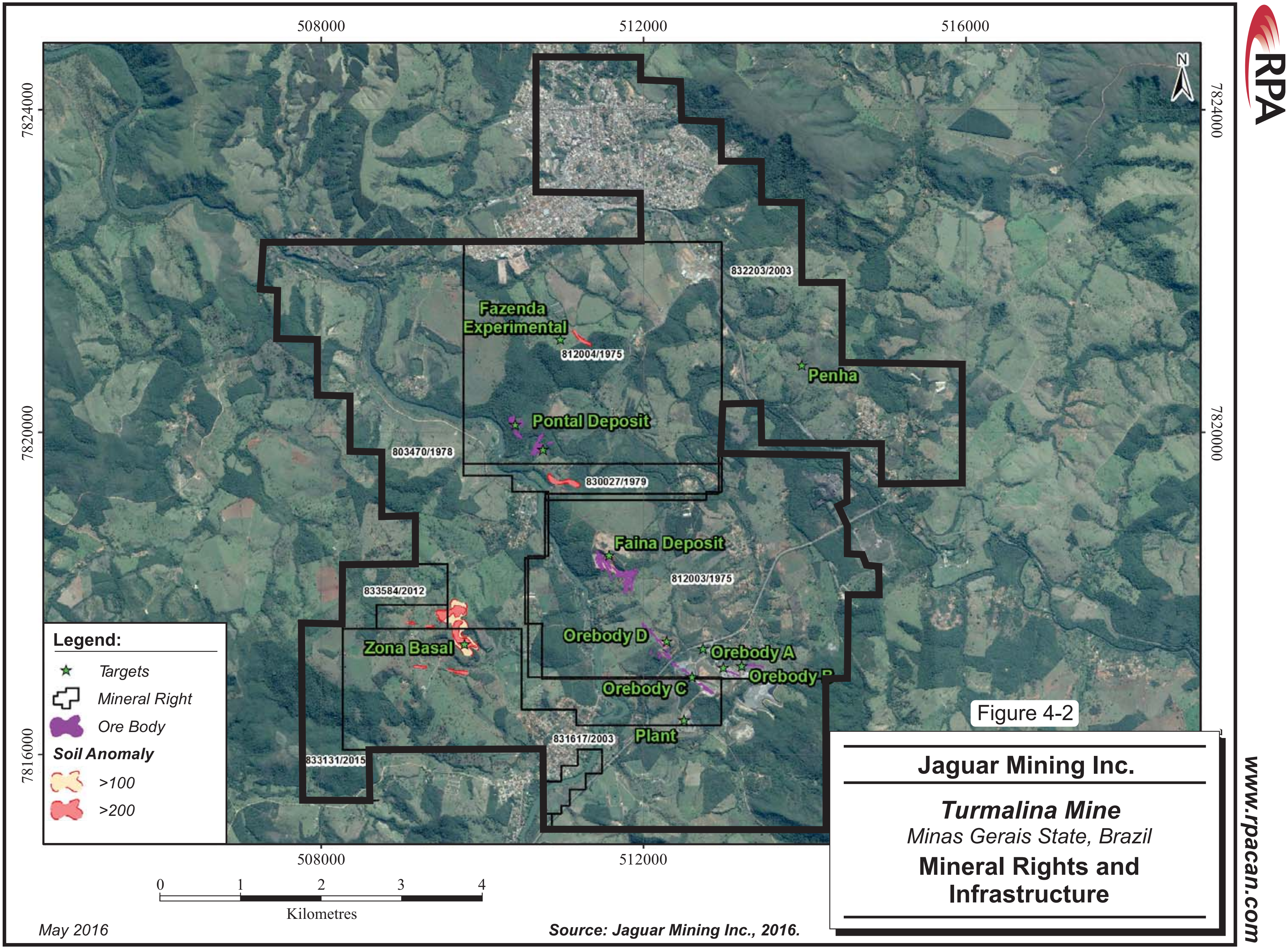


Figure 4-2

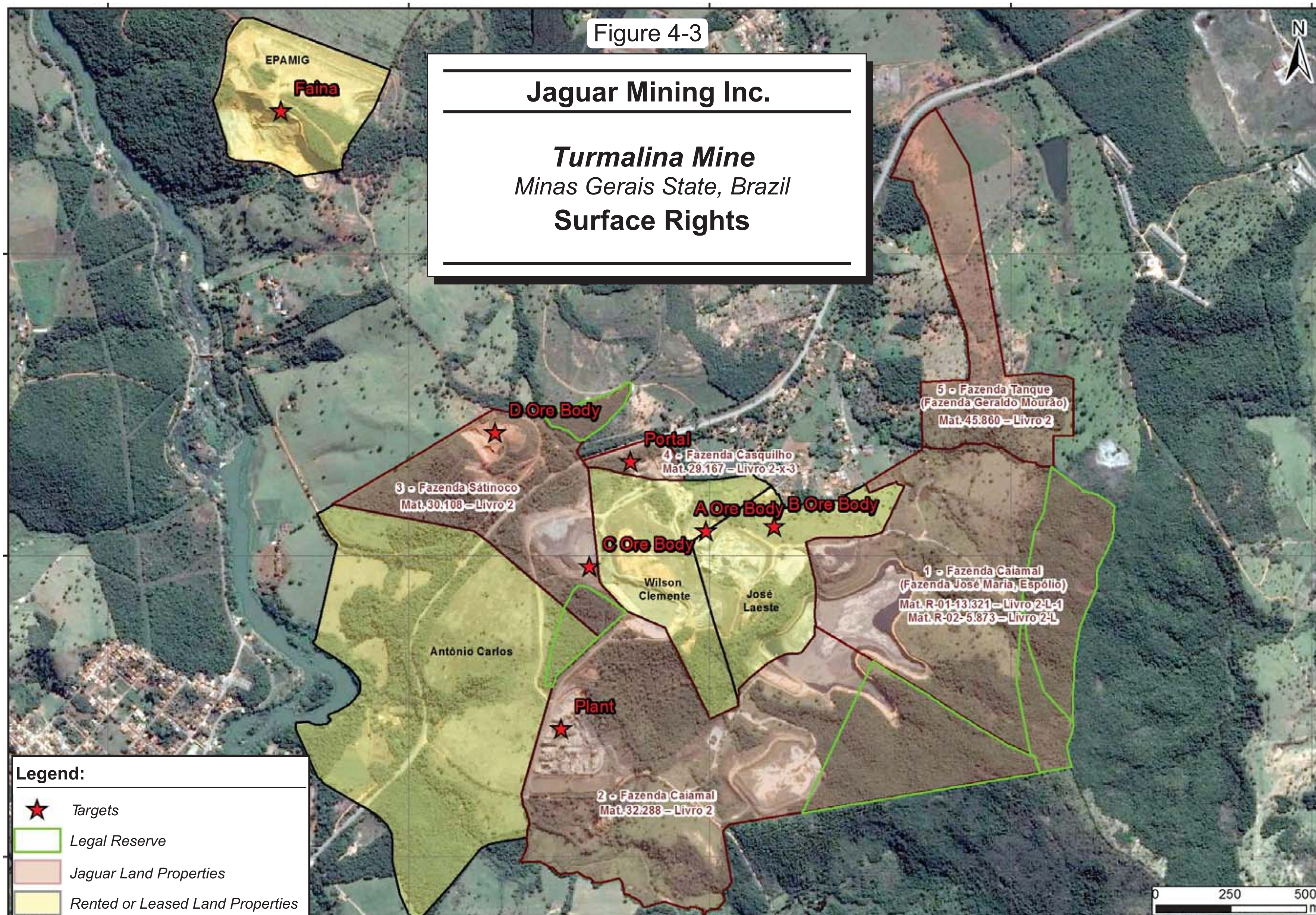
Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Mineral Rights and Infrastructure

Figure 4-3



May 2016

Source: Jaguar Mining Inc., 2016.

MINERAL AND SURFACE RIGHTS IN BRAZIL

In Brazil, DNPM issues all mining leases and exploration concessions. Mining leases are renewable annually, and have no set expiry date. Each year, Jaguar is required to provide information to DNPM summarizing mine production statistics in order to maintain the mining leases and exploration concessions in good standing.

Exploration concessions are granted for a period of three years. Once a company has applied for an exploration concession, the applicant holds a priority right to the concession area as long as there is no previous ownership. The owner of the concession can apply to have the exploration concession renewed for one-time extension for a period of two or three years. Renewal is at the sole discretion of DNPM. Granted exploration concessions are published in the Official Gazette of the Republic (OGR), which lists individual concessions and their change in status. The exploration concession grants the owner the sub-surface mineral rights. Surface rights can be applied for if the land is not owned by a third party.

The owner of an exploration concession is guaranteed, by law, access to perform exploration field work, provided adequate compensation is paid to third party landowners and the owner accepts all environmental liabilities resulting from the exploration work. The exploration permits are subject to annual fees based on its size.

In instances where third party landowners have denied surface access to an exploration concession, the owner maintains full title to the concession until such time as the issue of access is negotiated or legally enforced by the courts. Access is guaranteed under law and the owner of an exploration concession will eventually gain easements to access the concession.

Once access is obtained, the owner has three years to submit an Exploration Report (ER) on the concession. The owner of a mineral concession is obligated to explore the mineral potential of the concession and submit an ER to DNPM summarizing the results of the fieldwork and providing conclusions as to the economic viability of the mineralization. The content and structure of the report is dictated by DNPM and a person with suitable professional qualifications must prepare the report.

DNPM will review the ER for the concessions and will either:

- approve the report provided DNPM concurs with the report's conclusions regarding the potential to exploit the mineralization;
- dismiss the report should the report not address all requirements, in which case the owner is given a term in which to address any identified deficiencies in the report; or
- postpone a decision on the report should it be decided that exploitation of the deposits are temporarily non-economic.

Approval, dismissal, or postponement of the ER is at the discretion of the DNPM. There is no set time limit for the DNPM to complete the review of the ER. The owner is notified of the DNPM's decision on the ER and the decision ID is published in the OGR.

On DNPM approval of the ER, the owner of an exploration concession has one year to apply for a mining lease. The application must include a detailed Development Plan (DP) outlining how the deposit will be mined.

DNPM reviews the DP and decides whether or not to grant the application. The decision is at the discretion of DNPM, but approval is virtually assured unless development of the project is considered harmful to the public or the development of the project compromises interests more relevant than industrial exploitation. Should the application for a mining lease be denied for exploration concessions for which the ER has been approved, the owner is entitled to government compensation.

On approval of the DP, DNPM grants the mining licence, which remains in force until the depletion of the mineral resource. Mining concessions remain in good standing subject to submission of annual production reports and payments of royalties to the federal government.

RPA is not aware of any environmental liabilities on the property. Jaguar has all required permits to conduct the proposed work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

ACCESSIBILITY

The Turmalina Mining Complex is accessed from Belo Horizonte by 120 km of paved highways (BR-262 and MG-423) to the town of Pitangui. The Turmalina deposits are six kilometres south of Pitangui and less than one kilometre from highway MG-423.

Belo Horizonte is the commercial centre for Brazil's mining industries and has excellent infrastructure to support world-class mining operations. This mining region has historically produced significant quantities of gold and iron from open pit and large-scale underground mining operations operated by AngloGold, VALE, CSN, and Eldorado. The city is a well-developed urban metropolis of almost four million residents and has substantial infrastructure including two airports, an extensive network of paved highways, a fully developed and reliable power grid, and ready access to process and potable water.

Pitangui is a town of approximately 25,000 people. The local economy is based on agriculture, cattle breeding, and a small pig iron plant. Manpower, energy, and water are readily available.

CLIMATE

The Turmalina mining complex lies approximately at 700 MASL. The Pitangui area terrain is rugged in places, with numerous rolling hills incised by deep gullies along drainage channels. Farming and ranching activities are carried out in approximately 50% of the region.

The area experiences six months of warm dry weather (April to November) with the mean temperature slightly above 20ºC, followed by six months of tropical rainfall. Annual precipitation ranges from 1,300 mm to 2,500 mm and is most intense in December and January. The climate is suitable for year-round operations.

LOCAL RESOURCES

Belo Horizonte is one of the world's mining capitals with a regional population in the range of 4 million people. Automobile manufacturing and mining services dominate the economy.

General Electric has a major locomotive plant which produces engines for all of South America and Africa. Mining activities in Belo Horizonte and the surrounding area have been carried out in a relatively consistent manner for over 300 years. The Turmalina Mine site is within commuting distance of Belo Horizonte.

INFRASTRUCTURE

The Turmalina Mining Complex includes a nominal 2,000 tpd processing plant and tailings disposal area. Electrical power is obtained from the national grid.

All ancillary buildings are located near the mine entrance: gate house including a reception area and waiting room, administration building, maintenance shops, cafeteria, warehouse, change room, first aid, and compressor room. The explosives warehouse is located 1.2 km away from the mine area, in compliance with the regulations set forth by the Brazilian Army.

Other ancillary buildings are located near the processing plant and include an office building, a laboratory, warehousing, and a small maintenance shop.

RPA noted that the Turmalina Mine Complex was well run and organized, a reasonably safe environment for the mine workforce, and had well maintained maintenance and equipment facilities.

There is no infrastructure related to the Faina and Pontal historic open pit operations.

6 HISTORY

Gold was first discovered in the area in the 17th century, and through the 19th century, intermittent small-scale production took place from alluvial terraces and outcropping quartz veins. Gold production exploited alluvium or weathered material, including saprolite and saprolite-hosted quartz veins. Records from this historical period are few and incomplete.

AngloGold controlled the mineral rights from 1978 to 2004 through a number of Brazilian subsidiaries. AngloGold explored the Project area extensively between 1979 and 1988 using geochemistry, ground geophysics, and trenching, which led to the discovery of the Turmalina, Satinoco (Orebody C), Faina, Pontal, and other mineralized zones. Exploration work at these mineralized bodies included 22 diamond drill holes totalling 5,439 m drilled from the surface to test the downward extension of the sulphide mineralized body. At the Satinoco target (Orebody C), a total of 1,523 m were completed in nine holes.

In 1992 and 1993, AngloGold mined 373,000 t of oxide ore from open pits at the Turmalina, Satinoco (now referred to as Orebody C), Pontal, and Faina zones. It recovered 35,500 oz of gold using heap leach technology. Subsequently, AngloGold drove a ramp beneath the pit and carried out drifting on two levels in the mineralized zone at approximately 50 m and 75 m below the pit floor to explore the downward extension of the sulphide mineralized body.

Jaguar acquired the AngloGold Turmalina properties in 2004 and continued operation of the underground mine. The mine is accessed from a 5 m by 5 m primary decline located in the footwall of the main deposit. The decline has reached Level 9, a vertical depth of approximately 650 m (Figure 6-1).

HISTORICAL RESOURCE ESTIMATES

RPA is not aware of any historical Mineral Resource estimates prepared by previous owners of the land holdings.

PAST PRODUCTION

The Turmalina plant processed approximately 406,000 tonnes at an average grade of 4.25 g/t Au to produce 50,659 ounces of gold in 2015 (Jaguar 2016). In total, the plant has processed approximately 5.0 million tonnes of ore to produce a total of approximately 530,000 ounces of gold at an average recovered grade of 3.29 g/t Au (Table 6-1). This production includes a small quantity of material that was processed prior to Jaguar's ownership, the sulphide material extracted by Jaguar from Orebodies A, B, and C, and the oxide portions of the Orebody D, Faina, and Pontal deposits that were amenable to treatment at the existing plant.

Production from the Faina deposit open pit mine took place intermittently over a three year period between June 2010 and June 2013.

TABLE 6-1 PRODUCTION HISTORY AND MILL RECOVERY
Jaguar Mining Inc. – Turmalina Mine

Year	Tonnes Milled (000)	Feed Grade (g/t Au)	Recovered Grade (g/t Au)	Recovery (%)	Gold Produced (oz)
1992-1993	373		2.96		35,500
Q4 2006	9	2.58		91.5	678
2007	347	5.08	4.37	86.6	44,515
2008	481	5.46	5.37	88.5	72,514
2009	588	4.81	4.29	89.1	73,589
2010	692	3.20	3.06	87.4	61,861
2011	655	3.32	3.27	89.2	61,400
2012	540	2.39	2.13	89.2	37,840
2013	477	3.21	2.85	88.7	43,425
2014	449	3.63	3.27	90.0	47,994
2015	406	4.25	3.87	91.0	50,659
Total	**5,017**		**3.29**		**529,975**

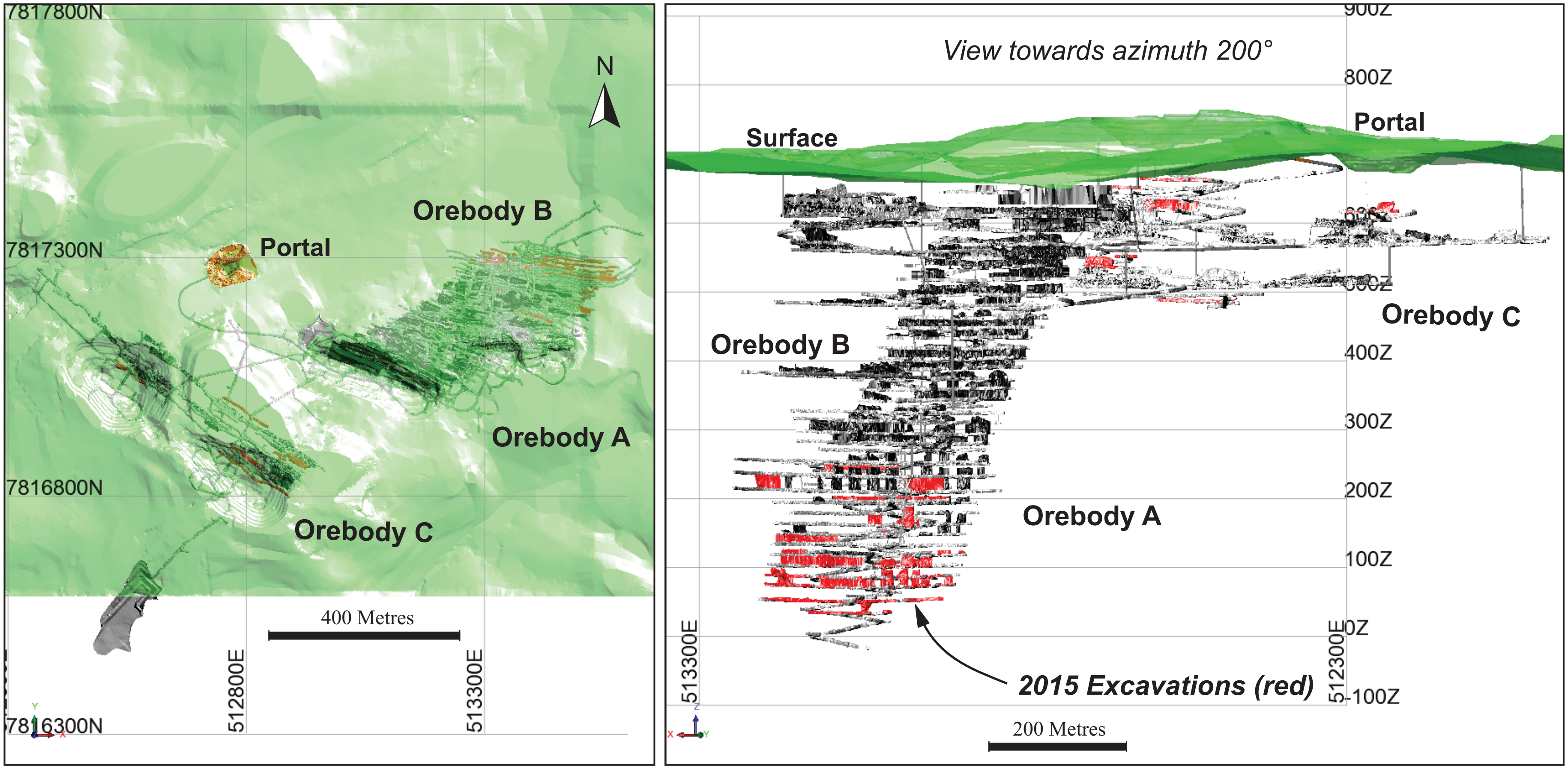


Figure 6-1

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

View of the Turmalina Mine Excavations as at December 2015

May 2016

Source: RPA Inc., 2016.

7 GEOLOGICAL SETTING AND MINERALIZATION

REGIONAL GEOLOGY

The Turmalina deposits are located in the western part of the Iron Quadrangle, which has been the largest and most important mineral province in Brazil for centuries until the early 1980s, when the Carajás mineral province, in the state of Pará, attained equal status. Many commodities are mined in the Iron Quadrangle, the most important being gold, iron, manganese, bauxite, imperial topaz, and limestone. The Iron Quadrangle was the principal region for the Brazilian hard rock gold mining until 1983 and accounted for about 40% of Brazil's total gold production. Gold was produced from numerous deposits, primarily in the northern and southeastern parts of the Iron Quadrangle, most hosted by Archean or Early Proterozoic-aged banded iron formations (BIF) contained within greenstone belt supracrustal sequences.

In the Brumal region, outcrops belonging to the granitic gneiss basement of the Nova Lima and Quebra sub-groups of the Rio das Velhas Supergroup occur. The granitic gneiss basement consists of leucocratic and homogeneous gneisses and migmatites, making up a complex of an initial tonalitic composition intruded by Archean rocks of granitic composition. The upper contact of the sequence is discordant and tectonically induced by reverse faulting. The Rio das Velhas is regionally represented by schists of the Nova Lima and meta-ultramafic rocks of the Quebra Group including serpentinites, talc schists, and metabasalts.

Iron formations occur as the only meta-sedimentary rocks in layers with thicknesses up to 10 m. The Nova Lima Group can be sub-divided into two units: a unit consisting of talc chlorites and intercalations of iron formation, fuschite schist, quartz sericite schist, and carbonaceous phyllite; and a unit hosting sulphidized gold bearing iron formation and quartz sericite schists.

The regional geology is shown in Figure 7-1.

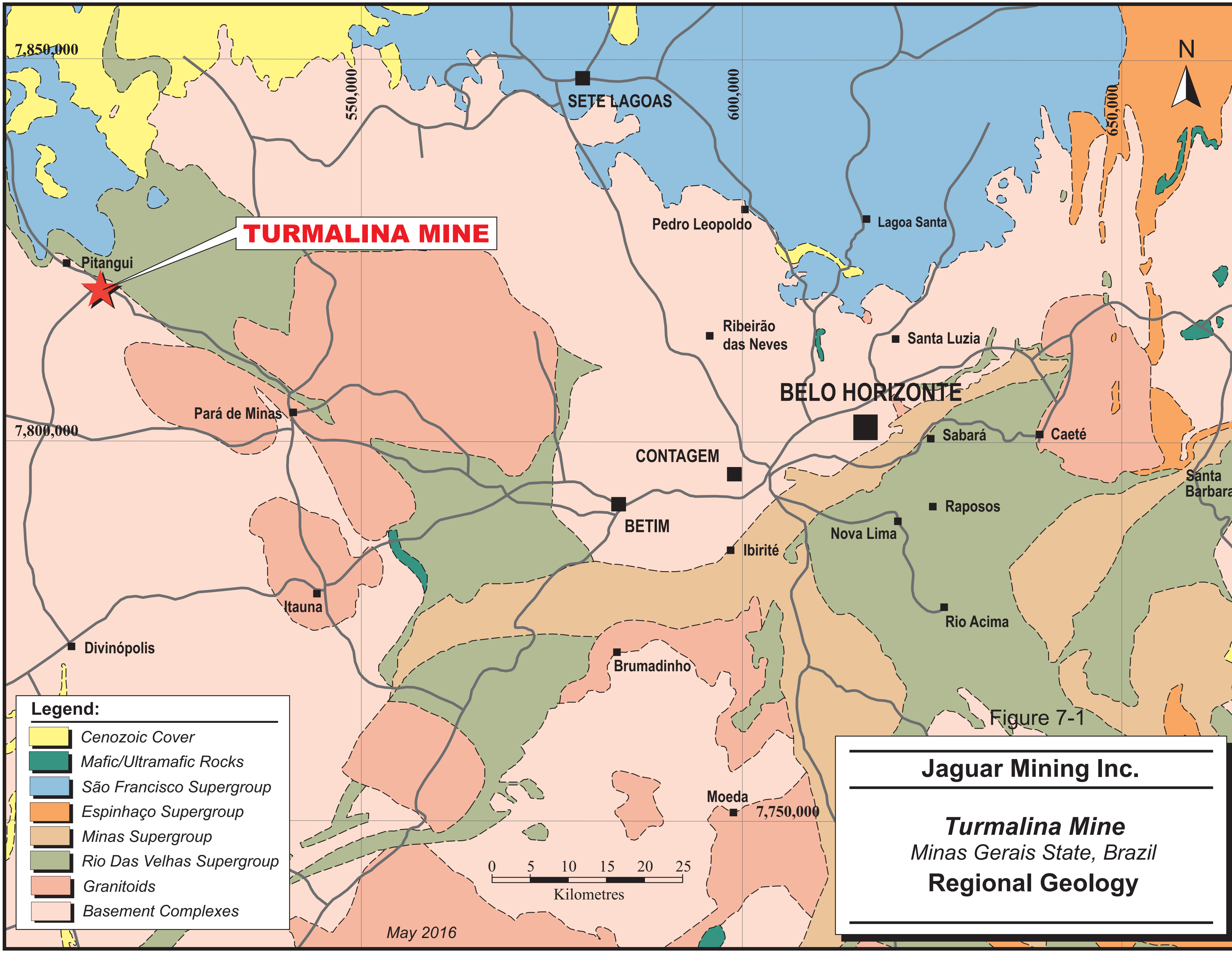


Figure 7-1

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Regional Geology

RPA

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LOCAL GEOLOGY

The Pitangui area, where the Turmalina Mine is located, is underlain by rocks of Archaean and Proterozoic age. Archaean units include a granitic basement, overlain by the Pitangui Group, a sequence of ultramafic to intermediate volcanic flows and pyroclastics and associated sediments. The Turmalina deposit is hosted by chlorite-amphibole schist and biotite schist units within the Pitangui Group. A sequence of sheared, banded, sulphide iron formation and chert lies within the stratigraphic sequence. The stratigraphy locally strikes azimuth 135º.

Proterozoic units include the Minas Supergroup and the Bambui Group. The former includes basal quartzites and conglomerates as well as phyllites. Some phyllites, stratigraphically higher in the sequence, are hematitic. The Bambui is composed of calcareous sediments.

The local geology in the Turmalina and adjacent exploration areas was defined by AngloGold, specifically by UNIGEO geologists during the initial exploration field work. At that time, the mapped lithologies were defined and classified as a greenstone sequence, within a possible western extension of the Iron Quadrangle.

The stratigraphic column defined by UNIGEO in the region, from bottom to the top was:

BASEMENT

The basement is composed of foliated, leucocratic granite and gneisses. Locally, it has been defined as migmatite portions with porphyry crystals of quartz and K- feldspars. Granitic intrusions with fine to medium texture and diabase dikes are common.

PITANGUI GROUP

The Pitangui Group is defined as a greenstone belt sequence, of Archean age. It shows the following sequence:

- Meta-Ultramafic and Meta-Mafic Volcanic Unit (Basal Unit): constituted by interlayered igneous ultramafic and mafic flows represented by serpentinite, chlorite-actinolite schist and amphibolite with layers of talc schist, oxide BIF and carbonaceous schist;

- Meta-Mafic and Meta-Sediment Unit (Middle Unit): constituted by interlayered meta-mafic (chlorite-actinolite schist with dacitic intrusion at the top);

- Meta-sediment: cummingtonite BIF and metachert-rich horizons interlayered with carbonaceous and chlorite schist, locally, layers of meta-arkose can be observed);

- Meta-mafic: alternation of amphibolite and chlorite-actinolite layers;
- Pyroclastic and meta-pelites: volcanic meta-conglomerates at the bottom, transitioning to or alternating with foliated meta-lapilli tuffs and metatuffs at the top of the sequence, where the meta-tuffs are predominant;
- Meta-sediments (Upper Unit): narrow and numerous interlayered layers of quartz-sericite schist, quartz-chlorite schist, quartz-sericite-chlorite schist, and carbonate-rich schist.

MINAS SUPERGROUP

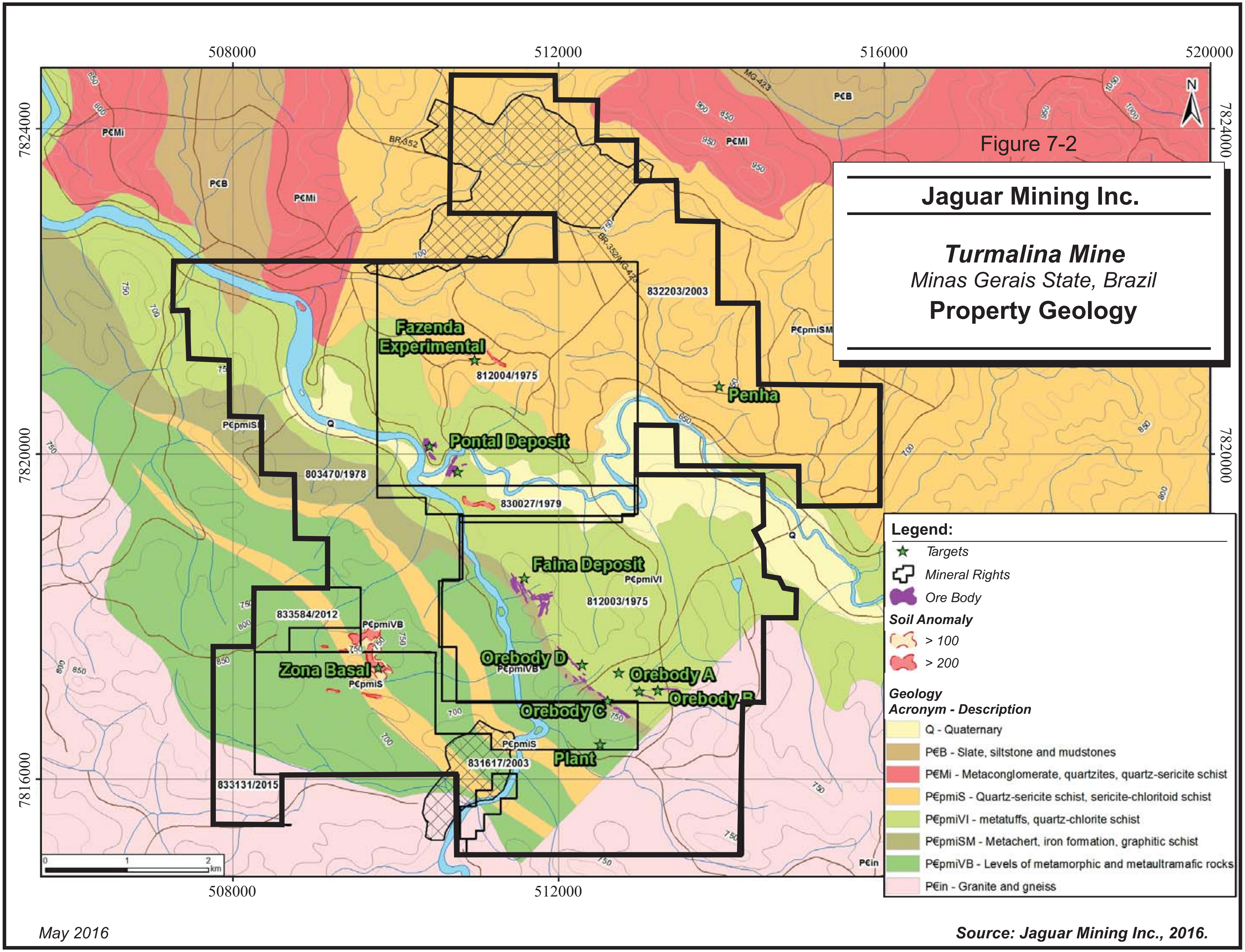
The Minas Supergroup is defined as clastic and chemical sediments in a Proterozoic sequence composed by thin to coarse quartzites with layers of the basal conglomerates. The quartzite is covered by grey carbonate phyllites and white sericite phyllites which present hematite increasing to the top of the sequence.

INTRUSIVE ROCKS

The intrusive rocks are defined as granitic and mafic to ultramafic rocks.

PROPERTY GEOLOGY

The details of the property geology of the Turmalina Mine area are shown in Figure 7-2. The general stratigraphic sequence strikes towards azimuth 320° and dips moderately to steeply to the east. The sequence consists the Pitangui Group of bedded metasediments of volcanic origin including quartz-sericite schists and sericite-chlorite-biotite schists grading stratigraphically upwards into a metachert, banded iron formation (BIF) and graphitic schist. Overlying these sediments is a thicker sequence of tuffaceous metasediments and quartz-chlorite schists. All units have been metamorphosed to the amphibolite grade.



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MINERALIZATION

The mineralization at the Turmalina Mine consists of a number of tabular bodies that are spatially related to a BIF. These tabular bodies are grouped together according to spatial configuration and gold content into Orebodies A, B, and C (together the Orebodies). Gold can occur within the BIF itself, but can equally occur in the other host lithologies.

The main production of the mine has been from Orebody A, which is a folded, steeply east dipping tabular deposit with a steep southeasterly plunge that is located in a biotite schist host rock. The mineralization in this deposit has been outlined along a strike length of approximately 250 m to 300 m and to depths of 700 m to 750 m below surface.

Orebody B includes three lower grade lenses parallel to Orebody A. Two of the lenses are located approximately 50 m to 75 m in the structural hangingwall and are accessed by a series of cross-cuts that are driven from Orebody A. The third lens is located possibly along the axial plane. The mineralization in this deposit has been outlined along a strike length of approximately 350 m to 400 m and to depths of 650 m to 700 m below surface.

Orebody C is a series of 14 lenses that are located to the west in the structural footwall of Orebody A and are generally of lower grade than Orebody A. They strike northwest and dip steeply to the northeast. A minor amount of production has been achieved from these lenses to date. The mineralization in this deposit has been outlined along a strike length of approximately 800 m to 850 m and to depths of 400 m to 450 m below surface.

Gold mineralization in the Turmalina deposits occurs in fine grains associated with sulphides in sheared schists and BIF sequences. Gold particles average 10 µm to 20 µm and are mostly associated with arsenopyrite, quartz, and micas (sericite and biotite) as presented in Table 7-1.

TABLE 7-1 GOLD MODE OF OCCURRENCE
Jaguar Mining Inc. –Turmalina Mine

Associated with:	% of Gold Content	Notes
Arsenopyrite	61	Occurring both inside and at the borders of the mineral
Quartz	26	Occurring both inside and at the borders of the mineral
Micas	9	Occurring both inside and at the borders of the mineral
Pyrite + Pyrrhotite	4	Occurring only at the borders of the mineral

Coarse gold, on a millimetre scale, is found locally with discrete quartz veins, but this type of occurrence is minor.

The style of mineralization is similar at the Faina and Pontal deposits with the exception that metallurgical testing has discovered that the mineralization at those two deposits is refractory with respect to the current plant configuration.

8 DEPOSIT TYPES

The gold metallogeny in the Iron Quadrangle is complex. Three types of deposits are the major sources for gold in the region. Initially, during the deposition of the Archean Nova Lima Group greenstone belt rocks, sea floor volcanic exhalative processes produced BIF and chert that hosted sulphide-rich, gold-bearing deposits of syngenetic origin. Subsequently, these greenstone belt rocks were deformed and mesothermal shear zone-related gold deposits were formed. Most of the gold produced from the Iron Quadrangle has come from these first two deposit types. The third type of gold deposit is hosted by silicified and carbonatized schist within shear zones.

The deposits at the Turmalina Mine are believed to be typical examples of mesothermal, epigenetic deposits that are enclosed by host rocks that have undergone amphibolite-grade metamorphism.

9 EXPLORATION

GEOCHEMISTRY

AngloGold performed a regional geochemistry survey covering an area of 430 km^2 in the Turmalina region. A total of 875 stream sediments and 446 pan concentrate samples were collected. Stream sediment samples were assayed for Au, Cu, Zn, Pb, Cr, Sb, and As. Pan concentrate samples were assayed for Au only.

Soil geochemistry sampling was executed by AngloGold in both the Faina and Pontal areas with grids varying from 100 m x 20 m to 10 m x 10 m. At Faina, 1,272 soil samples were collected and 16,900 m of lines were opened. At Pontal, 1,698 soil samples were collected and 28,000 m of lines were opened.

Several samples returned gold grades superior to 300 ppb. A significant portion of the soil samples collected from these targets were also assayed for As and Sb. There is a strong relation between gold and As/Sb since gold is associated directly with quartz veins with arsenopyrite and/or berthierite in the region.

Initial exploration efforts by Jaguar in 2004 focused on the re-interpretation of the AngloGold data (trenches, soil geochemistry, and drilling) to better understand the local geology. These efforts were concentrated on the targets previously identified by AngloGold: Principal, NE, and Satinoco.

An exploration program was carried out at the Satinoco (Orebody C) target by Jaguar from March 2006 to April 2008 in order to collect sufficient information to prepare an estimate of the Mineral Resources in accordance with NI 43-101. This Satinoco (Orebody C) program included the opening of about 700 m of trenches and the collection of 146 channel samples crossing the mineralized zone and a complementary diamond drill program.

GEOPHYSICAL SURVEYS

In the 1980s, AngloGold contracted the *Instituto de Pesquisas Tecnológicas* (IPT) to execute a ground geophysics survey at the Faina and Pontal areas. At Faina, a 50 m x 100 m grid was made composed of 11 lines covering about 31.5 ha. At Pontal, the grid was 40 m x 100 m, with 24 lines covering about 130 ha. Part of this area (approximately 56 ha) was surveyed by ground magnetics in a 5 m x 25 m grid.

Several geophysical anomalies were defined by both methods and most of them showed a strong relation with the geochemical anomalies. This information was used for the planning of trench locations.

In 2004, the Minas Gerais Government Mining Agency (COMIG) completed a supplementary airborne geophysical survey, covering all the Iron Quadrangle and the adjacent areas, totaling approximately 36,400 km^2. This survey was performed by LASA SA on a 250 m grid using magnetic and gamma ray methods. All Jaguar targets, including the Turmalina Mine, were covered with these geophysical surveys.

10 DRILLING

Following the trenching and channel sampling program between March 2006 and April 2008, Jaguar completed a three-phase drilling campaign in the Turmalina Mine area:

Phase 1: 5,501 m drilled in 35 holes. This program tested the continuity of the mineralized bodies between the weathered zone and up to 200 m below the surface.

Phase 2: 3,338 m drilled in 24 complementary in-fill holes to create a 25 m x 60 m grid between the surface and 100 m below and to test the lateral continuity of the mineralized bodies.

Phase 3: An additional drill hole campaign was carried out in 2007, which consisted of 12,763 m drilled in 48 holes. Results from holes FSN 10 to 68 from this campaign were included in the mineral resource estimate contained in the original TechnoMine technical report, dated October 22, 2007. Results from the remaining drill holes FSN 69 to 113 were included in the second TechnoMine technical report dated February 5, 2008.

During the three Satinoco/Orebody C drilling phases, 2,338 core samples from holes FSN 10 to 113 were collected. The drill program was carried out by Mata Nativa Comércio e Serviços Ltda. (Mata Nativa), a local drilling company, using Longyear drill machines.

Drill hole lengths ranged from 32 m to 453 m. Core diameters were consistently HQ (63.5 mm) from surface through the weathered rock to bedrock. At approximately three metres into bedrock, the holes were reduced to NQ (47.6 mm) diameter to the final depth.

Collar locations for the holes were established by theodolite surveys. All holes were drilled within three metres of the planned location. Azimuth and inclination for angle holes were set by Brunton compass, deemed accurate to within 2° azimuth and <1° inclination.

Following completion of the holes, the collars were resurveyed with theodolite and cement markers emplaced. Downhole surveys were completed in all holes with length greater than 100 m, using Sperry-Sun or Maxibore equipment.

The average core recovery was greater than 90%. Core samples were collected during these phases and sent to laboratories for gold assays (discussed in the next section).

Jaguar has continued to carry out drilling and channel sampling programs on the Orebodies. The drilling has been carried out from surface locations which provide general information as to the location of the mineralized zones. Further detailed drill hole information is gathered for the three Orebodies from underground locations. Final detailed information of the location and distribution of the gold mineralization is collected by means of channel sampling. Jaguar completed a program of diamond drilling in 2015 from underground stations where 188 holes with a total length of 20,942 m were completed. The drill holes mostly tested the down-plunge continuation of Orebodies A and C (Figure 10-1).

A summary of the drilling and channel sample information that has been gathered as at December 31, 2015 is provided in Table 10-1 and the locations are shown in Figure 10-1. Additional detailed information is provided in Section 14 of this report.

Surface diamond drilling was carried out by the drilling contractor Mata Nativa using HQ and NQ tools. HQ-sized equipment is used for the portion of the hole that traverses the saprolite horizon and the hole diameter is then reduced to NQ when the fresh rock is reached. The diamond drill core procedures adopted by Jaguar are described below:

- Only drill holes with more than 90% core recovery from the mineralized zone were accepted.
- Drill hole deviations (surveys) were measured by Sperry-Sun or DDI/Maxibore equipment.
- The cores were stored in wooden boxes of one metre length with three metres of core per box (HQ diameter) or four metres of core per box (NQ diameter). The hole's number, depth, and location were identified in the boxes by an aluminum plate on the front of the box and by a water-resistant ink mark on its side. The progress interval and core recovery are identified inside the boxes by small wooden or aluminum plates.

The underground-based drill holes were completed by the drilling contractor Geosol of Belo Horizonte during the 2015 campaign. The drilling was carried out using NQ and BQ sized tools and followed Jaguar's drill core procedures. Selected results from the 2015 drill holes that intersected the down-plunge projection of Orebody A are shown in Figure 10-2. Selected results of drill holes that intersected Orebody C are shown in Figure 10-3. RPA notes that these holes were drilled from drilling platforms located within the underground mine with the purpose of providing geological and assay information at specific spatial targets. Considering the constraints applied to the potential drilling sites, the intersection of the drill hole may not be perpendicular to the mineralization and so the core lengths may not represent the true thicknesses of the mineralization. As well, all assay results are shown using the uncapped gold grades.

TABLE 10-1 SUMMARY OF DRILL HOLE AND CHANNEL SAMPLES AS AT DECEMBER 31, 2015
Jaguar Mining Inc. –Turmalina Mine

Category	Number of Holes	Total Length (m)
Collars, Drill Holes	2,700	181,462
Collars, Channel Samples	12,679	66,166

It is clear that the drill holes that have targeted the down-plunge projection of Orebody A have been successful in demonstrating that the gold grades persist to a depth of approximately 150 m below the bottom of the ramp. The down-plunge limits of the gold grades have not been defined by the drilling completed to date. In RPA's opinion, it is clear that down-plunge continuation of Orebody A warrants a program of in-fill drilling in support of Mineral Resource estimates and detailed mine planning.

Similarly, the down-plunge limits of the gold grades in portions of Orebody C have not been defined by the drilling completed to date. Drilling programs and analysis by Jaguar staff have been successful in outlining local trends of the mineralized shoots in this Orebody. In RPA's opinion, it is clear that down-plunge continuation of the mineralized shoots within Orebody C warrants a program of in-fill drilling in support of Mineral Resource estimates and detailed mine planning.

RPA has not identified any drilling, sampling, or core recovery issues that could materially affect the accuracy or reliability of the core samples.

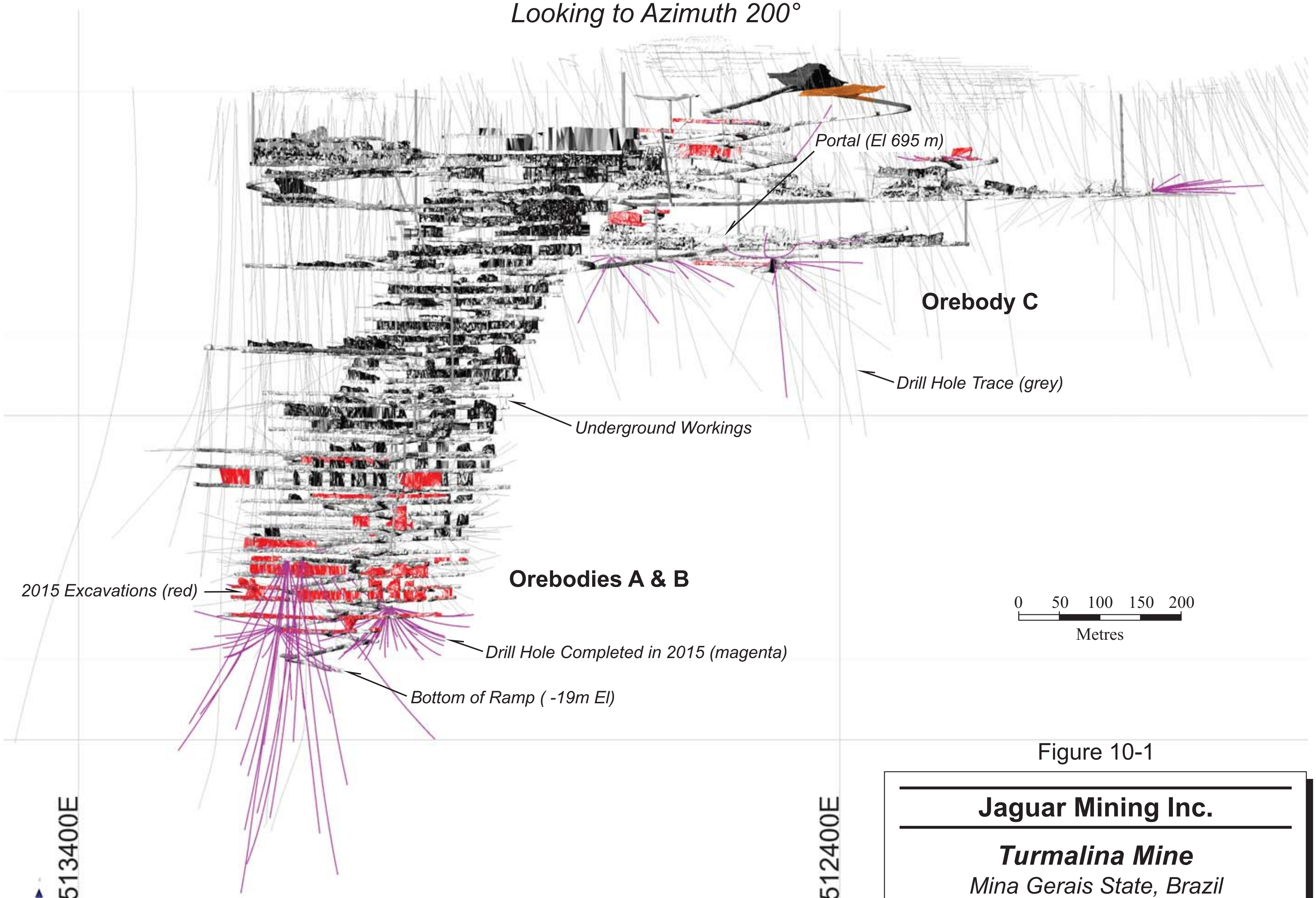

Figure 10-1

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Longitudinal View of the Drill Hole and Channel Sample Locations

May 2016

Source: RPA, 2016.

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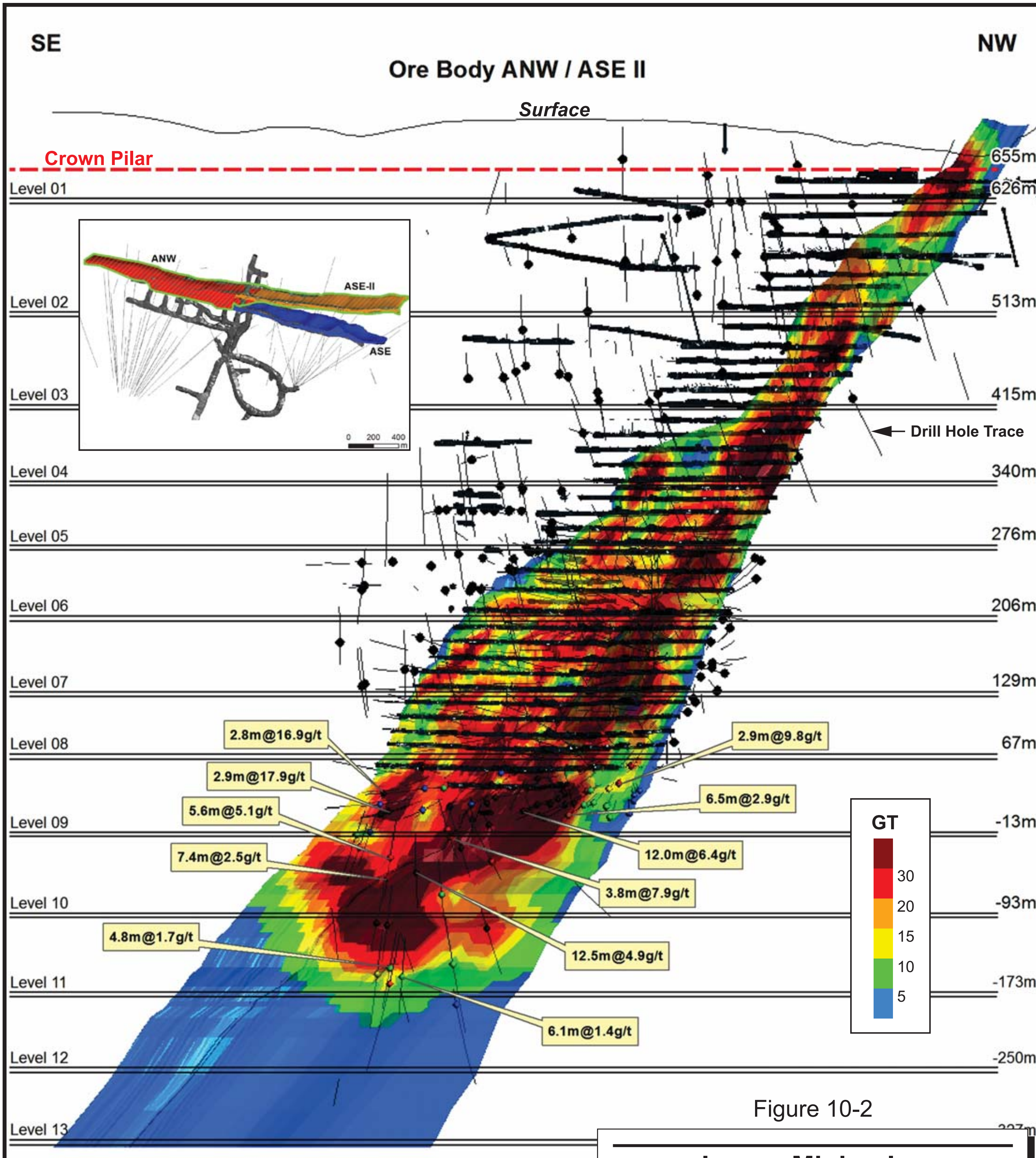


Figure 10-2

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Longitudinal View of the 2015 Drill Results, Orebody A Hangingwall and Nose

May 2016

Source: Jaguar Mining Inc., 2016.

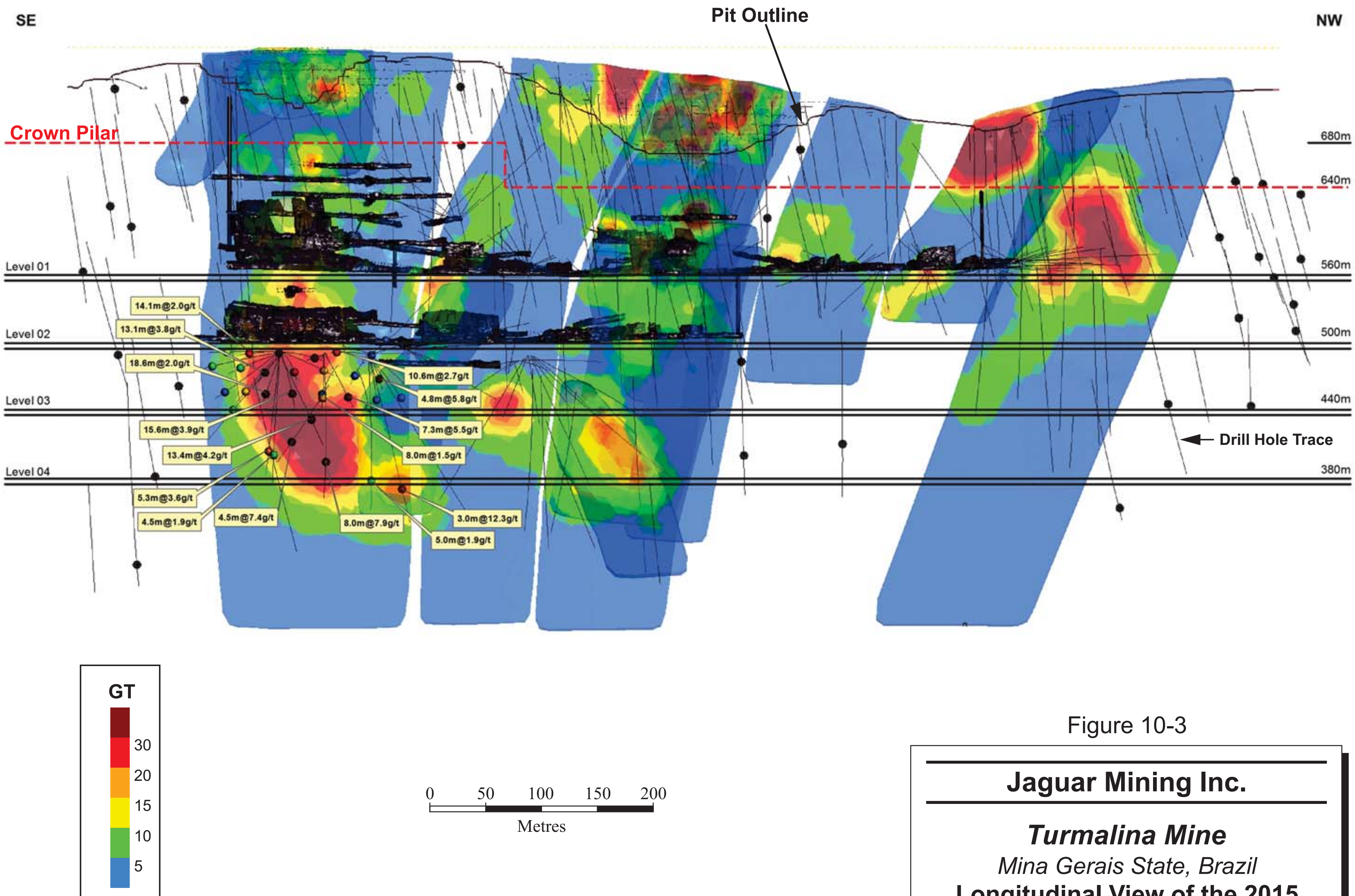


Figure 10-3

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Longitudinal View of the 2015 Drill Hole Results, Orebody C

May 2016

Source: Jaguar Mining Inc., 2016.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

SAMPLING

The sampling and sample preparation procedures used by Jaguar are as follows.

SURFACE/EXPLORATION CHANNEL SAMPLING

- Channel samples are regularly collected from outcrops and trenches.
- The sites to be sampled are cleaned with a hoe, exposing the material by scraping it.
- Structures are mapped and the lithologic contacts defined, and samples marked so that no sample has more than one lithology.
- Samples have a maximum length of one metre and are from one kilogram to two kilograms in weight.
- Each sample is collected manually in channels with average widths between five and ten centimetres, and about three centimetres deep, using a hammer and a chisel.
- Either an aluminum tray or a thick plastic canvas drop sheet is used to collect the material.
- The samples are then stored in a thick plastic bag and identified by a numbered label, which is protected by a thin plastic cover and placed with the sample.
- At the sampling site, samples are identified by small aluminum plates, labels, or small wooden poles.
- Sketches are drawn with lithological and structural information. The sample locations are surveyed.

DIAMOND DRILLING CORE SAMPLING

- Surface drilling is performed by contractors with holes in HQ or NQ diameters.
- Underground drilling in 2015 was performed either by Jaguar or contractors with core diameters of either HQ, NQ, BQ, or LTK diameters.
- Drill holes are accepted only if they have more than 85% of recovery from the mineralized zone.
- All the drill holes have their deviations measured by Maxibor or equivalent survey tool.

- The cores are stored in wooden boxes of one metre length with three metres of core per box (HQ diameter) or four metres of core per box (BQ or LTK diameters).
- The number, depth, and location of each hole are identified in the boxes by an aluminum plate or by a water-resistant ink mark in front of the box.
- The progress interval and core recovery are identified inside the boxes by small wooden plates.
- During logging, all of the geological information, progress, and recovery measures are verified and the significant intervals are defined for sampling.
- Samples are identified in the boxes by highlighting their side or by labels.
- Samples are cut lengthwise with the help of a diamond saw and a hammer into approximately equal halves.
- One half of the sample is placed in a highly resistant plastic bag, identified by a label, and the other half is kept in the box at a warehouse.
- The remaining drill core from the surface-based drill holes is stored at an offsite secure location nearby to the mine.
- For many of the underground-based drill holes, samples are cut lengthwise with the help of a diamond saw and a hammer into approximately equal halves.
- For the shorter-length, bazooka-type drill holes completed from underground set ups (the LM-series drill holes) the whole core is sampled as the core diameter does not permit splitting into halves.

UNDERGROUND PRODUCTION CHANNEL SAMPLING

- The sector of wall to be sampled is cleaned with pressurized water. Structures are mapped and lithologic contacts defined, and samples marked so that no sample has more than one lithology. Samples have a maximum length of one metre and are from two to three kilograms in weight.
- Channel samples were taken by manually opening the channels, using a hammer and a little steel pointer crowned by carbide or a small jackhammer.
- The channel samples have lengths ranging from 50 cm to one metre, average widths between five and ten centimetres, and about three centimetres deep.
- Two sets of channel samples on the face are regularly collected. One set of channel samples are taken from the top of the muck pile once the work area has been secured. The second set of channel samples are taken at waist height once the heading has been mucked clean and secured.
- At approximately 5 m intervals, the walls and back are sampled by channel sampling. The channel samples are collected starting at the floor level on one side and continue over the drift back to the floor on the opposite side.

- Either an aluminum tray or a thick plastic canvas is used to collect the material. The samples are then stored in a thick plastic bag and identified by a numbered label, which is protected by a thin plastic cover and placed with the sample.
- At the sampling site, samples are identified by small aluminum plates, labels, or small wooden poles.
- Sketches are drawn with lithological and structural information. The sample locations are surveyed.

SAMPLE PREPARATION AND ANALYSIS

Samples collected from the 2015 underground drilling program were forwarded to the SGS Geosol laboratory in Belo Horizonte. After drying, the samples were crushed to 75% less than 3 mm and then were pulverized to 95% less than 105 microns (150 mesh). Duplicate samples of the pulps were taken every 20^{th} sample to monitor the performance of the crushing and pulverization steps and for determination of the gold assays. Analysis for gold is by standard fire assay procedures, using the FAA method code (Fire assay and an atomic absorption (AA) finish.

The SGS laboratory based in Belo Horizonte meets international analytical standards and ISO 17025 compliance protocols. Analytical results from the SGS laboratory were forwarded to Jaguar's Exploration or Mine Departments by e-mail, followed by a hard copy.

For other drill holes and channels collected by Jaguar, samples are prepared at Jaguar's mine site laboratories by drying, crushing to 90% minus 2 mm, quartering with a Jones splitter to produce a 250 g sample, and pulverizing to 95% minus 150 mesh. Analysis for gold is by standard fire assay procedures, using a 50 g or 30 g sample and an AA finish.

A process control laboratory at the Turmalina Mine analyzes the shift and plant samples, while all delineation drill core, channel, and exploration drill core samples from Turmalina are forwarded to the in-house laboratory located at the Caeté mine site.

At Jaguar's Caeté laboratory, the samples are dried and then crushed. A one kilogram sub-sample of the crushed material is selected for pulverization to approximately 70% minus 200 mesh. The ring-and-puck pulverizers are cleaned after each sample using compressed air and a polyester bristle brush. The analytical protocol for all samples employs a standard fire assay fusion using a standard 30 g aliquot, with the final gold content being determined by means of AA. The detection limit for fire assay analyses is 0.05 g/t Au. A second cut from the pulps is taken and re-assayed for those drill core samples where the grade is found to be greater than 30 g/t Au. If the two assays are in good agreement, only the first assay is reported. The AA unit is calibrated to directly read gold grades up to 3.3 g/t Au – samples with grades greater than this are re-assayed by diluting the solute until it falls within the direct-read range.

RPA has reviewed the field and underground sampling procedures and is of the opinion that they meet accepted industry standards. In RPA's opinion, the sample preparation, analysis, and security procedures at the Turmalina Mine are adequate for use in the estimation of Mineral Resources.

QUALITY ASSURANCE AND QUALITY CONTROL

The results of the SGS Geosol duplicate samples are reviewed by means of statistical analyses and graphical methods and are presented to Jaguar in report format (SGS Geosol, 2016). RPA reviewed the results of the SGS Geosol internal quality assurance/quality control (QA/QC) program and considers them to be of acceptable level of precision.

Jaguar carried out a separate QA/QC program that monitored the analytical results of samples from the 2015 diamond drilling program. In all 24 blank samples, 24 duplicate samples, 21 samples of Certified Reference Material (CRM) SI64, and four samples of CRM SK78 were inserted into the sample stream. The results are presented in graphical form, and they were reviewed by RPA and found to be of an acceptable quality.

The Caeté laboratory carries out an internal program of QA/QC for all drill core samples and channel samples. The QA/QC protocol includes carrying out a duplicate analysis after every 20 samples, representing an insertion frequency of 5%.

Commercially sourced standard reference materials (Rocklab standards SI64 (recommended value of 1.780 g/t Au) and SK78 (recommended value of 4.134 g/t Au)) are inserted at a frequency of every 45 to 50 samples.

Blank samples are inserted at a rate of one in every 20 samples, representing an insertion frequency of 5%. Blank samples are composed of crushed, barren quartzite or gneiss and are used to check for contamination and carry-over during the crushing and pulverization stage.

The results of the blanks, duplicates, and standards are forwarded to Jaguar's head office on a monthly basis for insertion into the Jaguar's internal database (BDI). There, the results from the standards samples are scanned visually for out-of-range values on a regular basis. When failures are detected, a request for re-analysis is sent to the laboratory – only those assays that have passed the validation tests are inserted into the main database.

Sample control charts are presented in Figures 11-1 to 11-4

FIGURE 11-1 CONTROL CHART FOR BLANK SAMPLES, CAETE LABORATORY, JANUARY TO DECEMBER 2015

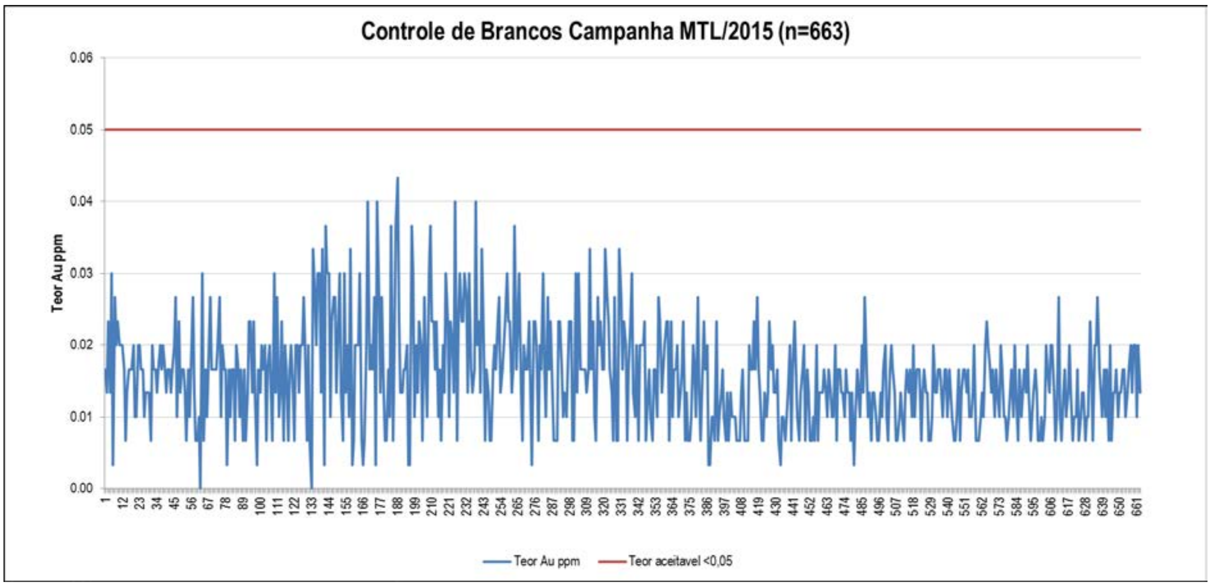


FIGURE 11-2 CONTROL CHART FOR CERTIFIED REFERENCE MATERIAL RL SI64, JANUARY TO DECEMBER 2015

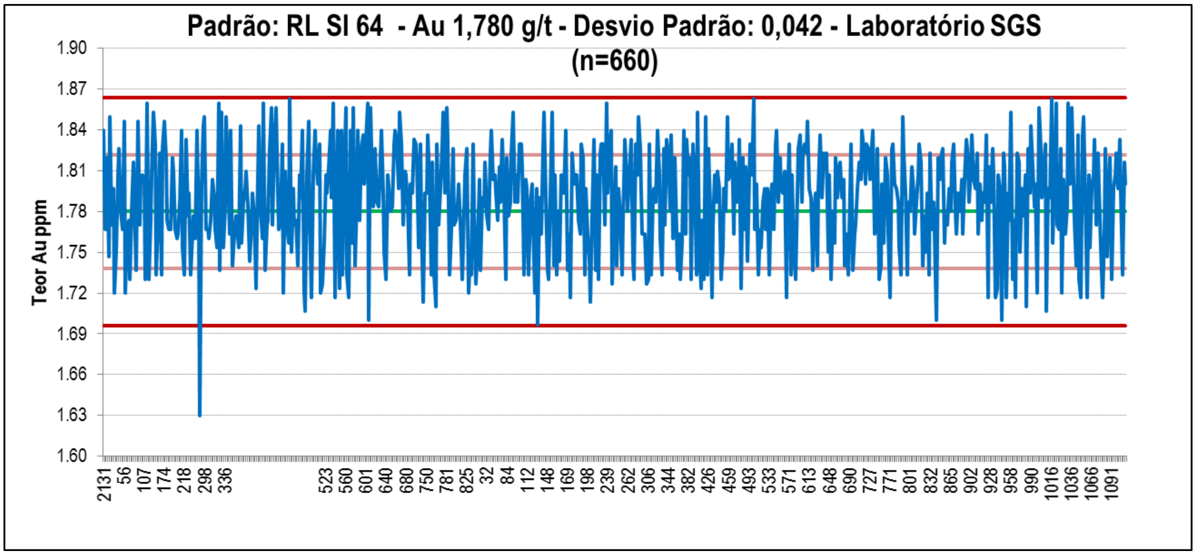


FIGURE 11-3 CONTROL CHART FOR CERTIFIED REFERENCE MATERIAL RL SK62, JANUARY TO DECEMBER 2015

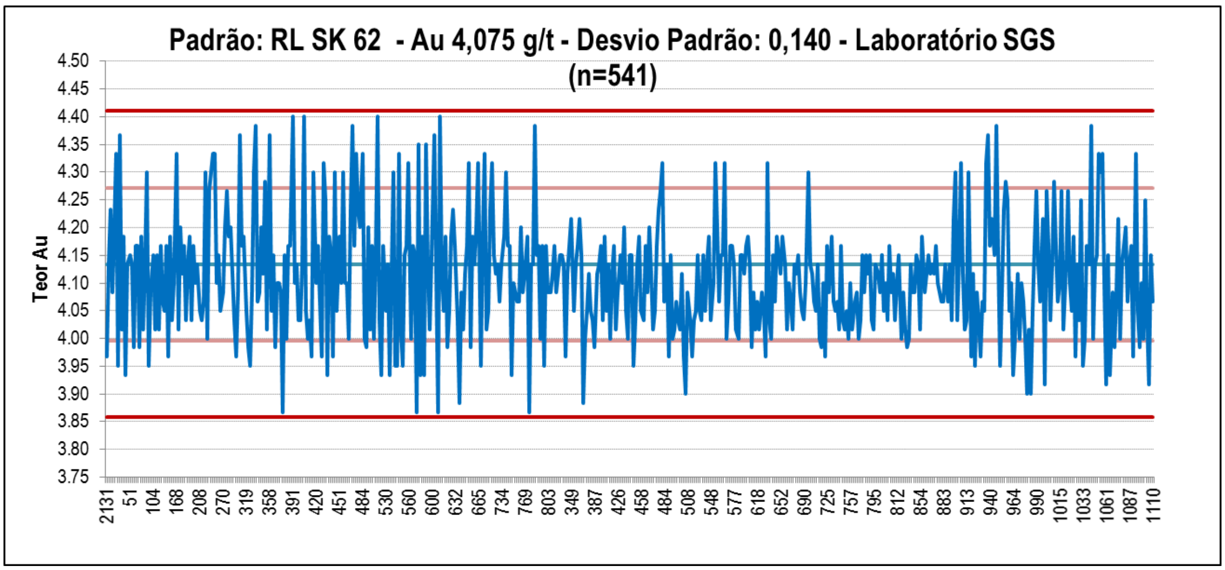
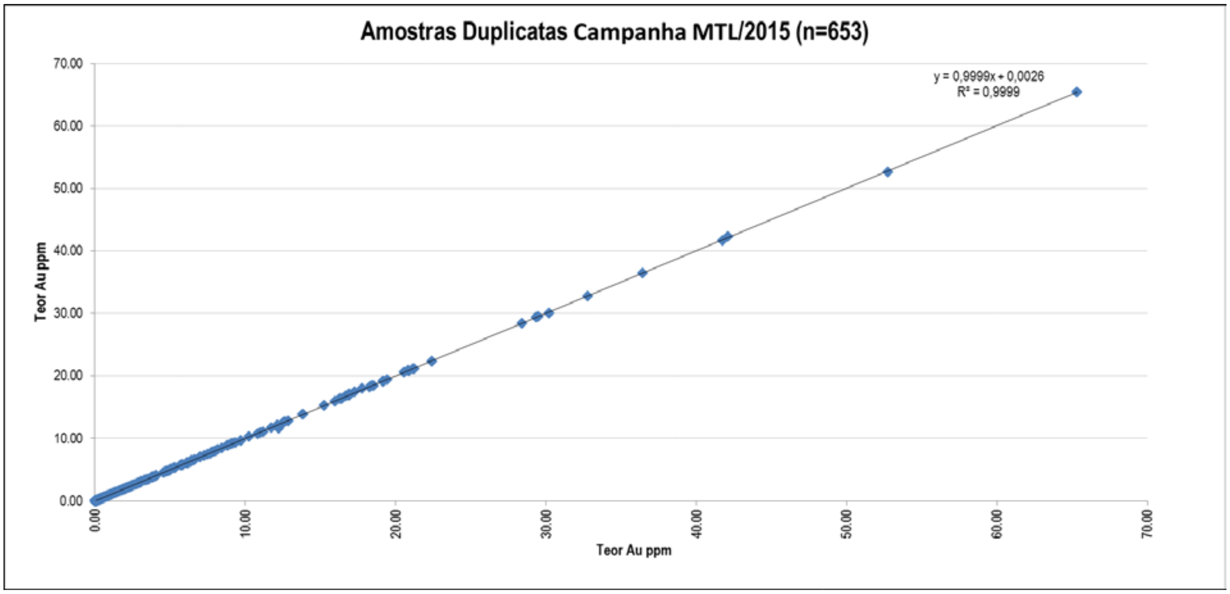


FIGURE 11-4 CONTROL CHART FOR DUPLICATE SAMPLES, CAETE LABORATORY, JANUARY TO DECEMBER 2015



In RPA's opinion, the QA/QC program as designed and implemented by Jaguar is adequate and the assay results within the database are suitable for use in a Mineral Resource estimate.

12 DATA VERIFICATION

In the fall 2014, in consultation with RPA, Jaguar commissioned MCB Serviços e Mineração (MCB), a Brazilian consulting group, to carry out a detailed validation of the geological database (Alvim, 2014). MCB's scope of work included a validation of 5% of the geological database that is used in the preparation of the Mineral Resource estimate for the Turmalina Mine. The scope also included an audit of the procedures and processes used to collect and process the geological data and to manage the geological database.

Approximately 5% of the drill hole and channel sample information that is used to prepare the 2014 Mineral Resource estimate for the Turmalina Mine was selected for review (Table 12-1). To carry out the comparison, all information was digitally re-coded and the results then compared with the source data contained in the master database.

TABLE 12-1 SUMMARY OF 2014 DATABASE VALIDATION DATA
Jaguar Mining Inc. – Turmalina Project

	Turmalina Mine	
	Drill Holes	**Channel Samples**
Total Data	937	5,141
5% subset	46	257

While a number of errors were detected in the Collar and Survey tables, no errors were detected in the Geology or Assay tables. The main areas of concern identified by this exercise include:

- The shortfall in the preparation of written procedures regarding data collection,
- Database management along with the database software used to manage the information, and
- Lack of a QA/QC program for the grade control channel samples.

RPA understands that Jaguar has set programs in place in 2016 to address these areas of concern. Procedures manuals have prepared and Jaguar has initiated activities to upgrade the current in-house database software program.

RPA's validation checks on the Turmalina drilling and sampling database provided by Jaguar included:

- Conducted a site visit in 2014 to personally inspect the style and structural complexity of the gold mineralization and its host rocks,
- Carried out independent validation of the drill hole database by means of spot checking of 20 drill holes which intersected significant gold mineralization in both Orebodies A and C,
- Checked collar locations relative to either the digital topographic surface or the location of the underground excavation digital model as appropriate,
- Reviewed drill hole and sample orientations (azimuth/dip) relative to the location of the mineralized zones,
- Completed validity checks for out-of-range values, overlapping intervals, and mismatched sample intervals,
- Reviewed the reasonableness of the geological interpretations relative to the nature of the previously extracted mineralization,
- Reviewed the geological wireframes to ensure that a minimum mining width was honoured, and
- Reviewed the coding of the mined out material in the block model to ensure a reasonable match with the excavation model.

No errors were noted for the collar, survey, lithology, or assay records reviewed. RPA recommends a slight modification to the logging procedures whereby detailed information regarding the mineralized intervals be brought forward from the remarks column and be inserted as a major level entry in the drill logs to assist in preparation of future updates of the Mineral Resources.

The surface and underground drill hole collar locations are reasonable and channel samples are appropriately located with respect to the existing underground infrastructure. RPA is of the opinion that the drilling and sampling database is appropriate to be used in the preparation of Mineral Resource and Mineral Reserve estimates.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

TURMALINA MINE METALLURGICAL TESTS

Machado (2005) reports that AngloGold carried out the following metallurgical testwork:

- Metallurgical testwork in 1987 on 65 kg of mineralized core, 90% minus 200 mesh. Recovery by direct cyanidation (apparently bottle roll tests) yielded 91.4%.

- Metallurgical testwork in 1992 on mineralized material from the 640 m level, 50 m below the pit floor. Recovery by direct cyanidation (apparently bottle roll tests) yielded 90.3%.

- Metallurgical testwork in 1993 on a 44.9 t sample grading 5.84 g/t Au, from the 640 m and 626 m levels. Samples crushed to 90% and 100% minus 400 mesh yielded recoveries of 86% and 93%, respectively, using direct cyanidation (apparently tank tests).

- Metallurgical testwork in 1994 on a 17,000 t bulk sample grading 5.24 g/t Au. The bulk sample was treated at AngloGold's Nova Lima Pilot Plant, near Belo Horizonte.

A summary of the historical testwork that was carried out prior to Jaguar's ownership is provided in Table 13-1.

In January 2005, as part of the feasibility study work, a 10 t bulk sample was mined from underground for testing purposes (Clow and Valliant, 2006). From this sample, six tonnes were used for the testing as described below:

1. METSO Laboratories, Brazil:
    a. Full crushing tests to determine the size distribution and equipment design parameters.

2. CETEC, Brazil:
    a. Conventional bottle roll tests at various grinds.

3. Dawson Laboratories Inc, USA:
    a. Bond Ball Mill Work Index Tests
    b. Adsorption Kinetic Tests

4. Dawson Laboratories and CDTN Research Center, Brazil:
    a. Agitated leach cyanidation tests at various grinds. Both laboratories reported leaching recoveries of 92% for the 200 mesh samples and 94% for 400 mesh.

5. Federal University of Minas Gerais, School of Engineering – Mining Engineering Department Laboratory, Brazil
    a. Settling Tests
    b. Dynamic Viscosity Tests

6. Lakefield and Geosol, Brazil:
    a. Tailings characterization tests to determine acid generation potential.

7. Mine System Design Inc. (MSD), USA:
    a. Paste fill tests

8. AngloGold Laboratory, Brazil:
    a. Leaching testwork. The samples consisted of diamond drill core from the Principal and NE Zones and attained metallurgical recoveries of 92.96% and 92.87%, respectively.

Jaguar's testwork of 2005 and 2006 is summarized in Table 13-1.

TABLE 13-1 HISTORICAL METALLURGICAL TESTWORK
Jaguar Mining Inc. – Turmalina Project

Year	Owner	Laboratory	Testwork	Results
1987	AngloGold	Morro Velho Mine	Gravity-Flotation-Cyanidation testing on 65 kg sample	Gravity recovery=10.4%
			grading 6.23 g/t Au	Flotation-Cyanidation recovery=90%x90%=81%
				Total recovery=91.4%
1992	AngloGold		Bottle roll	90.3% recovery @ 90% minus 200 mesh
1993-94	AngloGold		35 t bench scale cyanidation	86% recovery @ 90% minus 200 mesh
				93% recovery @ 90% minus 400 mesh
2005	Jaguar	METSO	Optimize crushing/screening by testing 6 t sample	
			Crush to 100 minus 3/8"	
			Test crushability & rod mill indices	
			Measure particle & bulk densities	
			Test abrasiveness	
			Measure flatness index	
2005	Jaguar	CETEC	Bottle roll on 90% minus 100, 200, & 325 mesh	
2005	Jaguar	Dawson Laboratories Inc.	Bond ball mill work index tests @ 100, 200, & 400 mesh	
			Adsorption kinetic tests to study carbon in pulp (CIP) vs. carbon in leach (CIL)	

Year	Owner	Laboratory	Testwork	Results
2005	Jaguar	CDTN Research Centre	Cyanidation in agitated tanks on 90% minus 200 & 325 mesh	92% recovery @ 90% minus 200 mesh 94.5% recovery @ 90% minus 325 mesh
2005	Jaguar	Federal Univ. of Minas Gerais	Viscosity, settling, and flocculent tests for thickener design	
2005	Jaguar	Lakefield/Geosol	Tailings characterization to study acid generation potential	
2005-06	Jaguar	Mine System Design (MSD)	Paste fill preparation tests	
2006	Jaguar	AngloGold Laboratory	Leaching tests	92.96% recovery, Principal Zone, 92.87% recovery NE Zone

FAINA, PONTAL, AND OREBODY D TESTING PROGRAMS

OXIDE MINERALIZATION

In August 2009, direct cyanidation testing was performed by Jaguar's in-house process laboratory, located in Caeté, on oxide mineralization from the Faina deposit. This cyanidation testing resulted in an average gold extraction of 96.1% on a sample of approximately 83% minus 200 mesh.

In August 2011, direct cyanidation testing was performed by Jaguar's in-house process laboratory on oxide mineralization from the Orebody D target. The results indicate the Orebody D target oxide mineralization is amenable to cyanidation.

In February 2010, direct cyanidation testing was performed by Jaguar's in-house process laboratory on oxide mineralization from the Pontal deposit. The cyanidation testing resulted in an average gold extraction of 94.1%.

SULPHIDE MINERALIZATION

In May 2008, direct cyanidation testing was performed by Jaguar's in-house process laboratory on a sample of sulphide mineralization from the Faina deposit. The testing resulted in an average gold extraction of 42.91% at 80% minus 200 mesh and an average gold extraction of 42.99% at 80% minus 270 mesh, indicating that a portion of the Faina deposit sulphide mineralization is refractory. In November 2008, direct cyanidation testing was performed by Jaguar's in-house process laboratory on sulphide mineralization from Orebody D. The cyanidation testing resulted in an average gold extraction of 60.0% at 90% minus 200 mesh, indicating that a portion of Orebody D sulphide mineralization is refractory (Machado, 2011).

In October 2010, Jaguar engaged Resource Development Inc. (RDi) to complete a metallurgical test program on a 150 kg composite sample from the Faina and Orebody D deposits. The objective of this test program was to identify and develop the best treatment processing route for the extraction of gold from the refractory sulphide deposits. This metallurgical test program, included grinding testwork, gravity concentration, whole ore cyanidation, carbon-in-leach (CIL), and flotation and pressure oxidation of whole ore, flotation concentrate. The RDi test program indicated that 45% of the gold in the composite sample was free milling and the remaining gold was refractory. RDi concluded the best treatment route for the composite sample tested was to float the sulphides, pressure oxidize the flotation concentrate, and treat the oxidized material and flotation tailings in a CIL circuit to recover gold. In this manner, the overall gold extraction for the refractory gold mineralization from the Faina and Orebody D deposits combined mineralized material is projected to be approximately 87.4% (Machado, 2011).

In September 2011, RDi completed a metallurgical test program on an approximately 50 kg sample of refractory sulphide mineralization from the Pontal deposit. The objective of the testing was to determine if the metallurgical recovery of the refractory sulphide mineralization can be improved by roasting and subsequent cyanidation over direct cyanidation. Direct cyanidation resulted in a gold extraction of 58.0% and cyanidation of roasted mineralization improved the gold extraction to 80.3% (Machado, 2011).

14 MINERAL RESOURCE ESTIMATE

SUMMARY

Table 14-1 summarizes the Mineral Resources as of December 31, 2015 based on a US$1,400/oz gold price. The total Mineral Resources for the Turmalina Mine Complex comprise 2.739 million tonnes at an average grade of 5.01 g/t Au containing 442,000 ounces of gold in the Measured and Indicated Resource category and 3.057 million tonnes at an average grade of 6.30 g/t Au containing 619,000 ounces of gold in the Inferred Mineral Resource category. The Mineral Resources include the Turmalina Mine and two satellite deposits, Faina and Pontal. A cut-off grade of 2.11 g/t Au was used to report the Mineral Resources for the Turmalina Mine, and cut-off grades of 3.8 g/t Au and 2.9 g/t Au were used to report the Mineral Resources for the Faina and Pontal deposits, respectively.

The updated block model for the Turmalina Mine is based on drilling and channel sample data using a data cut-off date of December 31, 2015. The database comprises 2,700 drill holes and 12,679 channel samples. The estimate was generated from a block model constrained by three-dimensional (3D) wireframe models that were constructed using a minimum width of two metres. The gold grades are interpolated using the inverse distance cube (ID^3) interpolation algorithm using capped composited assays. A capping value of 50 g/t Au was applied for all three Orebodies. The wireframe models of the mineralization and excavated material for the Turmalina Mine, Faina Deposit, and Pontal Deposit were constructed by Jaguar and reviewed by RPA.

The mineralized material for each Orebody was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and previous production experience with these orebodies.

TABLE 14-1 SUMMARY OF TOTAL MINERAL RESOURCES – DECEMBER 31, 2015
Jaguar Mining Inc. – Turmalina Mine Complex

Category	Tonnes (000)	Grade (g/t Au)	Contained Oz Au (000)
Turmalina			
Measured	912	5.12	150
Indicated	1,157	4.62	172
Sub-total M&I	**2,068**	**4.84**	**322**
Inferred	1,385	5.34	238
Faina			
Measured	72	7.39	17
Indicated	189	6.66	42
Sub-total M&I	**261**	**6.87**	**58**
Inferred	1,542	7.26	360
Pontal			
Measured	251	5.00	40
Indicated	159	4.28	22
Sub-total M&I	**410**	**4.72**	**62**
Inferred	130	5.03	21
Total Turmalina, Faina, and Pontal			
Measured	1,235	5.21	207
Indicated	1,505	4.88	236
Sub-total M&I	**2,739**	**5.01**	**442**
Inferred	3,057	6.30	619

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources include the Turmalina Mine, Faina deposit, and Pontal deposit.
3. Mineral Resources are estimated at a cut-off grade of 2.11 g/t Au at Turmalina, 3.8 g/t Au at Faina, and 2.9 g/t Au at Pontal.
4. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
5. Mineral Resources are estimated using an average long-term foreign exchange rate of 2.5 Brazilian Reais: 1 US Dollar.
6. A minimum mining width of approximately 2 m was used.
7. Bulk density is 2.76 t/m^3 for Orebodies A and B and 2.95 t/m^3 for Orebody C at the Turmalina Mine.
8. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples.
9. Mineral Resources are inclusive of Mineral Reserves.
10. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
11. Numbers may not add due to rounding.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other factors that could materially affect the Mineral Resource estimates.

It is RPA's opinion that the Turmalina Mineral Resource estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014).

TURMALINA MINE

DESCRIPTION OF THE DATABASE

Current drilling and sampling practices involve the initial delineation of the location of the mineralized lenses using surface-based drill holes. Once sufficient primary underground access has been established, the mineralized lenses are further outlined by underground-based drill holes at a nominal spacing of 25 m to 50 m. As development of the underground access progresses on the ore, a series of channel samples are taken in two locales (one set on the face and one set along the back) for each round. The average sample spacing along development drifts is five metres.

Jaguar maintains an internal database which is used to store and manage all of the digital information for all of its operations. The drill hole and channel sample information for the Turmalina Mine were extracted from this internal database into separate files for use in preparation of the Mineral Resource estimates.

The cut-off date for the drill hole database is December 31, 2015. The drilling and sampling was carried out using the UTM Datum Córrego Alegre, Zone 23S grid coordinate system.

A summary of the drilling and channel sampling information is provided in Table 14-2.

TABLE 14-2 DESCRIPTION OF THE DATABASE AS AT DECEMBER 31, 2015
Jaguar Mining Inc. – Turmalina Mine

Table Name	Records
assay_minesight_raw	220,610
collar	15,379
comps_minesight	39,055
litho	93,867
survey	107,680
weather	37,827

This drill hole information was modified slightly so as to be compatible with the format requirements of the MineSight v.7.60 mine planning software and was imported into that software package. A number of new tables were created during the estimation process to capture such information as the intersection information between the drill holes and the wireframe models, density readings, capped assay records, and composited assay records.

The database included a number of assay records which contained entries of negative values to represent intervals of no sampling, lost core, lost sample, or no core recovery, some of which are contained within the mineralized wireframes. Depending upon the specific local conditions, these null values can introduce an undesired positive bias upon the grade estimations. Jaguar therefore elected to pursue a conservative approach by inserting a very low gold value of 0.01 g/t Au for these intervals of null values. A total of 51,013 records were adjusted in this process.

RPA notes that the deposits are well drilled and well sampled. The drilling and sampling protocols permit the identification and delineation of the mineralized areas with confidence. The drilling and sampling practices are carried out to a high standard. RPA is of the opinion that the drill hole and sampling database is suitable for use in preparation of Mineral Resource estimates.

MINERALIZATION WIREFRAMES

The interpreted 3D wireframe models of the gold mineralization have been created using the assay values from surface- and underground-based drill holes, and channel sample data as available. Wireframe models of the gold distribution for the three Orebodies were created using the MineSight and the LeapFrog Geo version 3.01 software packages.

The wireframe limits were drawn using a cut-off grade of 0.50 g/t Au and a nominal minimum width of 2.0 m. Some lower grade gold values were included inside the wireframes to preserve the continuity of the interpretation. The wireframe models were clipped to the original, pre-mining topography surface.

The main production of the mine has been from Orebody A, which is a folded, steeply northeast dipping tabular deposit with a steep northeasterly plunge that is located in a biotite schist host rock (Figure 14-1). The drilling results from the 2015 program have been successful in intersecting the down-plunge extension of Orebody A. The results also show that the strike length of the fold nose portion of the Orebody increases with depth, with a corresponding decrease in the strike length of the fold limbs (Figure 14-2). Better grades and widths are found with increased abundances of quartz and pyrite-arsenopyrite in the nose of this fold, however good gold grades can be found along the fold limbs as well (Figures 14-3 and 14-4). The mineralization in this deposit has been outlined along a strike length of approximately 250 m to 300 m and to depths of 900 m to 1,000 m below surface. The deposit is accessed by a ramp system that has supported production over a vertical distance of approximately 700 m. The mineralization in Orebody A has been defined by drilling below the lowest working level and good potential remains for discovering additional mineralization along the down-plunge projection with additional drilling.

Orebody B includes three lower grade lenses parallel to Orebody A. Two of the lenses are located approximately 50 m to 75 m in the structural hangingwall and are accessed in the upper levels of the mine by a series of cross-cuts that are driven from Orebody A. The third lens is located possibly along the axial plane. The mineralization in this deposit has been outlined along a strike length of approximately 350 m to 400 m and to depths of 650 m to 700 m below surface.

Orebody C is a series of 12 lenses that are located to the west in the structural footwall of Orebody A and are generally of lower grade than Orebody A (Figure 14-5). They strike northwest and dip steeply to the northeast. They are accessed by two cross-cuts from the main ramp. A minor amount of production has been achieved from these lenses to date. The mineralization in this deposit has been outlined along a strike length of approximately 800 m to 850 m and to depths of 400 m to 450 m below surface.

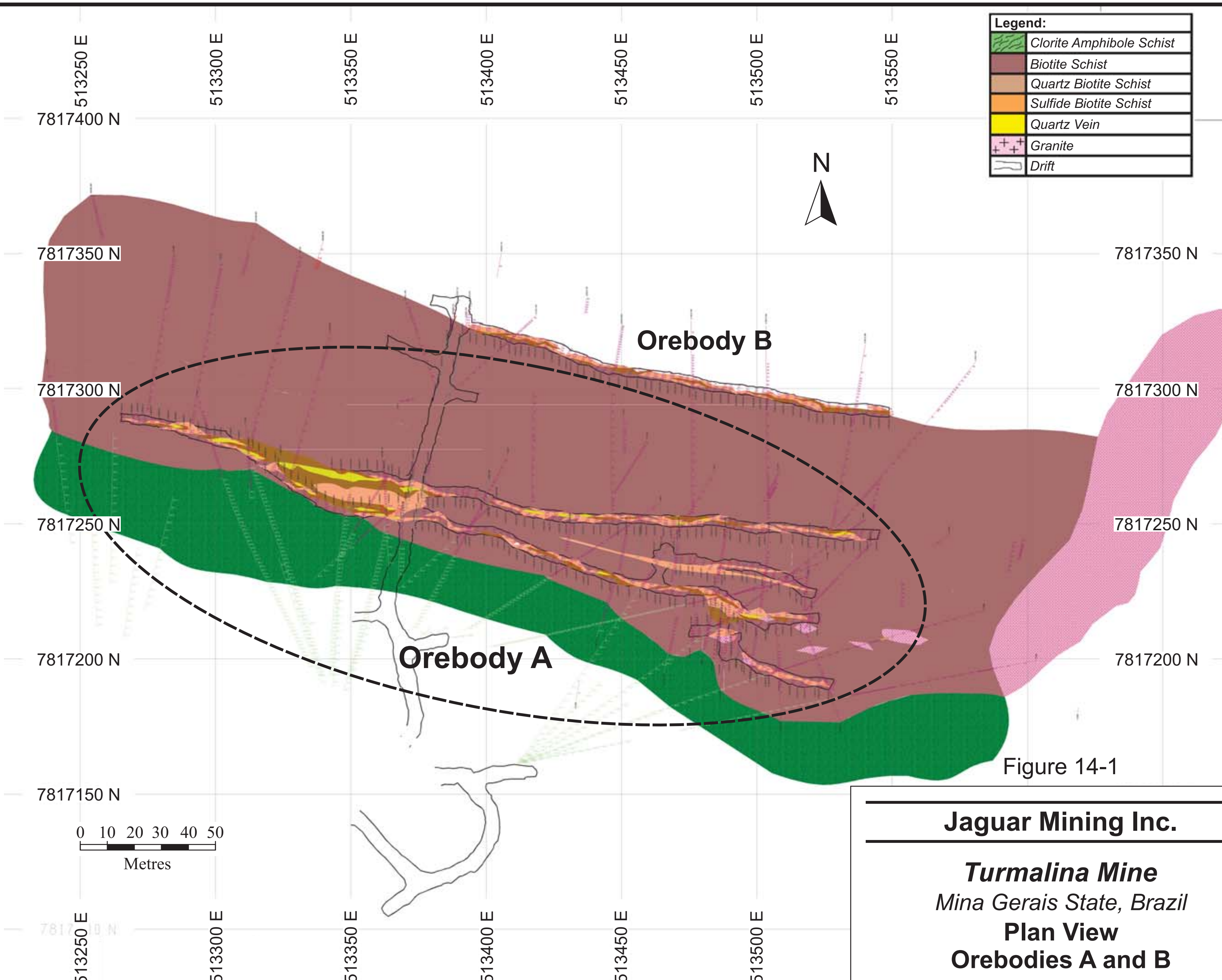


Figure 14-1

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Plan View
Orebodies A and B

May 2016

Source: Jaguar Mining Inc., 2014.

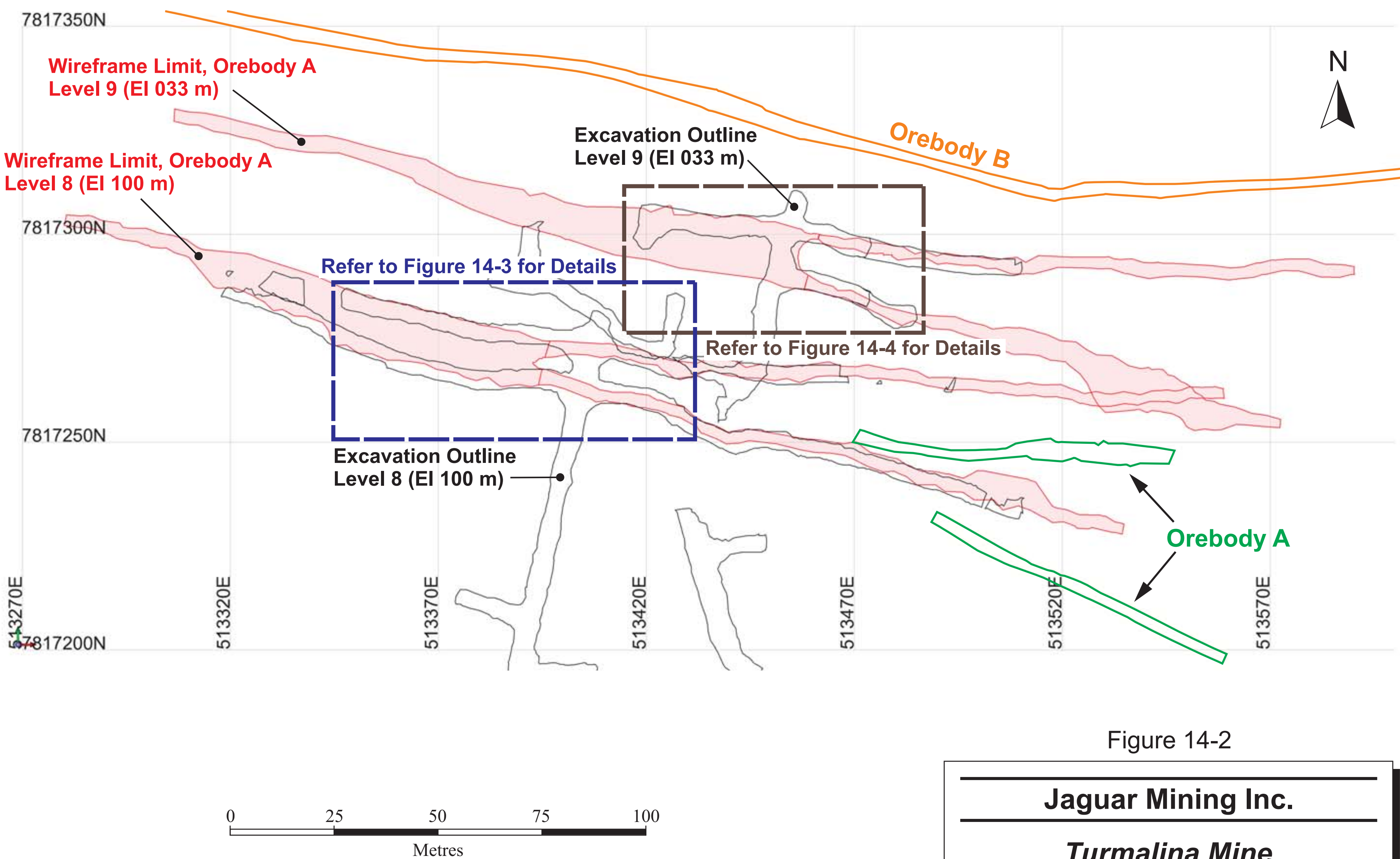


Figure 14-2

Jaguar Mining Inc.

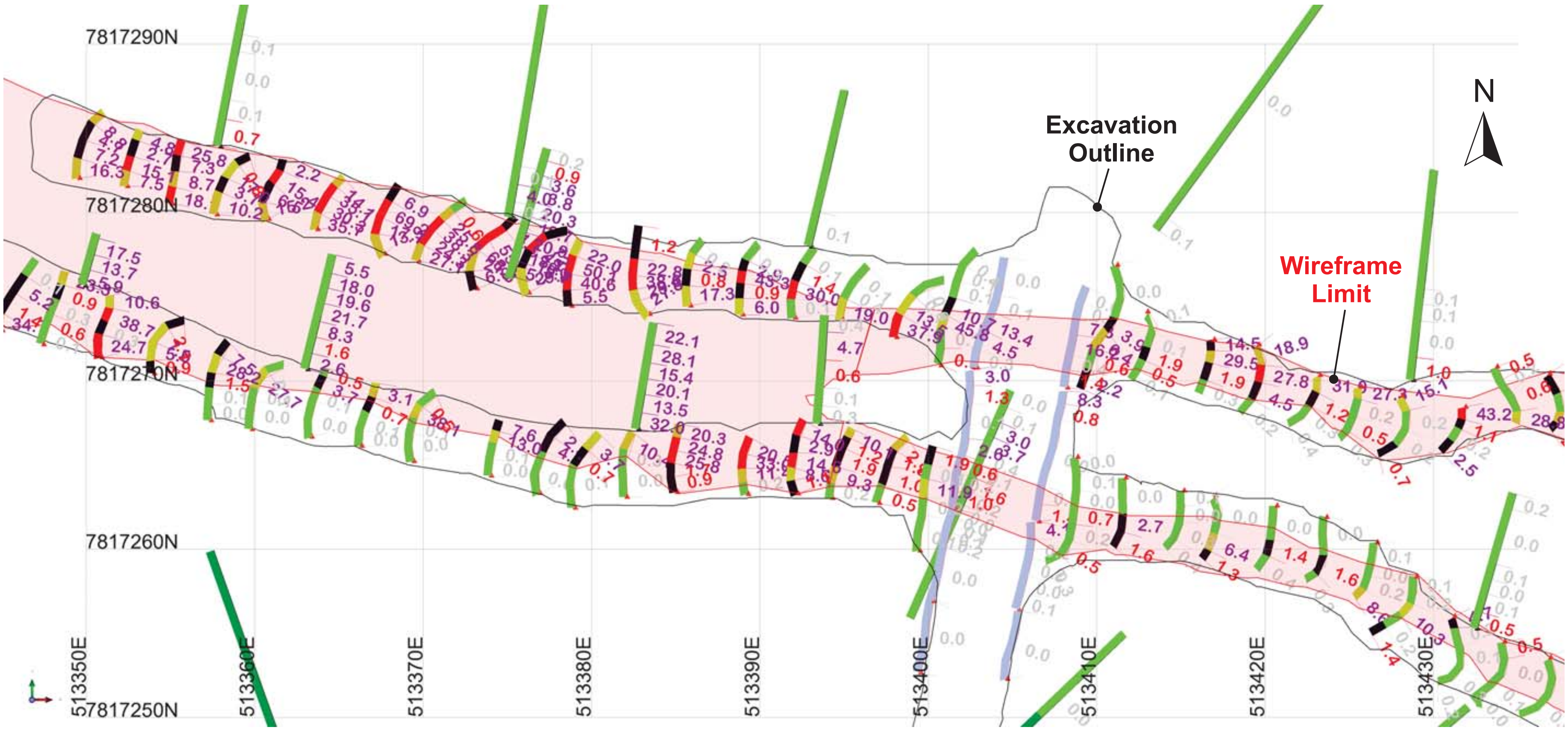
Turmalina Mine

Mina Gerais State, Brazil

Comparison of Orebody A Geometry, Level 8 to Level 9

May 2016

Source: RPA, 2016.



Lithology:

- *Quartz*
- *Biotite Schist with Quartz*
- *Biotite Schist with Sulphides*
- *Biotite Schist*
- *Chlorite-Amphibole Schist*
- *Undifined*

0 5 10 15 20
Metres

Figure 14-3

Jaguar Mining Inc.

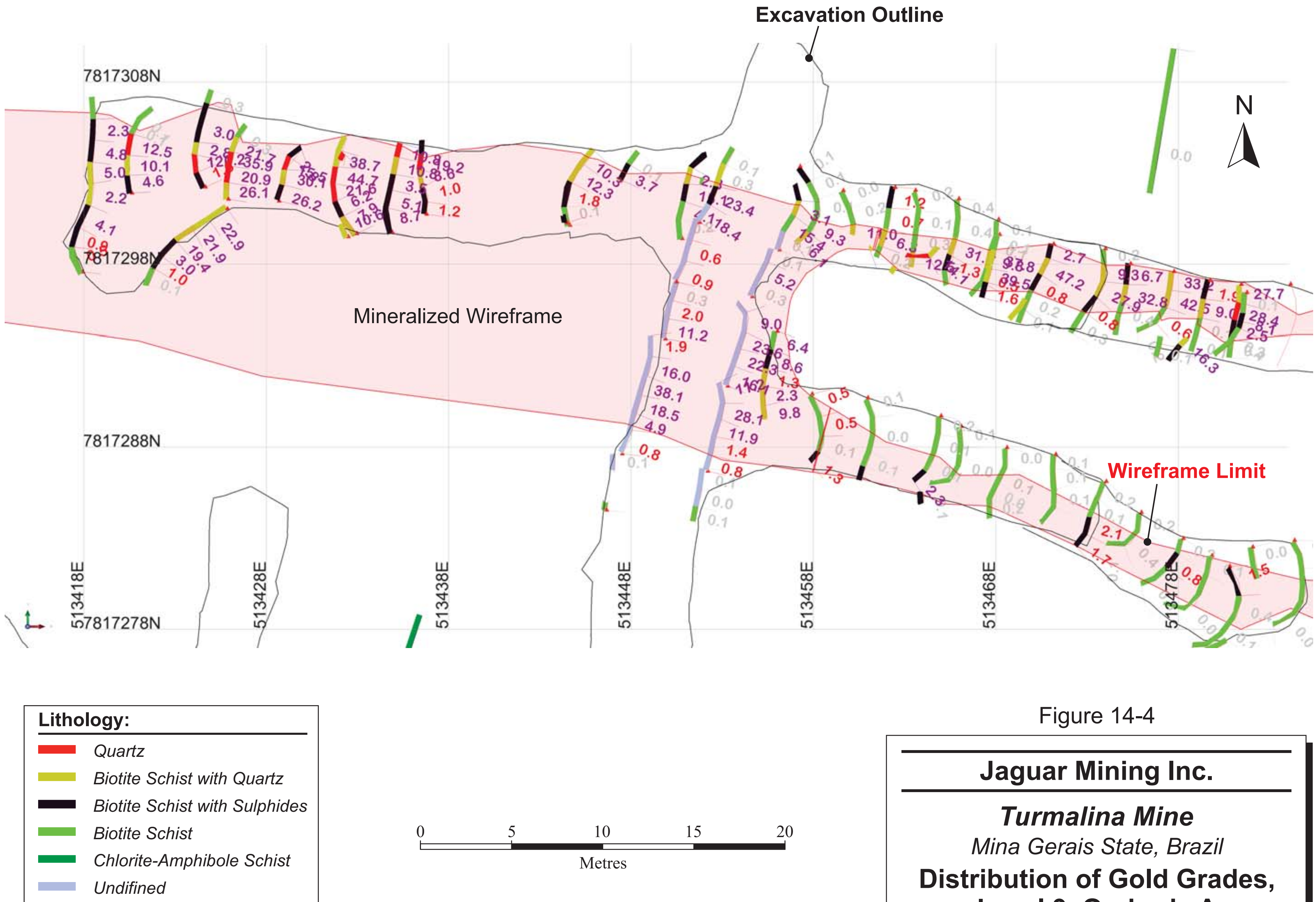
Turmalina Mine

Mina Gerais State, Brazil

Distribution of Gold Grades, Level 8, Orebody A

May 2016

Source: RPA, 2016.



May 2016

Source: RPA, 2016.

Figure 14-4

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Distribution of Gold Grades, Level 9, Orebody A

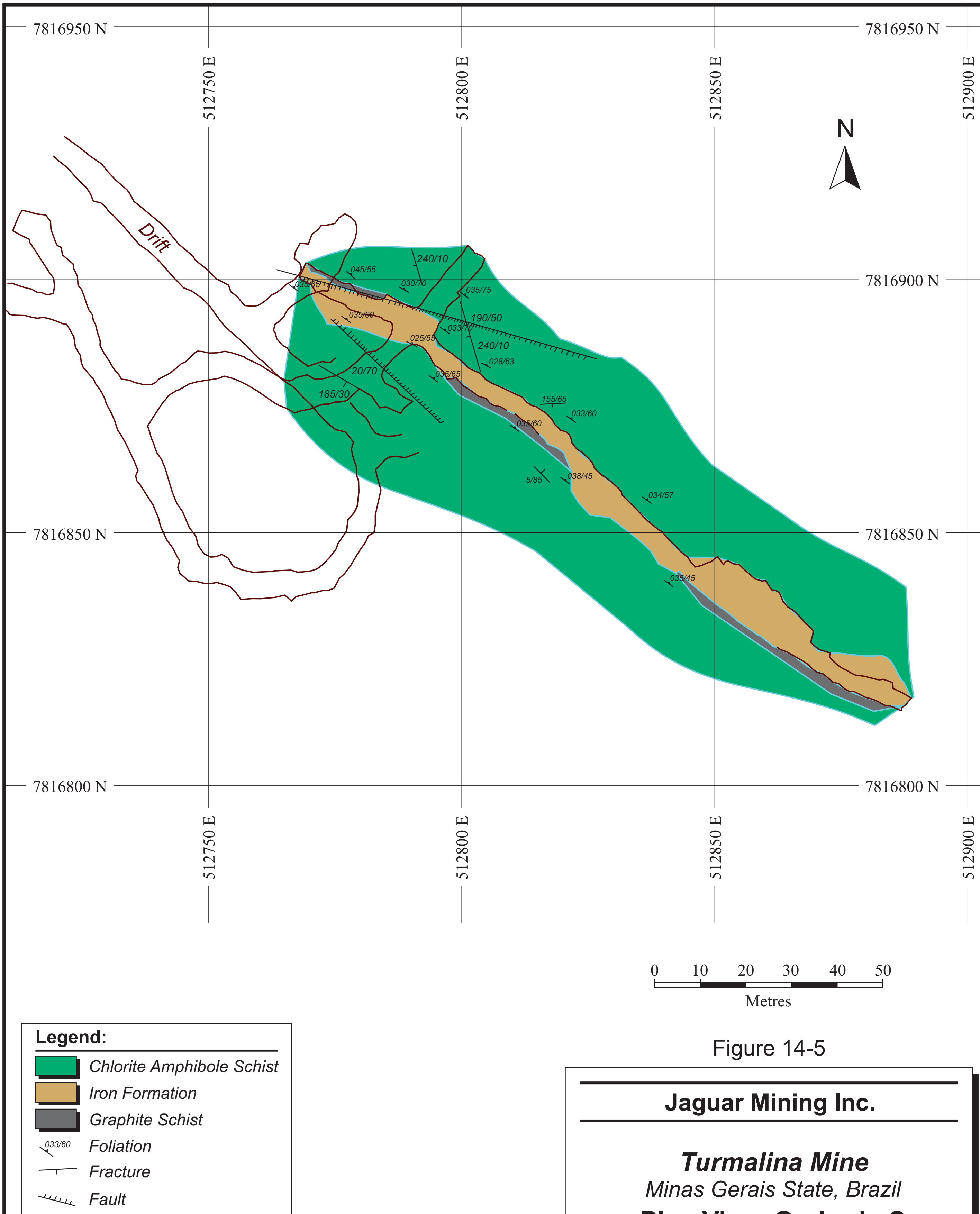


Figure 14-5

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Plan View, Orebody C

May 2016

Source: Jaguar Mining Inc., 2014.

Review of the wireframes by RPA reveals that the interpretations are reasonable and appropriate. The locations of the Orebodies are illustrated in Figure 14-6. The various lenses have been grouped into domains for statistics and modelling purposes. Integer codes were assigned to the various zone wireframes and then the wireframes were used to transfer these codes to the block model. The coding provided the means to customize grade interpolation parameters for each zone. A listing of the domain codes is provided in Table 14-3.

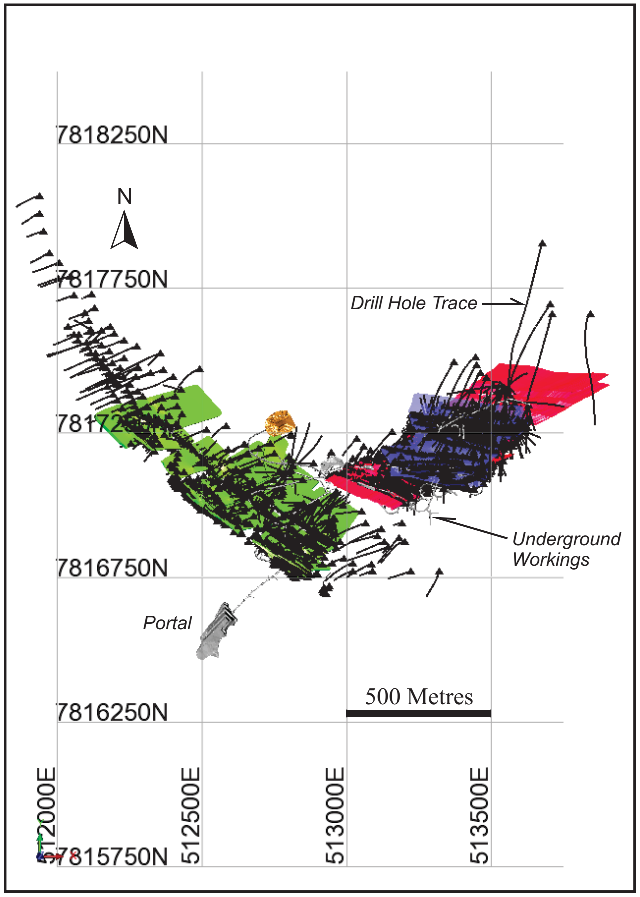
TABLE 14-3 LIST OF WIREFRAME DOMAIN CODES
Jaguar Mining Inc. – Turmalina Mine

Domain Code	Name	Orebody
1	ANW	Orebody A - Portion NW
2	ASE	Orebody A - Portion SE
3	ASE02	Orebody A - Portion SE
4	ASE01	Orebody A - Portion SE
5	ASE03	Orebody A - Portion SE
6	AGRANADA	Orebody A - Portion SE - associated with Garnets
11	B	Ore body B
12	BHW	Orebody B Hang wall
21	CSE	Orebody C - Portion SE
22	CCE	Orebody C - Center Portion - CE "Central"
23	CNW	Orebody C - Portion NW

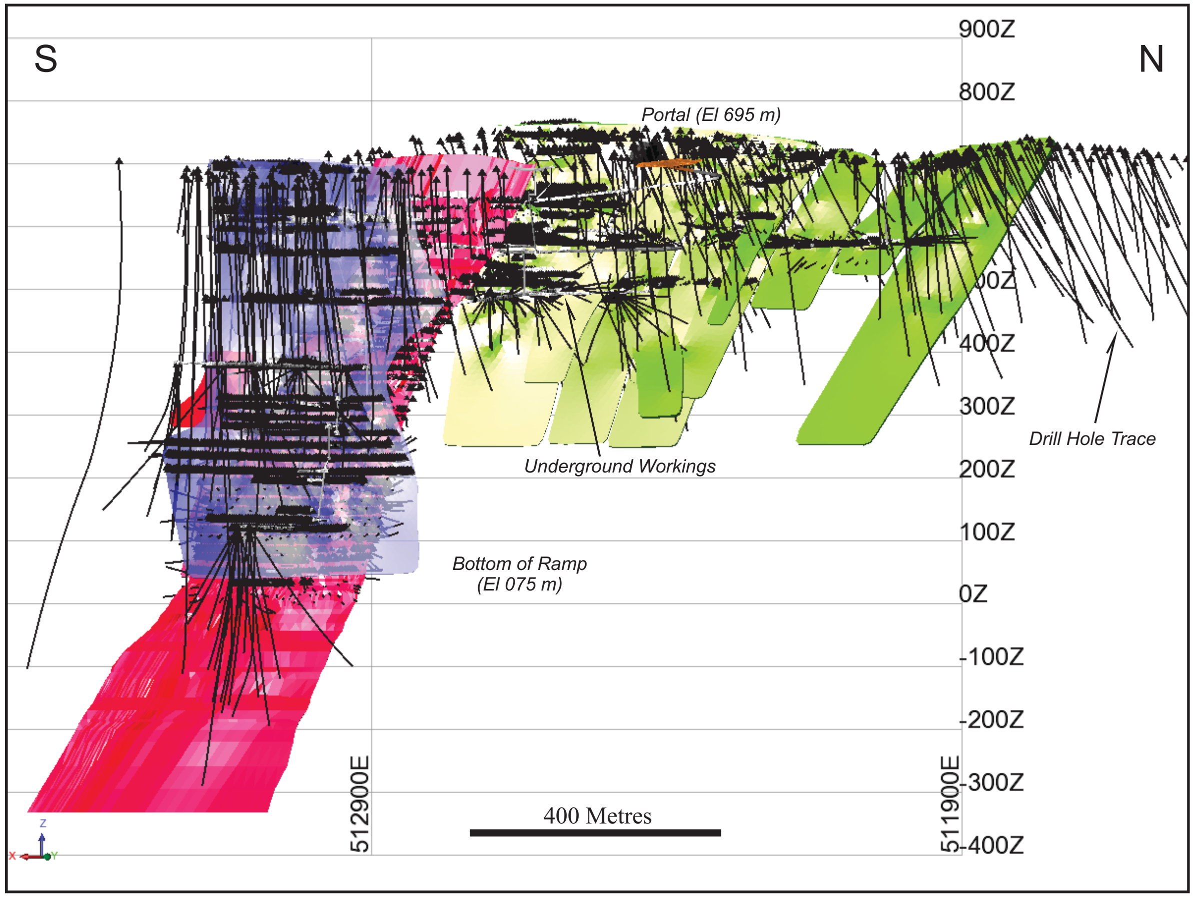
TOPOGRAPHY AND EXCAVATION MODELS

A topographic surface of the immediate mine area that is current as of October 2013 was used to code the block model for those portions of Orebodies A, B, and C that have been excavated by means of open pit mining methods. A wireframe model of the completed underground excavations as of December 2015 was prepared and was used to code the block model for the portions of Orebodies A, B, and C that have been mined out (Figure 14-7).

Plan View



Looking to Azimuth 200°



Legend:

Orebody A   Orebody B   Orebody C

Figure 14-6

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Plan and Longitudinal Views of the Mineralized Wireframes

May 2016

Source: RPA, 2016.

Looking to Azimuth 200°

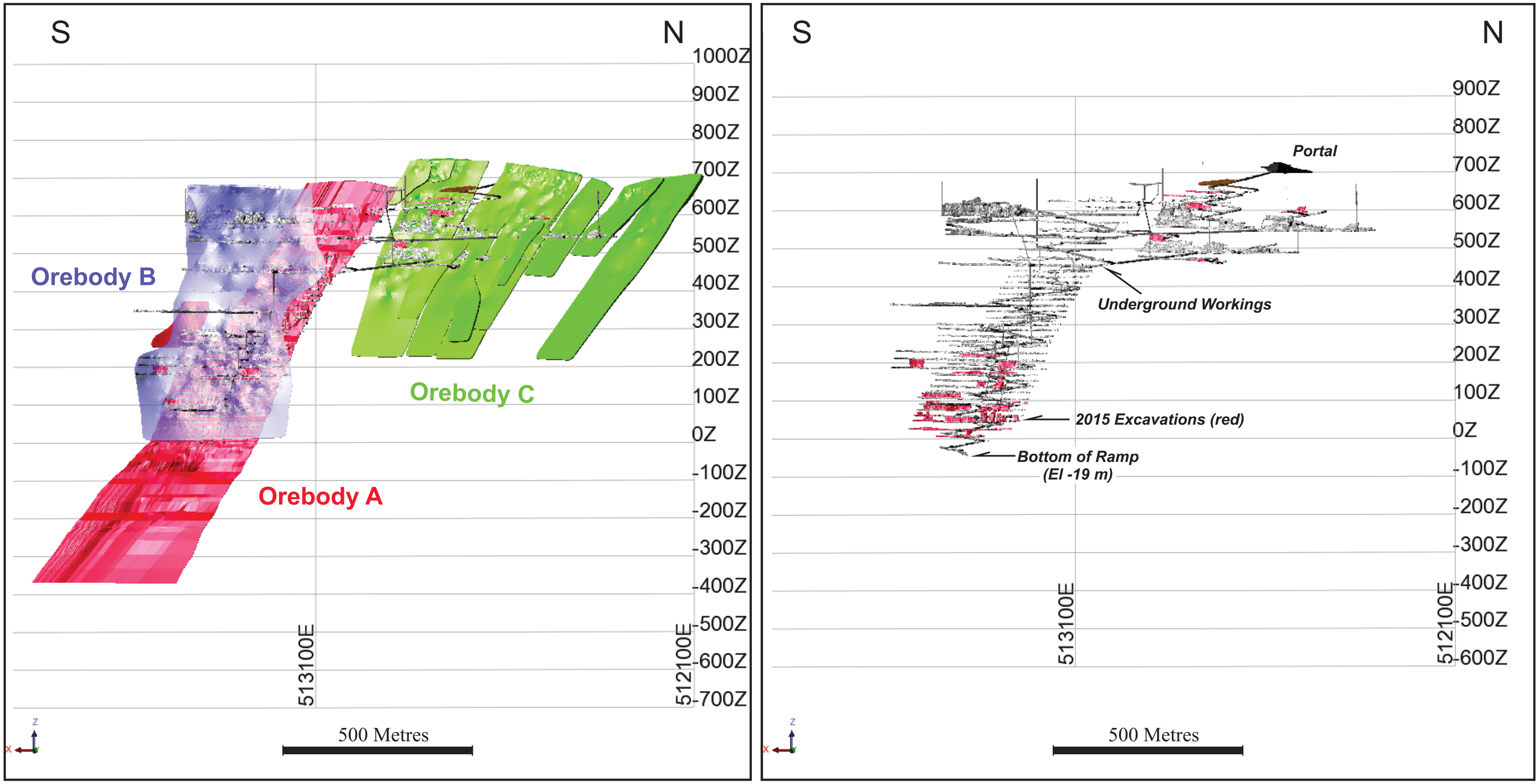


Figure 14-7

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Mine Excavations as at December 2015

May 2016

Source: Jaguar Mining Inc., 2015.

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SAMPLE STATISTICS AND GRADE CAPPING

The mineralization wireframe models were used to code the drill hole database and identify the resource related samples. These samples were extracted from the database into their respective domains, and then subjected to statistical analyses by means of histograms, probability plots, and decile analyses. A total of 64,565 samples were contained within the mineralized wireframes, of which approximately 0.7% comprised samples with null values which had been replaced by near-zero values. The sample statistics are summarized in Table 14-4. Sample histogram have been presented in Cox and Pressacco (2015).

TABLE 14-4 DESCRIPTIVE STATISTICS OF THE RAW GOLD ASSAYS
Jaguar Mining Inc. – Turmalina Mine

	Orebody A		Orebody B		Orebody C	
Item	**Uncapped**	**Capped**	**Uncapped**	**Capped**	**Uncapped**	**Capped**
Length-Weighted Mean (g/t)	7.08	6.99	2.49	2.47	2.71	2.68
Median (g/t)	2.55	2.55	0.64	0.64	0.89	0.89
Mode (g/t)	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation (g/t)	10.42	9.96	5.14	4.99	5.74	5.23
Coefficient of Variation	1.47	1.42	2.07	2.02	2.12	1.95
Sample Variance (g/t)	108.61	99.17	26.46	24.93	33.00	27.39
Minimum (g/t)	0.01	0.01	0.01	0.01	0.01	0.01
Maximum (g/t)	120.16	50.00	76.83	50.00	184.00	50.00
Count	33,982	33,982	13,469	13,469	17,114	17,114
Number of Null Values	160		49		253	
Percent Null Values	5%		4%		1%	

On the basis of its review of the assay statistics, RPA believes that a capping value of 50 g/t Au remains appropriate for each of the three Orebodies. The selection of capping values remain unchanged from those presented in Cox and Pressacco (2015). The capping values can be re-examined in light of grade reconciliation information and adjusted accordingly.

COMPOSITING METHODS

The selection of an appropriate composite length began with examination of the descriptive statistics of the raw assay samples and preparation of sample length frequency histograms. Consideration was also given to the size of the blocks in the model. On the basis of the available information, RPA believes that a composite length of one metre for all samples is reasonable. This composite length remains unchanged from that described in Cox and Pressacco (2015). All samples contained within the mineralized wireframes were composited to a nominal one metre length using the best-fit function of the MineSight software package. The composite descriptive statistics are provided in Table 14-5.

TABLE 14-5 DESCRIPTIVE STATISTICS OF THE GOLD COMPOSITES
Jaguar Mining Inc. – Turmalina Mine

	Orebody A		Orebody B		Orebody C	
Item	**Uncapped**	**Capped**	**Uncapped**	**Capped**	**Uncapped**	**Capped**
Length-Weighted Mean (g/t)	6.79	6.71	2.50	2.49	2.69	2.67
Median (g/t)	2.92	2.92	0.84	0.84	1.01	1.01
Mode (g/t)	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation (g/t)	9.50	9.11	4.54	4.43	5.25	4.94
Coefficient of Variation	1.40	1.36	1.82	1.78	1.95	1.85
Sample Variance (g/t)	90.34	82.95	20.59	19.62	27.57	24.36
Minimum (g/t)	0.01	0.01	0.01	0.01	0.01	0.01
Maximum (g/t)	103.73	50.00	63.87	50.00	138.24	50.00
Count	20,631	20,631	7,692	7,692	10,764	10,764

BULK DENSITY

A summary of the bulk densities used for the various material types is presented in Table 14-6. The tonnage estimates for Orebodies A and B incorporate a bulk density of 2.76 t/m^3, based on previous test work completed by Metso Minerals (Clow and Valliant, 2006). In 2014, Jaguar has carried out a compilation of all available density measurements taken since the 2006 measurements. A summary of the information collected from 2006 to 2014 is provided in Table 14-7. The new data support slightly higher ore and waste densities.

TABLE 14-6 MATERIAL DENSITIES BY OREBODY (AFTER CLOW AND VALLIANT, 2006)
Jaguar Mining Inc. – Turmalina Mine

Orebody	Density (t/m³)
A	2.76
B	2.76
C	2.95
Waste	2.7

TABLE 14-7 SUMMARY OF DENSITY MEASUREMENTS BY OREBODY AS AT DECEMBER 31, 2014
Jaguar Mining Inc. – Turmalina Mine

			Chip Samples		Drill Core Samples		Total Samples	
Orebody	Rock Status	Ore/ Waste	Number	Bulk Density (t/m^3)	Number	Bulk Density (t/m^3)	Number	Bulk Density (t/m^3)
A	Fresh	Ore	11	2.85	77	2.81	88	2.82
		Waste			8	2.78	8	2.78
B	Fresh	Ore	2	3.00			2	3.00
		Waste			2	2.79	2	2.79
C	Fresh	Ore	3	2.80	84	2.99	87	2.98
		Waste			433	2.84	433	2.84
	Transition	Ore			26	2.79	26	2.79
	Weathered	Ore			11	2.82	11	2.82

Jaguar commissioned a program of systematic determination of the bulk density in the fall 2014 using samples of ore and waste taken from in-fill and exploration drill holes. The bulk density values were determined by the water pycnometer method by Jaguar's laboratory staff at the Caeté site. The bulk density of 408 ore and waste samples from Orebodies A and C were determined (Table 14-8). The distribution of the density values are shown in Figures 14-8 and 14-9. The recent data confirm that the average bulk density for the mineralized material in Orebody A is slightly higher than had been presented in Clow and Valliant (2006) while the average bulk density for the mineralized material for Orebody C is slightly lower.

TABLE 14-8 SUMMARY OF DENSITY MEASUREMENTS BY OREBODY AUGUST 2014 TO JANUARY 2016
Jaguar Mining Inc. – Turmalina Mine

Material	No. Samples	Avg. Bulk Density
	Orebody A:	
Ore	49	2.86
Waste	175	2.82
Sub-total	***224***	
	Orebody C:	
Ore	24	2.90
Waste	160	2.87
Sub-total	***184***	

FIGURE 14-8 HISTOGRAM OF BULK DENSITY MEASUREMENTS AUGUST 2014 TO JANUARY 2016, OREBODY A

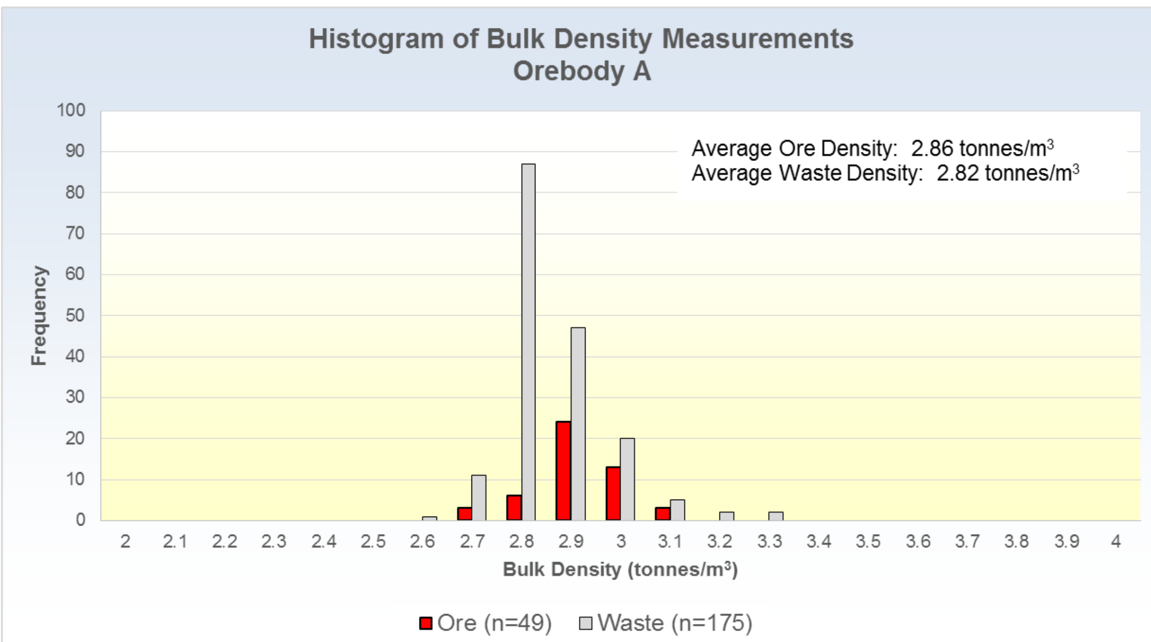
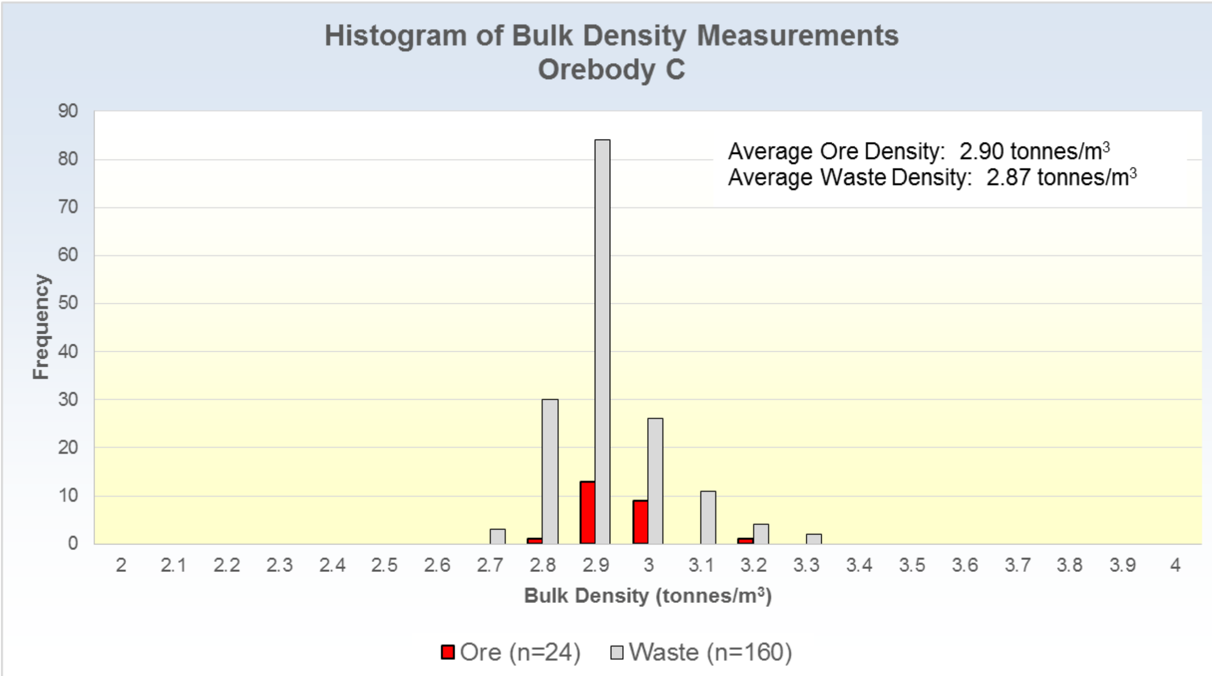


FIGURE 14-9 HISTOGRAM OF BULK DENSITY MEASUREMENTS AUGUST 2014 TO JANUARY 2016, OREBODY C



TREND ANALYSIS

As an aid in carrying out variography studies of the continuity of the gold grades in the mineralized domain models, a short study to examine the overall trends was carried out. For this exercise, a data file was prepared that contained the gold values for each drill hole and channel sample contained within the respective mineralized domain model. The resulting gold grade-thickness products were digitally contoured using the LeapFrog software package. The results for the hangingwall and nose of Orebody A are shown in Figure 10-2 while the results for Orebody C are presented in Figure 10-3. The grade-thickness contours for the footwall and nose of Orebody c are shown in Figure 14-10.

It can be seen that a pronounced down-plunge of the gold grade-thickness product is present for Orebody A. The gold grades for Orebody C do not show any clear trends, however, a weak north-northwesterly rake may be present in the lower portions of the mineralized wireframes.

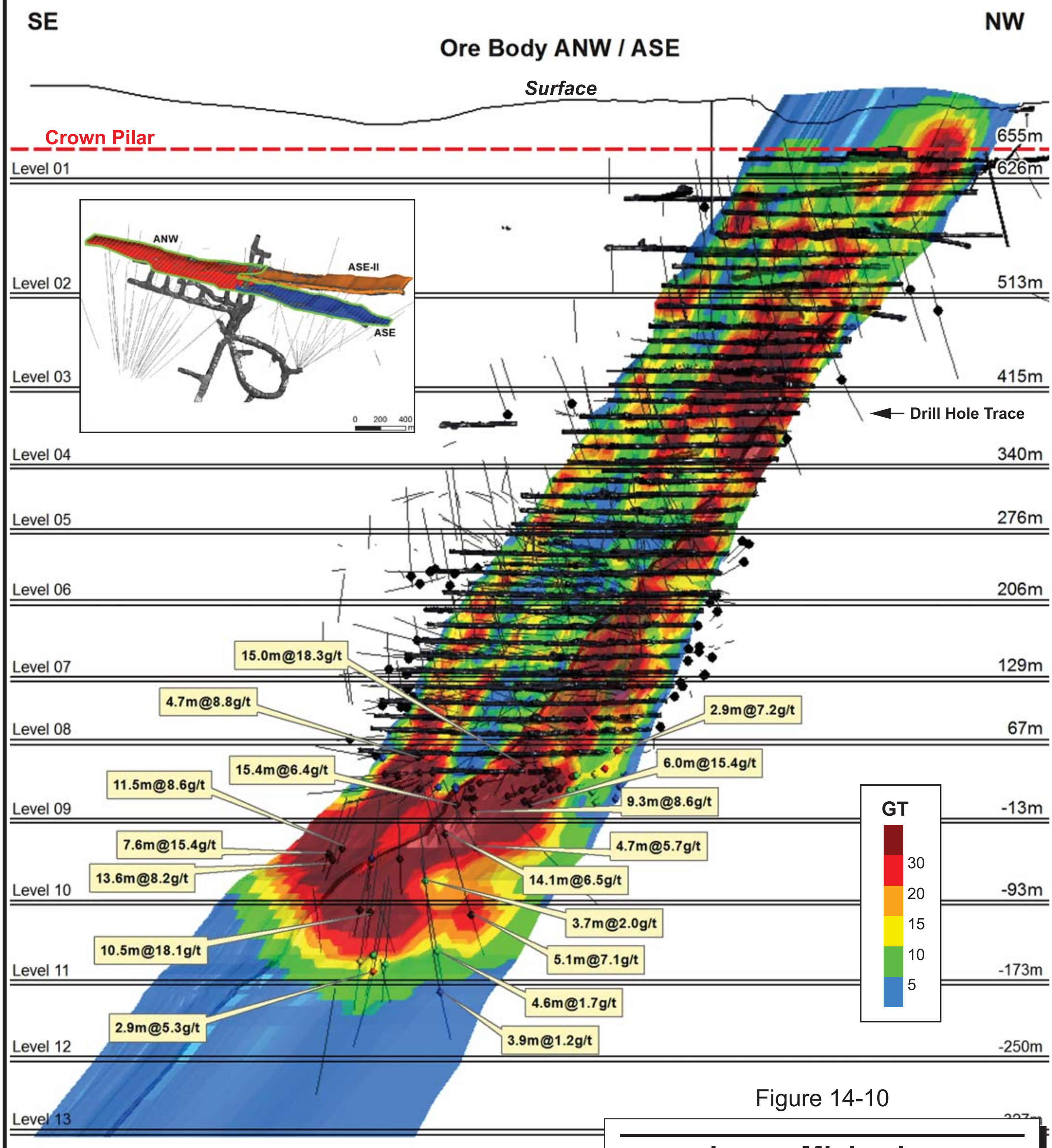


Figure 14-10

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Gold Distribution, Orebody A Footwall and Fold Nose

May 2016

Source: Jaguar Mining Inc., 2016.

VARIOGRAPHY

Jaguar's analysis of the spatial continuity of the gold grades in Orebodies A, B, and C were presented in Cox and Pressacco (2015). The conclusions of that analysis remain unchanged and the same variogram parameters were applied in estimation of the gold grades for the updated block model. A summary of the variogram parameters derived for each of the three Orebodies is presented in Table 14-9. A comparison of the search ellipse parameters for Orebody A with the contoured gold grades from the channel sample and drill hole samples is shown in Figure 14-11 and 14-12. A comparison of the search ellipse parameters for Orebody C with the contoured gold grades is presented in Figure 14-13.

TABLE 14-9 SUMMARY OF VARIOGRAPHY AND INTERPOLATION PARAMETERS
Jaguar Mining Inc. – Turmalina Mine

Item	Orebody A	Orebody B	Orebody C
Nugget (C0)	34.0	5.0	10
Sill, Major Axis (C1)	16.0 (8 m)	10.0 (36 m)	8.0 (8m)
Sill, Major Axis (C2)	23.5 (42 m)	4.9 (60 m)	26.0 (26 m)
Model Type	Spherical	Spherical	Spherical
Orientation	060/-55/47	030/-65/40	045/-60/20
Anisotropy Ratio (Major/Semi-Major)	1.62	2.4	1.44
Anisotropy Ratio (Major/Minor)	3.0	6.0	2.17
Minimum Number of Samples	3	3	3
Maximum Number of Samples	8	8	8
Maximum Number of Samples per Hole	2	2	2
Maximum Number of Samples per Quadrant	2	2	2

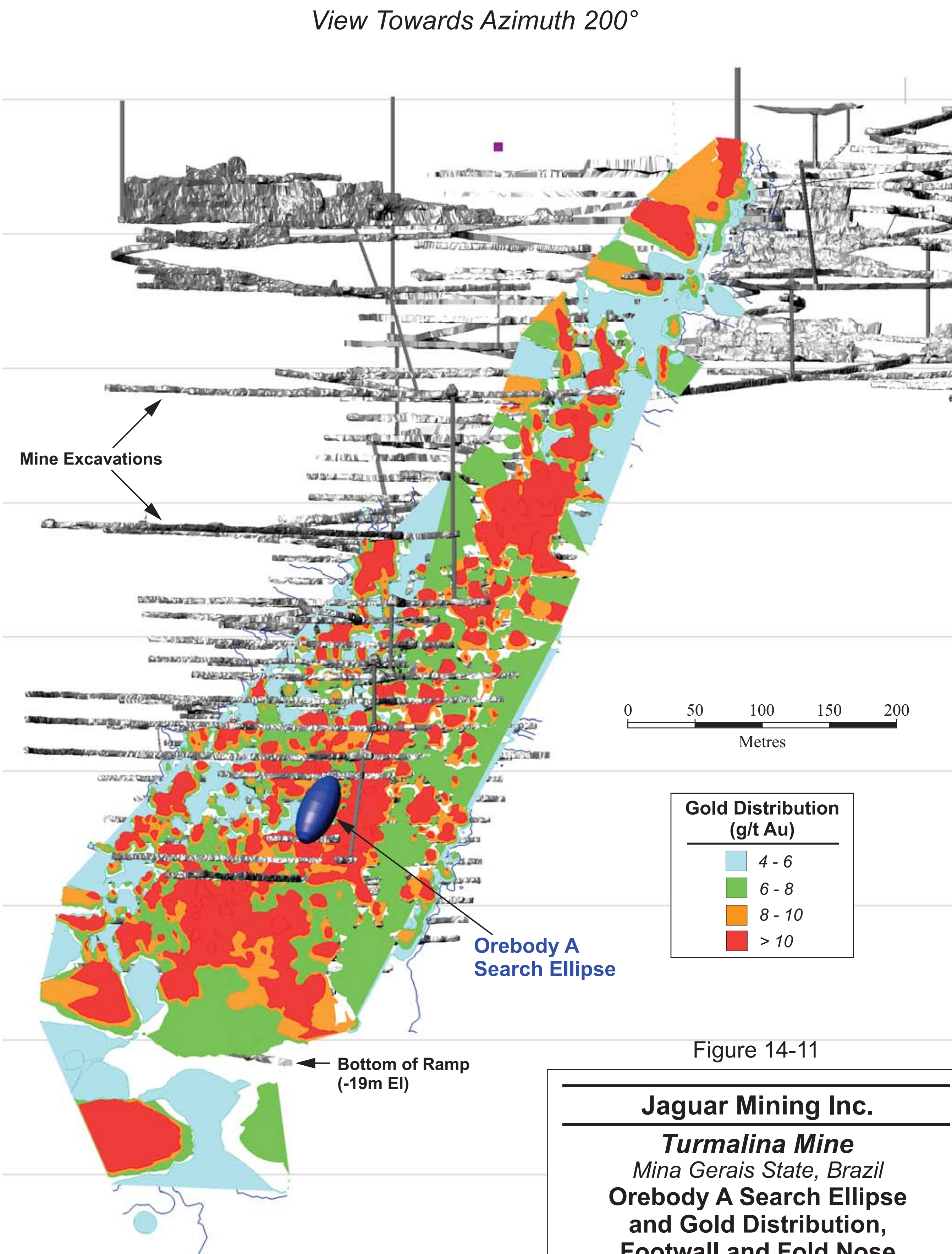


Figure 14-11

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Orebody A Search Ellipse and Gold Distribution, Footwall and Fold Nose

May 2016

Source: RPA, 2016.

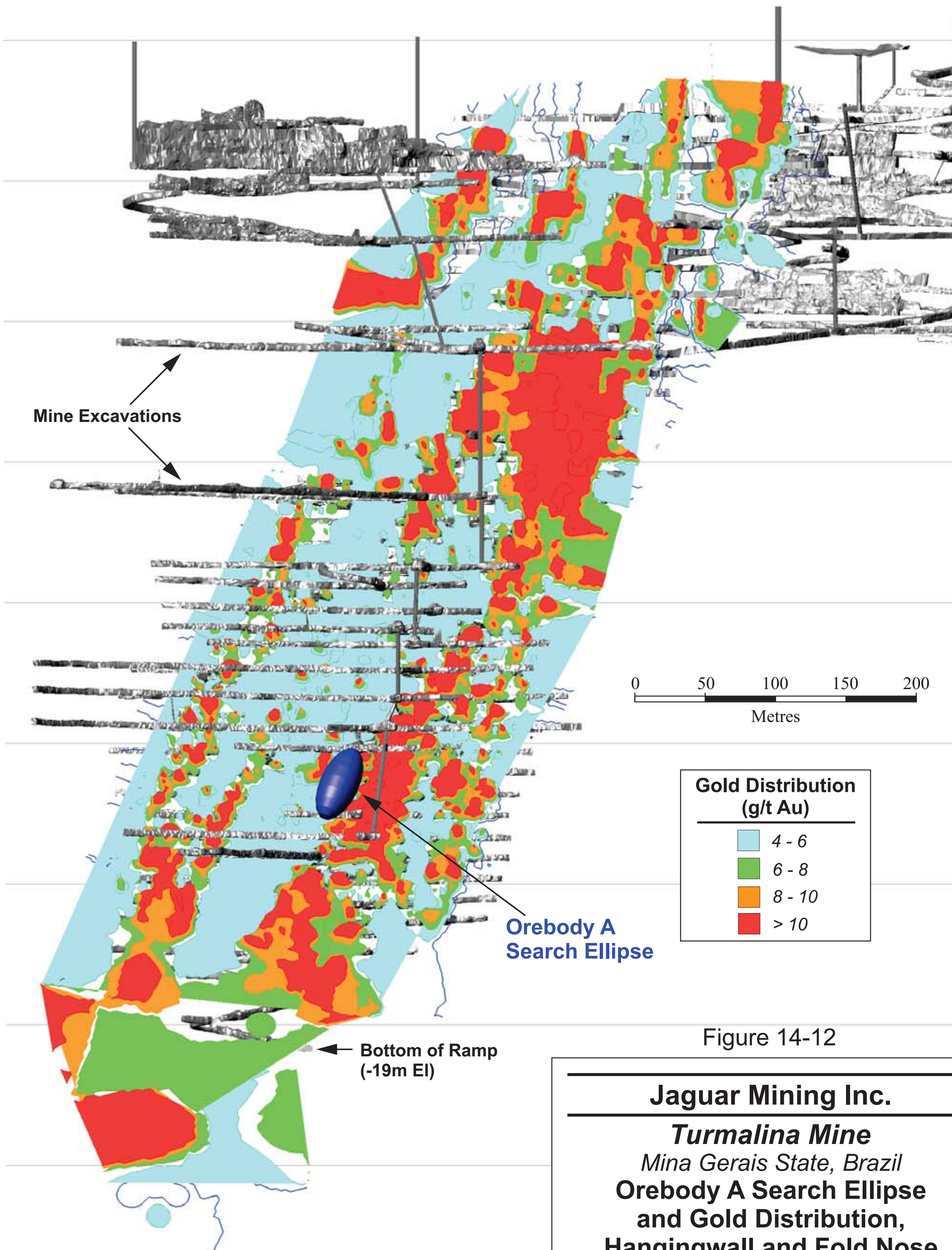


Figure 14-12

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Orebody A Search Ellipse and Gold Distribution, Hangingwall and Fold Nose

May 2016

Source: RPA, 2016.

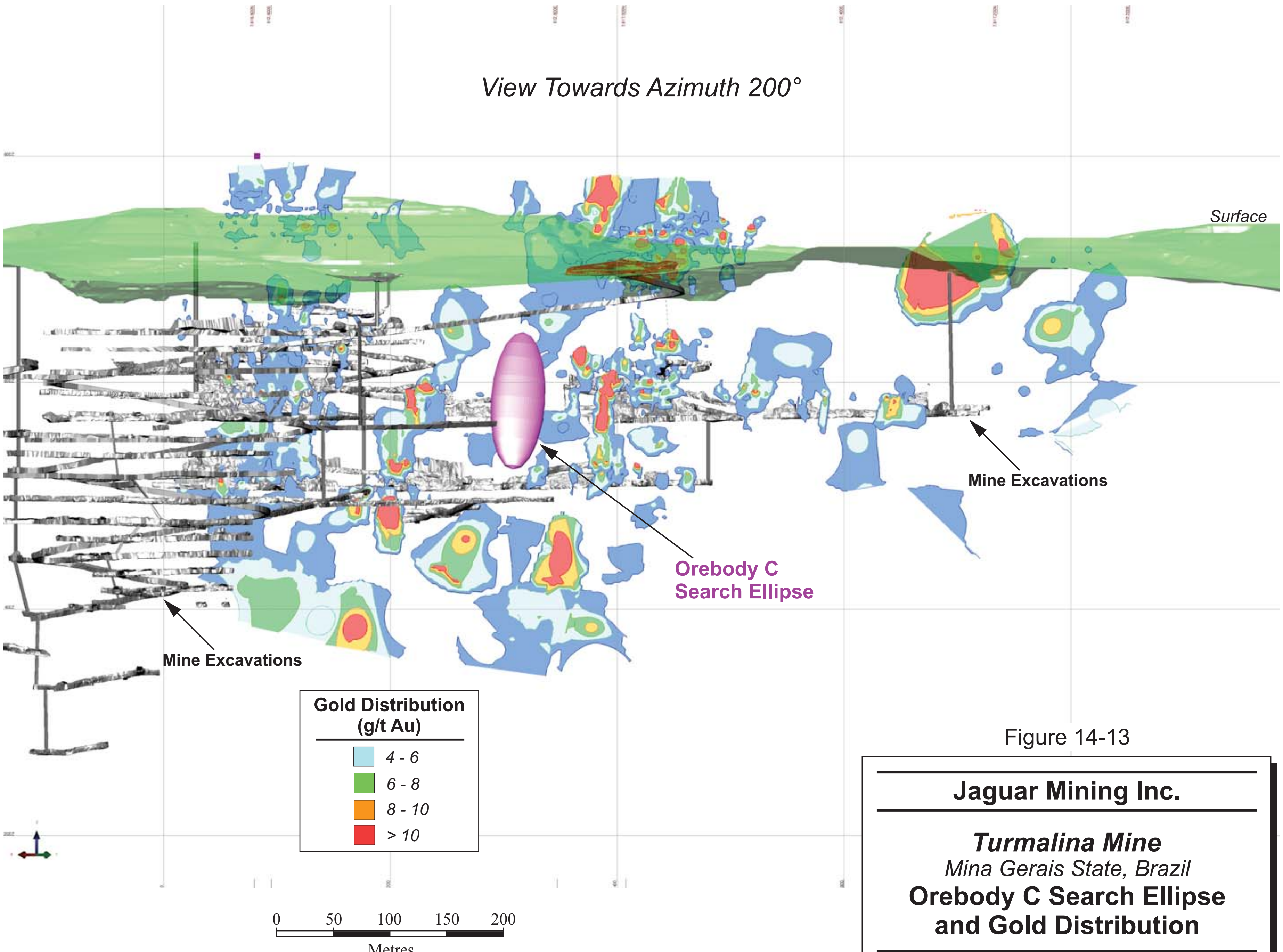


Figure 14-13

Jaguar Mining Inc.

Turmalina Mine

Mina Gerais State, Brazil

Orebody C Search Ellipse and Gold Distribution

May 2016

Source: RPA, 2016.

RPA

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BLOCK MODEL CONSTRUCTION

The block model was constructed using the MineSight version 7.60 software package and comprised an array of 2 m x 2 m x 2 m sized blocks using a partial percentage attribute. The model is oriented parallel to the coordinate grid system (i.e., no rotation or tilt). The selection of the block size for this model was based upon the block sizes previously employed at the mine. The block model origin, dimensions, and attribute list are provided in Table 14-10. A number of attributes were created to store such information as rock code, material densities, estimated gold grades, mineral resource classification, mined out material and the like (Table 14-11).

Gold grades were estimated into the blocks by means of inverse distance cubed (ID^3) interpolation algorithm. A total of four interpolation passes were carried out using distances derived from the variography results and the search ellipse parameters presented above.

In general, "hard" domain boundaries were used along the contacts of the mineralized domain models. Only data contained within the respective wireframe model were allowed to be used to estimate the grades of the blocks within the wireframe in question, and only those blocks within the wireframe limits were allowed to receive grade estimates.

Due to the unique geometry of Orebody A, three sub-domains were created for the main mineralized lens. Domain ANW was created for the "nose" portion of the mineralized wireframe, and separate domains were created for the northern and southern "limbs" of the mineralization (ASE II and ASE, respectively). Soft data domain boundaries were used for these three sub-domains to permit a smooth transition of gold grades in the block model.

TABLE 14-10 BLOCK MODEL DEFINITION
Jaguar Mining Inc. – Turmalina Mine

Type	Y (Northing)	X (Easting)	Z (Elevation)
Minimum Coordinates (m)	7,816,600	511,800	-500
Maximum Coordinates (m)	7,818,100	514,200	800
User Block Size (m)	2	2	2
Min. Block Size (m)	2	2	2
Rotation (°)	0.000	0.000	0.000

TABLE 14-11 LIST OF BLOCK MODEL ATTRIBUTES
Jaguar Mining Inc. – Turmalina Mine

Variable Name	Description
au_id3_cap	Gold by Inverse Distance, Power 3, Capped Composites
avd	Average Distance of Informing Samples
class	Mineral Resource Classification (1=measured, 2=indicated, 3=inferred)
density	Material Density
mined	Mined Out (-1=Remaining Material, 1=Mined Out Stopes, 2=Mined Out Drifts, 3=Sill Pillars)
no_samp	Number of Informing Samples
ore_pct	Percent of Block Inside the Wireframe
pass	Pass Number 1=Half of Variogram Range, 2=Variogram Range, 3=2x Range, 4=4x Range
rock	Material Code
topo_pct	Percent of Block Below Topography Surface
Weath	Weathering Code

BLOCK MODEL VALIDATION

Block model validation exercises consisted of comparing contoured gold grades for Orebodies A and C against the estimated block grades in longitudinal views. A good correlation `was observed.

Validation exercises also consisted of comparing the revised block model estimated grades and tonnes against the 2015 production information on a monthly and quarterly basis. The work flow consisted of three stages as shown in Figure 14-12. The reconciliation work was prepared by RPA using source data provided by Jaguar following the general outline described in Parker (2014).

Phase 1 consisted of comparing the reported block model tonnes and grades to the production tonnage and grades as compiled from Jaguar's internal monthly reports. For the purposes of the current work, this corresponds generally to the F1 reconciliation step of Parker (2014) and will be referred to as F1'. Phase 2 consisted of comparing the mine production tonnage to the plant production data as compiled from Jaguar's internal monthly reports. The results from this phase will be referred to as F2'. Phase 3 consisted of comparing the block model tonnes and grade with the plant production data and will be referred to as F3' (Figure 14-14). The input data for the block model, mine production, and plant production are presented in Tables 14-12, 14-13, and 14-14, respectively.

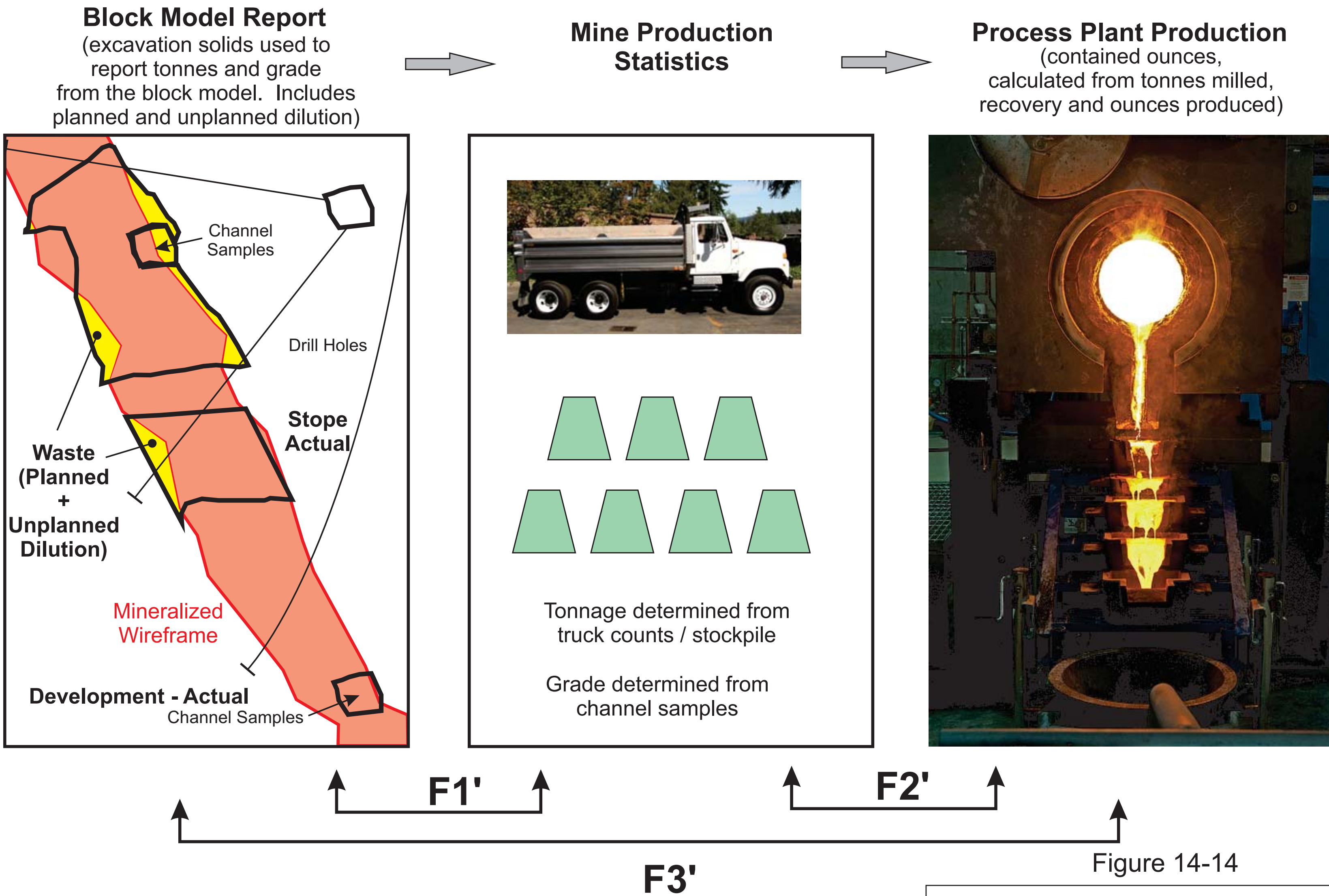


Figure 14-14

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Block Model Reconciliation Workflow

May 2016

Source: RPA, 2016.

TABLE 14-12 BLOCK MODEL MONTHLY PRODUCTION, 2015
Jaguar Mining Inc. – Turmalina Mine

Month	Model Tonnes	Model Grade (Diluted, Recovered)	Model Oz (Diluted, Recovered)
January	33,746	4.12	4,467
February	21,361	2.91	2,001
March	16,746	5.60	3,014
April	21,129	4.92	3,340
May	21,039	6.13	4,144
June	18,114	4.80	2,796
July	28,369	9.69	8,842
August	19,390	5.38	3,355
September	36,655	7.99	9,419
October	34,111	4.37	4,791
November	31,706	5.34	5,442
December	24,444	6.11	4,805
Total, 2015	**306,811**	**5.72**	**56,416**

TABLE 14-13 MINE MONTHLY PRODUCTION, 2015
Jaguar Mining Inc. – Turmalina Mine

Month	Tonnes Mined	Mine Head Grade	Oz Mined
January	40,637	3.71	4,848
February	34,971	3.84	4,318
March	34,345	4.96	5,478
April	27,262	3.9	3,419
May	35,105	4.35	4,910
June	31,457	4.63	4,683
July	29,039	6.12	5,714
August	36,129	4.07	4,728
September	37,308	5.97	7,162
October	42,067	4.43	5,992
November	37,033	4.88	5,811
December	34,806	4.82	5,394
Total, 2015	**420,159**	**4.62**	**62,457**

TABLE 14-14 PLANT MONTHLY PRODUCTION, 2015
Jaguar Mining Inc. – Turmalina Mine

Month	Tonnes Milled	Mill Feed Grade	Mill Feed Oz	Plant Recovery	Oz Produced	Oz Recov. calc
January	40,246	3.33	4,309	90.4	3,598	3,896
February	35,897	3.44	3,971	90.3	3,731	3,585
March	34,573	4.04	4,491	90.4	4,467	4,060
April	26,269	3.87	3,269	90.6	2,798	2,962
May	36,515	3.77	4,426	87.3	3,813	3,864
June	31,685	4.11	4,187	91.8	3,809	3,844
July	28,769	6.21	5,745	91.9	4,912	5,279
August	35,166	3.71	4,195	90.5	4,127	3,797
September	37,480	4.66	5,616	92.2	4,955	5,178
October	42,783	4.25	5,847	90.3	5,554	5,279
November	37,526	4.78	5,768	90.9	5,450	5,243
December	19,508	5.98	3,751	93.4	3,445	3,503
Total, 2015	**406,417**	**4.25**	**55,574**	**91.2**	**50,659**	**50,490**

The monthly tonnage and grade figures derived from the block model utilized the as-mined excavation solids models for the development and stopes completed in 2015 to constrain the reports. The mined out volumes were created using data collected using Cavity Monitoring Survey (CMS) and/or total station survey equipment. This approach will result in inclusion of all waste tonnes (both planned and unplanned dilution) along with the recovered ore tonnes. The data then represent the fully diluted, recovered tonnes and grade.

Jaguar's operating procedures use truck counts to derive the monthly mine production tonnes, while the average grade is derived from the in-situ channel sample grades and application of a dilution factor. The plant production statistics in the monthly reports record the tonnes milled, the average processed grade, the average plant recovery and the amount of gold produced. For the purposes of this reconciliation exercise, the contained ounces in the feed tonnes were calculated and these were used in turn to calculate an average feed grade.

Monthly F1', F2', and F3' reconciliation results are presented in Figures 14-15, 14-16, and 14-17, respectively.

FIGURE 14-15 2015 MONTHLY COMPARISON, F1'

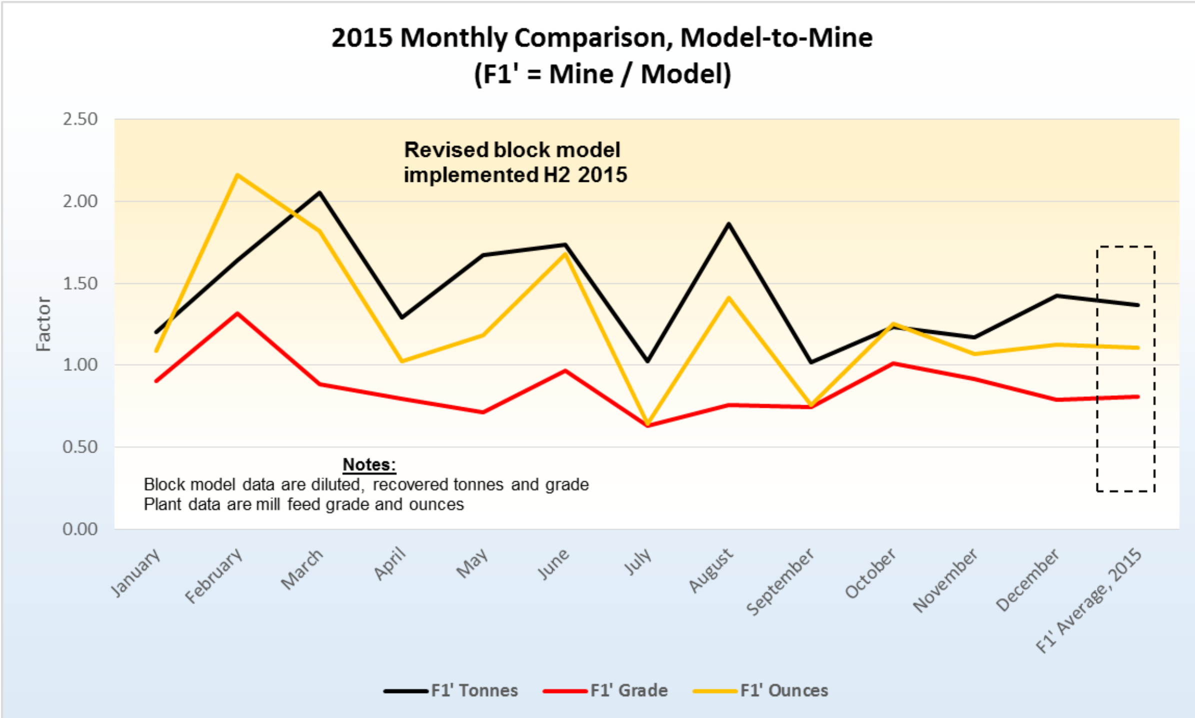


FIGURE 14-16 2015 MONTHLY COMPARISON, F2'

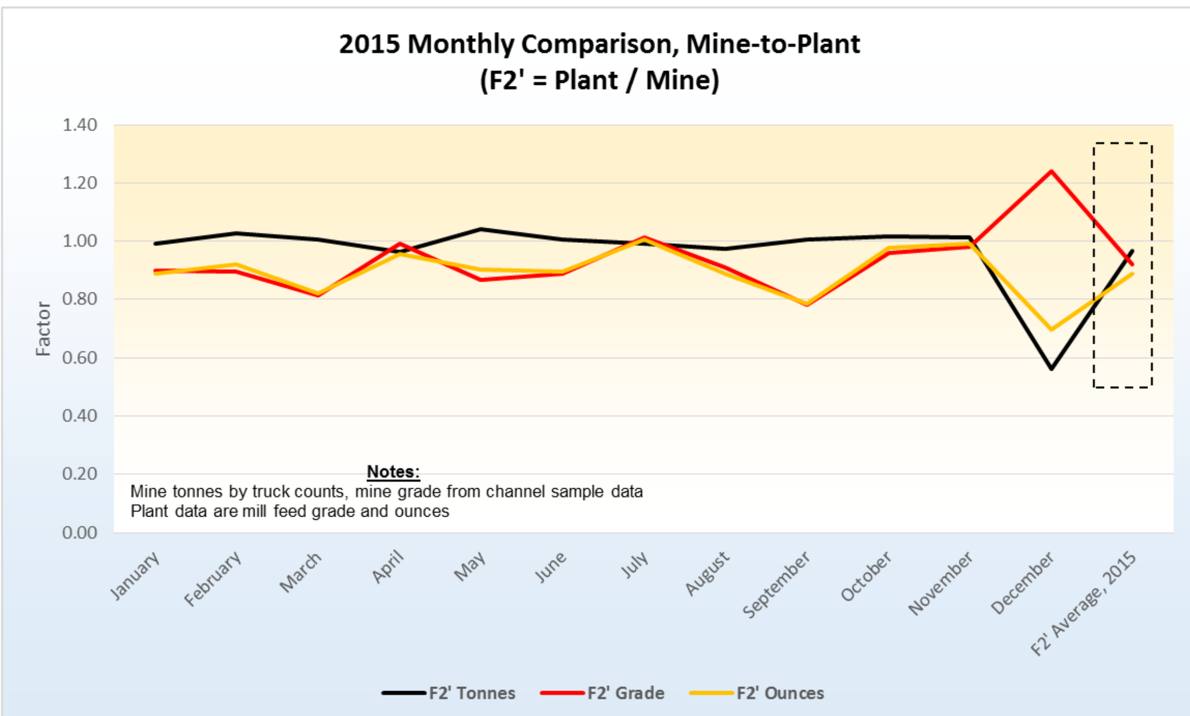
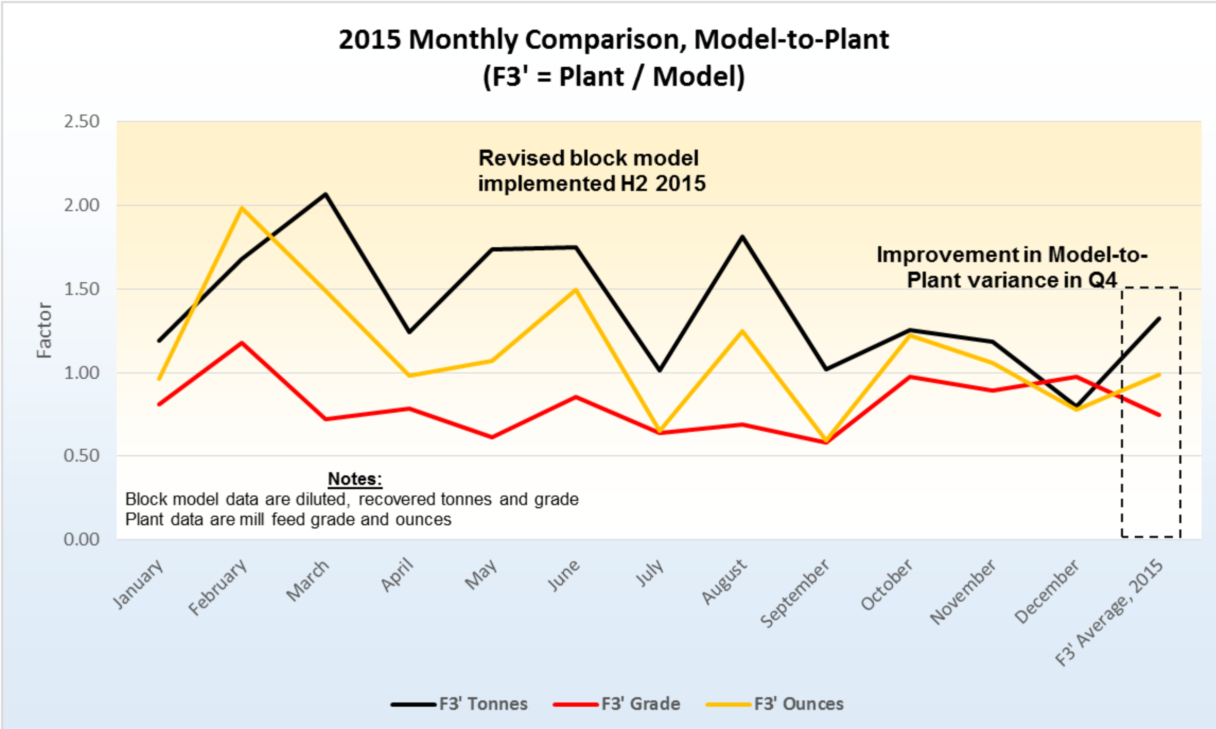


FIGURE 14-17   2015 MONTHLY COMPARISON, F3'



The monthly F1' results (Model-to-Mine) show a wide variance in the tonnage data throughout much of the year, with a reduction in the variance occurring in the last quarter. The grade data show a low degree of variance for most of the year with the block model grades generally being lower than the mine production grades.

The monthly F2' results (Mine-to-Plant) show a very good correlation between the mine and the plant data throughout most of the year. The variance in the December tonnage data is related to repairs that were made to the plant grinding circuit in that month.

The monthly F3' results (Model-to-Plant) show a similar behaviour in the tonnage and grade variances as were observed in the F1' reconciliation results.

In RPA's opinion, the observed variance in the monthly tonnage data can be ascribed to two factors. Firstly, given the relatively small volumes that are involved and the slight time delays that are inherent in the mining process, in some cases the mined volumes from a given stope may be ascribed to a different monthly period between the planning and production departments. Secondly, it must be noted that the 2015 block model was not implemented until the second half of the period. Therefore analysis of the block model performance for the

January to June period is not appropriate. Similarly, conclusions drawn from analysis of the annual block model performance must be regarded with caution.

In order to address the short-term time delays of the extraction process, RPA examined the reconciliation results on a quarterly basis. Quarterly F1', F2', and F3' reconciliation results are presented in Figures 14-18, 14-19, and 14-20, respectively.

FIGURE 14-18 2015 QUARTERLY COMPARISON, F1'

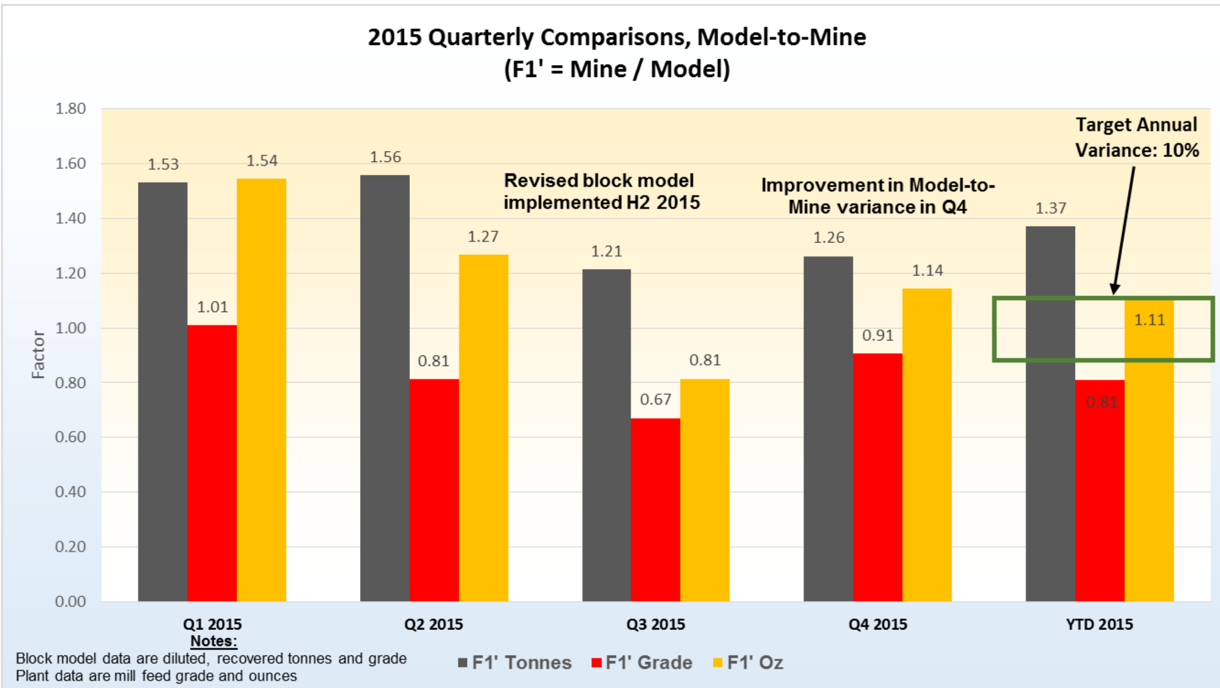


FIGURE 14-19 2015 QUARTERLY COMPARISON, F2'

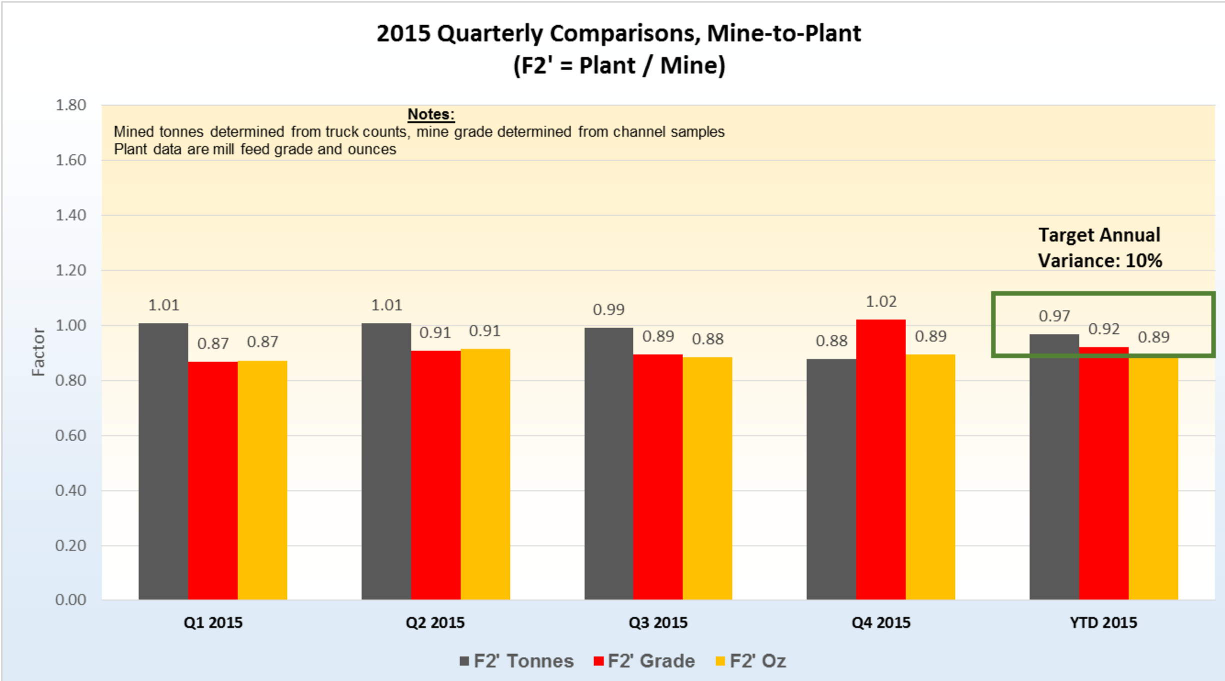
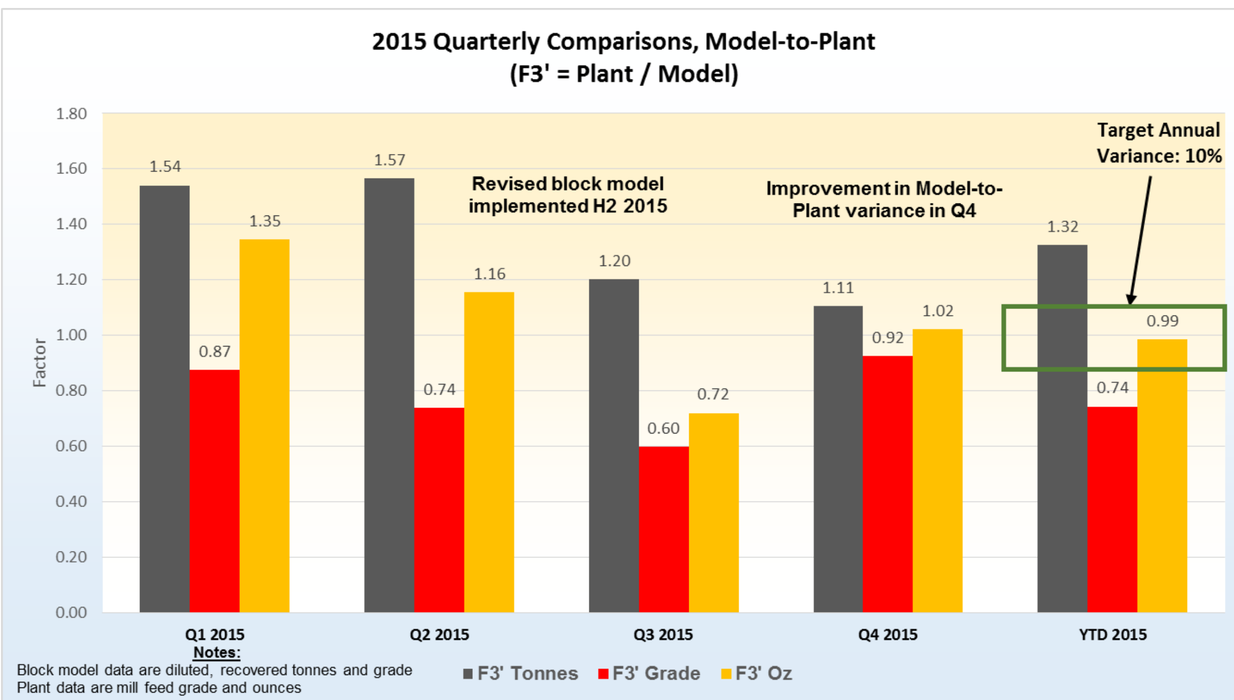


FIGURE 14-20 2015 QUARTERLY COMPARISON, F3'



The quarterly F1' results (Model-to-Mine) show a wide variance in the tonnage data for the first three quarters of the year, with a reduction in the variance occurring in the last quarter.

The grade data show an increasing variance for the first three quarters with the block model grades generally being lower than the mine production grades. Improvement is noted in the fourth quarter.

The quarterly F2' results (Mine-to-Plant) show a very good correlation between the mine and the plant data throughout the year.

The quarterly F3' results (Model-to-Plant) show a similar behaviour in the tonnage and grade variances as were observed in the F1' reconciliation results. Improvement is noted in the fourth quarter with the tonnage, grade and gold contents all being within or close to a variance of 10%.

As discussed with the monthly reconciliation results above, RPA believes that it is important to note that the revised block model was not implemented until the second half of the year, consequently conclusions drawn from the data of the first two quarters and from the annual data must be regarded with caution. The improvement noted in the data for the fourth quarter is encouraging. RPA recommends that the block model performance continue to be monitored through to at least the second half of 2016.

RPA also recommends that a slight revision be made to the workflow used for the reconciliation analysis. The current workflow of using the as-mined volumes to prepare the tonnage and grade reports from the block model does not permit a comparison of the planned tonnage and grades as stated in the mine production schedule to the actual mined tonnes and grade. Consequently, no measures of the unplanned dilution are possible.

RPA recommends that Jaguar adopt the proposed work flow shown in Figure 14-21. In this revised work flow, the block model tonnes and grade are derived using the planned excavation shapes (drifts and stopes) while the mined tonnes be determined using the actual excavated volumes. Determination of the diluted, recovered mined grade can be accomplished by creation of a local block model that incorporates all available channel sample and drill hole information. At present, Jaguar conducts a reconciliation exercise on an annual basis. RPA recommends that reconciliation activities be carried out at least on a quarterly basis or more frequently as required.

In addition, RPA recommends that Jaguar consider a program of sampling the muck from the stope draw points as an additional method of determining the as-mined stope grades.

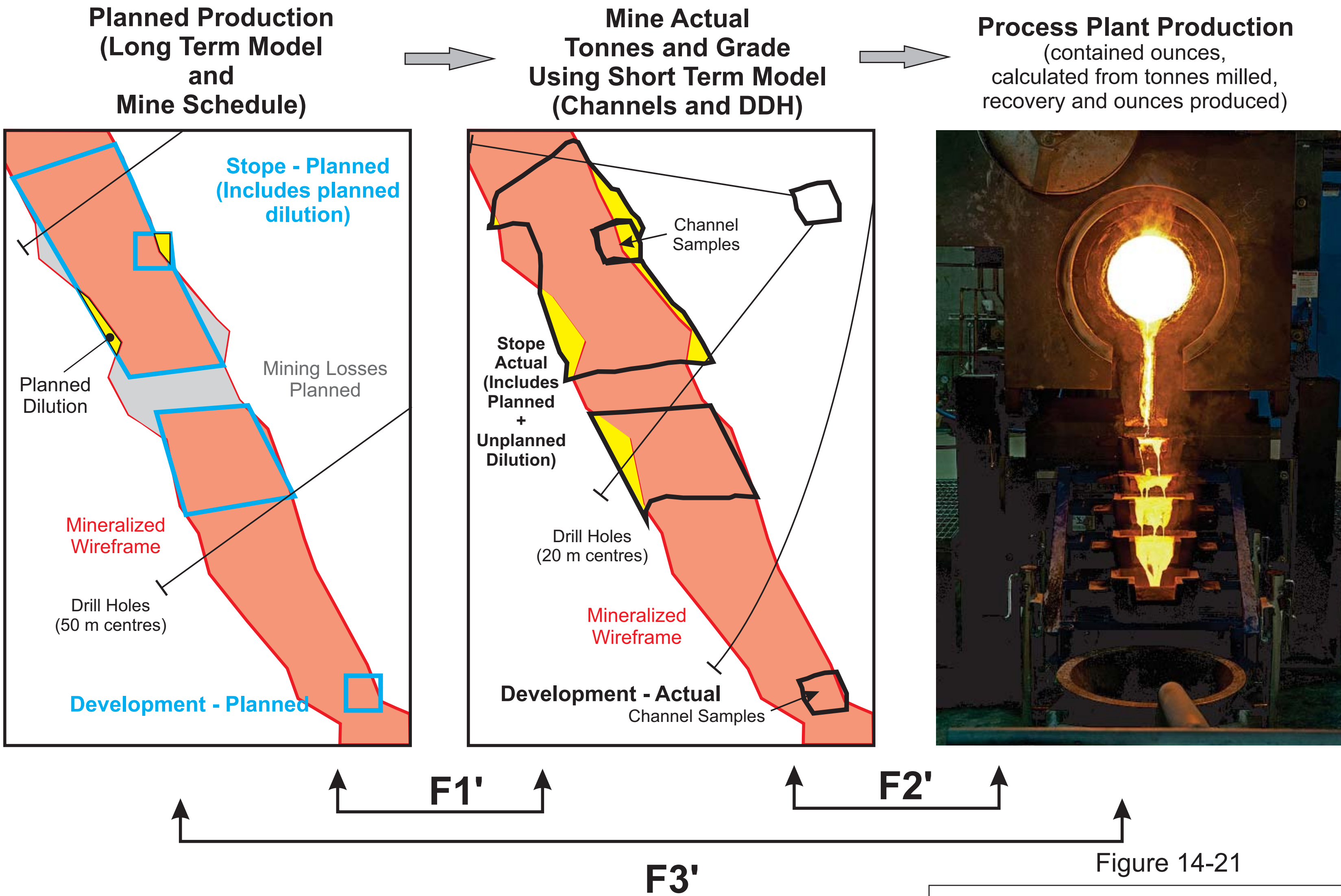


Figure 14-21

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Proposed Revised Reconciliation Workflow

May 2016

Source: RPA, 2016.

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MINERAL RESOURCE CLASSIFICATION CRITERIA

The Mineral Resources in this report were estimated in accordance with the definitions contained in CIM (2014).

The mineralized material for each wireframe was classified into the Measured, Indicated, or Inferred Mineral Resource category on the basis of the search ellipse ranges obtained from the variography study, the demonstrated continuity of the gold mineralization, the density of drill hole and chip sample information, and the presence of underground access.

On the basis of these criteria, Measured Mineral Resources comprise that material that has been estimated using Pass #1 that is located between developed levels. Indicated Mineral Resources comprise that material that has been estimated using Pass #2, and Inferred Mineral Resources comprise that material that has been estimated using Pass #3. Clipping polygons were used in a final stage of the classification process to ensure continuity and consistency of the classified blocks in the model.

RESPONSIBILITY FOR ESTIMATION

The estimate of the Mineral Resources for the Turmalina Mine presented in this report was prepared by Mr. Helbert Taylor Vieira, Senior Geologist with Jaguar under the supervision of Mr. Jean-Marc Lopez, Director – Mine Geology with Jaguar and Mr. Reno Pressacco, M.Sc.(A), P.Geo., with RPA. Mr. Pressacco is a Qualified Person as defined in NI 43-101, is independent of Jaguar, and takes responsibility for this Mineral Resource estimate.

CUT-OFF GRADE

A cut-off grade of 2.11 g/t Au is used for reporting of Mineral Resources. This cut-off grade was arrived at using a gold price of US$1,400/oz, average gold recovery of 90%, and 2015 actual cost data for the Turmalina Mine. Gold prices used for reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources. For resources, gold prices used are slightly higher than those for reserves.

For the 2015 Mineral Resource estimate, Jaguar has used a cut-off grade of 0.50 g/t Au to prepare the interpreted mineralized outlines, which is far below the economic cut-off grade. RPA recommends that Jaguar use the stope incremental cut-off grade in future updates of the

Mineral Resource estimate to better reflect the grades of the material that may be mined and processed.

MINERAL RESOURCE ESTIMATE

The Mineral Resources are inclusive of Mineral Reserves. For those portions of the Mineral Resources that comprise the Mineral Reserve, the stope design wireframes were used to constrain the Mineral Resource reports.

Additional Mineral Resources are present that reside beyond the Mineral Reserves. For these areas, clipping polygons were prepared to aid in the estimation of the Mineral Resources. The clipping polygons were prepared in either plan or longitudinal views, as appropriate. The clipping polygons were drawn to include continuous volumes of blocks whose estimated grades were above the stated cut-off grade, and were not located in mined out areas. The clipping polygons were used to appropriately code the block model and report the Mineral Resources.

At a cut-off grade of 2.11 g/t Au, the Mineral Resources at the Turmalina Mine comprise 2.07 million tonnes at an average grade of 4.84 g/t Au containing 322,000 ounces of gold in the Measured and Indicated Resource category and 1.4 million tonnes at an average grade of 5.34 g/t Au containing 238,000 ounces of gold in the Inferred Mineral Resource category. The Mineral Resources are presented in further detail in Table 14-15 and are shown in Figure 14-22.

TABLE 14-15 SUMMARY OF MINERAL RESOURCES AS OF DECEMBER 31, 2015 – TURMALINA MINE
Jaguar Mining Inc. – Turmalina Mine

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Orebody A:			
Measured	478	6.75	104
Indicated	378	7.33	89
Sub-total M&I	**855**	**7.01**	**193**
Inferred	564	6.5	118
Orebody B:			
Measured	352	3.38	38
Indicated	158	3.95	20
Sub-total M&I	**511**	**3.56**	**58**
Inferred	46	5.45	8
Orebody C:			
Measured	82	2.88	8
Indicated	621	3.17	63
Sub-total M&I	**702**	**3.14**	**71**
Inferred	775	4.51	112
Total Turmalina Mine:			
Total, Measured	912	5.12	150
Total, Indicated	1,157	4.62	172
Total Measured & Indicated	**2,068**	**4.84**	**322**
Total, Inferred	1,385	5.34	238

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 2.11 g/t Au.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
4. Mineral Resources are estimated using an average long-term foreign exchange rate of 2.5 Brazilian Reais: 1 US Dollar.
5. A minimum mining width of approximately 2 m was used.
6. Bulk density is 2.76 t/m^3 for Orebodies A and B and 2.95 t/m^3 for Orebody C.
7. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples.
8. Mineral Resources are inclusive of Mineral Reserves.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other factors that could materially affect the Mineral Resource estimates.

It is RPA's opinion that the Turmalina Mineral Resource estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014).

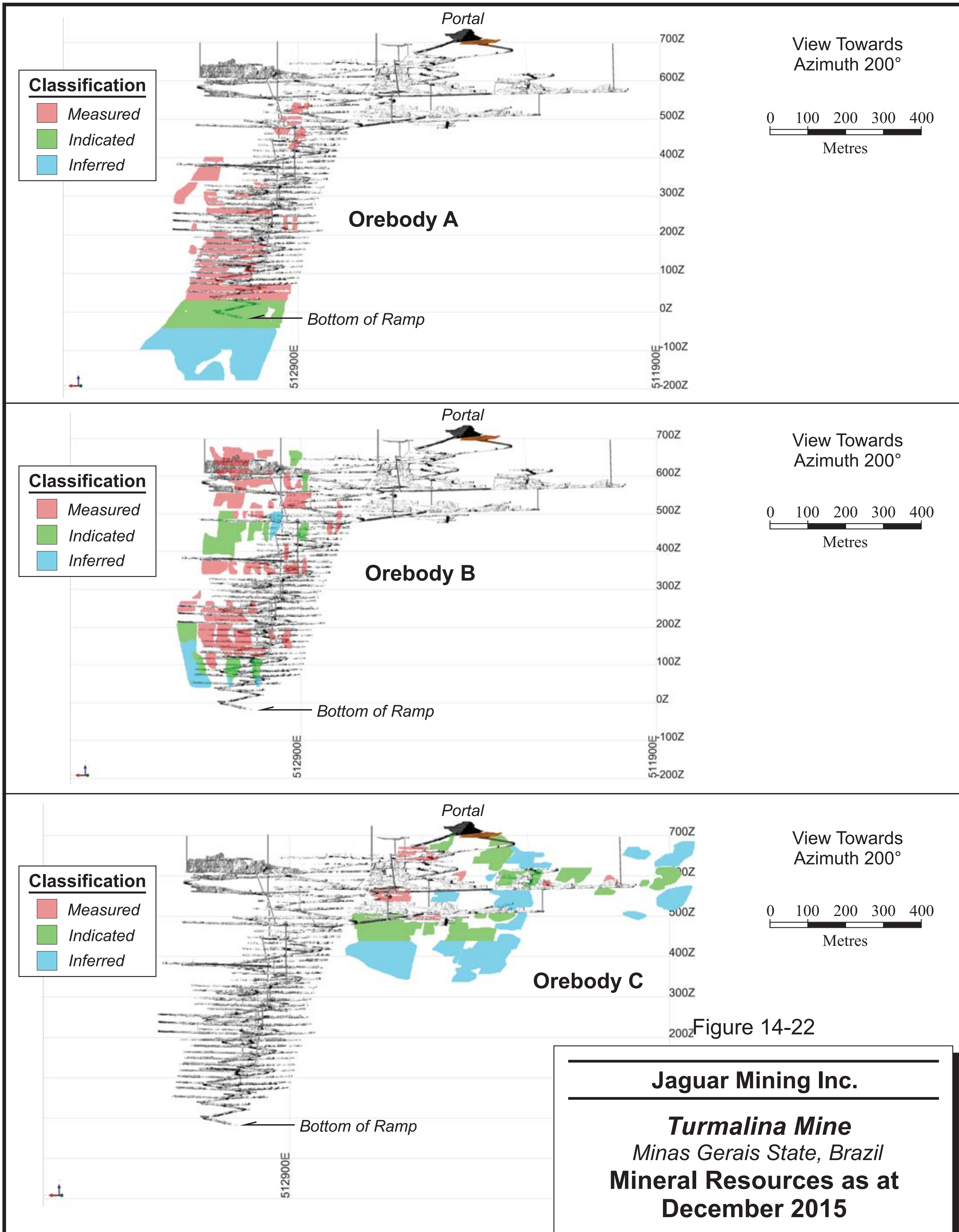

Figure 14-22

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Mineral Resources as at December 2015

May 2016

Source: RPA, 2016.

FAINA DEPOSIT

An updated Mineral Resource estimate for the Faina deposit was prepared in early 2015. A detailed description of the data and procedures to prepare the Mineral Resource estimate has been presented in Cox and Pressacco (2015). A summary of the salient items relating to that Mineral Resource estimate is presented below.

DATABASE

The drill hole database for the Faina deposit includes surface and underground drill holes along with surface trench and underground channel samples taken from the open pit and underground excavations, respectively. The drill hole and trench/channel sample data includes both historical-based samples collected by Mineração Morro Velho (MMV), a prior owner of the property, along with more recently completed drill holes and samples collected by Jaguar. In total, 3,992 DDH, chip, and trench samples were included in the drill hole database, along with a total of 47,667 assay records.

MINERALIZATION WIREFRAMES

The interpreted three-dimensional wireframe models of the gold mineralization have been created using the assay values from surface and underground drill holes, channel sample data as available, and the detailed geological mapping information contained on the historical plan maps of the underground excavations. Wireframe models of the gold distribution were created using the LeapFrog Geo version 2.0.2 software package. The wireframe limits were drawn using a cut-off grade of 0.50 g/t Au and a nominal minimum width of 2.0 m.

A total of 39 individual wireframe models were created along a strike length of approximately 750 m and to a vertical depth of approximately 500 m from surface. In general, the wireframe models display a general northwest strike and plunge to the northeast at approximately 40°.

Wireframe surfaces were also created for oxidized and transitional weathering volumes using all available drill hole, channel, and trench sample information.

TOPOGRAPHY AND EXCAVATION MODELS

Two topography surfaces have been created that provide coverage over the area of the Faina deposit. The first surface represents the limit of open pit excavation, and was used to properly code the block model with the mined out volume. The second surface represents the current topography surface and accounts for the volume in the southeast portion of the mined out pit that was filled in with back fill material. The depth of the back filled area is estimated at approximately 20 m.

A solid model of the underground excavation volume was created using existing centre-line survey data and a general arched cross section profile of 3 m x 3 m.

SAMPLE STATISTICS, GRADE CAPPING, AND COMPOSITES

The mineralization wireframe models were used to code the drill hole database and identify the resource-related samples. These samples were extracted from the database into their respective domains, and then subjected to statistical analyses by means of histograms, probability plots, capping curves, and decile analyses. A total of 12,419 samples were contained within the mineralized wireframes.

On the basis of its review of the assay statistics, RPA believes that a capping value of 30 g/t Au for channel samples and 25 g/t Au for drill hole samples is appropriate for each of the three domains.

The selection of an appropriate composite length began with examination of the descriptive statistics of the raw assay samples and preparation of frequency histograms. Consideration was also given to the size of the blocks in the model. On the basis of the available information, RPA believes that a composite length of one metre for all samples is reasonable. All samples contained within the mineralized wireframes were composited to a nominal one metre length using the best-fit function of the MineSight software package.

VARIOGRAPHY

Jaguar carried out an analysis of the spatial continuity by constructing separate omnidirectional variograms using the capped, composited sample data for each of the three domains, with the objective of determining an appropriate value for the global nugget (C0) using the MineSight software package. The analysis proceeded with the evaluation of any anisotropies that may be present in the data which resulted in successful variograms with reasonably good model fits for the down-plunge direction. Due to the spatial complexities inherent in the mineralized wireframe models, poor model fits were obtained for the along-strike and across-dip directions. A summary of the variography and interpolation parameters is presented in Table 14-16.

TABLE 14-16 SUMMARY OF VARIOGRAPHY AND INTERPOLATION PARAMETERS
Jaguar Mining Inc. – Faina Deposit

Item	NW Domain	Central Domain	SE Domain
Nugget (C0)	5.0	6.0	4.0
Sill, Major Axis (C1)	5.45 (40 m)	4.28 (30 m)	6.62 (65 m)
Model Type	Spherical	Spherical	Spherical
Orientation*	070/-50/15	60/-55/-45 & 60/-55/60	60/-50/-25
Anisotropy Ratio (Major/Semi-Major)	2.67	1.88	1.91
Anisotropy Ratio (Major/Minor)	6.67	6.0	3.61
Minimum Number of Samples	3	3	3
Maximum Number of Samples	8	8	8
Maximum Number of Samples per Hole	2	2	2
Maximum Number of Samples per Quadrant	2	2	2

BLOCK MODEL CONSTRUCTION

The block model was constructed using the MineSight version 7.60 software package and comprised an array of 2 m x 2 m x 2 m sized blocks using a partial percentage attribute. The model is oriented parallel to the coordinate grid system (i.e., no rotation or tilt). The selection of the block size for this model was based upon the block size employed at the mine.

Gold grades were estimated into the blocks by means of ID^2, ID^3, OK, and NN interpolation algorithms. A total of four interpolation passes were carried out using distances derived from the variography results and the search ellipse parameters presented above. Pass #1 used search ellipses that were one-half of the variogram ranges, Pass #2 used search ellipses with the variogram ranges as defined, Pass #3 used twice the variogram ranges, and Pass #4 used four times the variogram ranges. A single search ellipse orientation was used for the NW Domain and SE Domain, however, two search ellipse orientations were used for the Central Domain due to the complex spatial geometry in this area. The number of samples per quadrant was relaxed from two to one for passes #3 and #4, and the maximum number of composites per hole were relaxed from two to one for pass #4.

In general, “hard” domain boundaries were used along the contacts of each of the 39 individual mineralized domain models. Only data contained within the respective individual wireframe model were allowed to be used to estimate the grades of the blocks within the wireframe in question, and only those blocks within the wireframe limits were allowed to receive grade estimates.

CUT-OFF GRADE

The conceptual operational scenarios considered during preparation of previous Mineral Resource estimates envisioned that the fresh, unoxidized mineralization from the Faina deposit would be excavated on a satellite deposit basis and transported by truck to the existing Turmalina plant for processing. Preliminary metallurgical tests have been completed on samples of fresh, unoxidized mineralization from the Faina deposit from that conceptual perspective. They have yielded unacceptably low recoveries when the material is considered as potential feed to the existing Turmalina plant, and have concluded that the mineralization at the Faina deposit is refractory. While the arsenical nature of the mineralization at Faina is suspected to play a role in the poor recoveries, RPA believes that the testwork completed to date has not definitively supported this conclusion.

An alternative conceptual operational scenario was developed for the current update of the Mineral Resources in which the mineralized material will be excavated by means of underground mining methods and transported to the Turmalina plant for processing. A gold-rich flotation concentrate is envisioned to be generated after appropriate upgrades have been made to the existing plant. The gold-rich flotation concentrate would then be shipped or sold to a domestic source for recovery of the gold.

Input parameters to the estimate of an appropriate reporting cut-off grade considered this revised conceptual operating scenario along with the potential mining methods that are suitable for the narrow widths, short strike-length lenses, and highly convoluted nature of the mineralized wireframes at the Faina deposit. Consideration was also given to the actual costs incurred at the Turmalina plant where appropriate.

A cut-off grade of 3.8 g/t Au is used for reporting of Mineral Resources. This cut-off grade was arrived at using a gold price of US$1,400/oz, average gold recovery of 85% to flotation concentrate, 2014 actual cost data for the Turmalina Mine, along with estimated transportation and treatment charges. The gold prices used for resources are based on consensus, long term forecasts from banks, financial institutions, and other sources.

MINERAL RESOURCE ESTIMATE

At the Faina deposit, the Mineral Resources are dominated by fresh, unoxidized material, but also contain a small proportion of oxide- and transition-hosted weathered material.

At a cut-off grade of 3.8 g/t Au, the Mineral Resources at the Faina deposit total 261,000 tonnes at an average grade of 6.87 g/t Au containing 57,500 ounces of gold in the Measured and Indicated Resource category and 1,542,000 tonnes at an average grade of 7.3 g/t Au containing 360,200 ounces of gold in the Inferred Mineral Resource category (Table 14-17).

No Mineral Reserves are present at the Faina deposit.

TABLE 14-17 SUMMARY OF MINERAL RESOURCES AS OF DECEMBER 31, 2014 – FAINA DEPOSIT
Jaguar Mining Inc. – Faina Deposit

Category	Tonnes (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
		Oxide	
Measured	11	6.81	2
Indicated	7	6.48	2
Sub-total M&I	**18**	**6.68**	**4**
Inferred	3	5.65	1
		Transition	
Measured	5	6.65	1
Indicated	3	6.20	1
Sub-total M&I	**8**	**6.48**	**2**
Inferred	2	6.30	0
		Fresh	
Measured	56	7.51	14
Indicated	179	6.85	39
Sub-total M&I	**235**	**6.88**	**52**
Inferred	1,537	7.27	359
		Total: Oxidized, Transition and Fresh	
Measured	72	7.39	17
Indicated	189	6.66	42
Sub-total M&I	**261**	**6.87**	**58**
Inferred	1,542	7.26	360

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 3.8 g/t Au.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
4. Mineral Resources are estimated using an average long-term foreign exchange rate of 2.5 Brazilian Reais: 1 US Dollar.
5. A minimum mining width of approximately 2 m was used.
6. Bulk density is 1.70 t/m^3 for oxidized material, 2.25 t/m^3 for transition, and 2.85 t/m^3 for fresh, un-weathered material.
7. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples.
8. No Mineral Reserves exist for the Faina deposit.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

PONTAL DEPOSIT

An updated Mineral Resource estimate for the Pontal deposit was prepared in early 2015. A detailed description of the data and procedures to prepare the Mineral Resource estimate has been presented in Cox and Pressacco (2015). A summary of the salient items relating to that Mineral Resource estimate is presented below.

DATABASE

The drill hole database for the Pontal deposit includes surface and underground drill holes along with surface trench samples and underground channel samples. The drill hole and trench/channel sample data includes both historical-based samples collected by MMV, a prior owner of the property, along with more recently collected samples taken by Jaguar. In total, 3,590 DDH, chip, and trench samples were included in the drill hole database, along with a total of 17,043 assay records.

MINERALIZATION WIREFRAMES

The interpreted three-dimensional wireframe models of the gold mineralization have been created using the assay values from surface and underground drill holes, trench and channel sample data as available, and the detailed geological mapping information contained on the historical plan maps of the underground excavations. The gold values are hosted in two principal deposits known as LB1 and LB2.

Wireframe models of the gold distribution were updated using the MineSight v.7.60 software packages. The wireframe limits were drawn using a cut-off grade of 0.50 g/t Au and a nominal minimum width of 2.0 m. The wireframe models were clipped to the as-mined surface. A total of 16 individual wireframe models were created, including seven wireframes for the LB1 deposit and nine wireframes for the LB2 deposit.

In general, the LB1 wireframe models measure approximately 250 m x 250 m in plan view and continue downwards to a vertical depth of approximately 300 m from surface. The mineralization at the LB1 deposit has been traced by drilling along a dip of approximately -60° to the east.

The mineralization wireframes at the LB2 deposit display a general northwesterly strike of approximately 335° and have been traced by drill hole and trench sampling along a strike length of approximately 300 m. The wireframes generally dip at approximately -45° to the northeast and extend to a depth of approximately 100 m from surface.

Wireframe surfaces were also created for oxidized and transitional weathering volumes using all available drill hole, channel, and trench sample information.

TOPOGRAPHY AND EXCAVATION MODELS

Two topography surfaces were created that covered the local area of each of the two deposits using contour lines from available topography maps along with local spot heights derived from the locations of any drill hole or trench sample data.

An approximation of the underground excavations was created by digitizing the outlines in plan view from historical underground mapping and sampling programs carried out at the LB1 deposit. The digitized plan view strings were projected upwards by a constant distance of 2.5 m to create the solid model of the underground excavations. In total, two levels were excavated – the upper level was excavated at a toe elevation of approximately 609 m and the lower level was excavated at a toe elevation of approximately 603 m.

SAMPLE STATISTICS, GRADE CAPPING, AND COMPOSITES

The mineralization wireframe models were used to code the drill hole database and identify the resource-related samples. These samples were extracted from the database into their respective domains, and then subjected to statistical analyses by means of histograms, probability plots, capping curves, and decile analyses. A total of 6,569 samples were contained within the LB1 mineralized wireframes and a total of 1,308 samples were contained within the LB2 mineralized wireframes.

On the basis of its review of the assay statistics, RPA believes that a capping value of 30 g/t Au is appropriate for the LB1 wireframes and a capping value of 10 g/t Au is appropriate for the LB2 wireframes. The selection of an appropriate composite length began with examination of the descriptive statistics of the raw assay samples and preparation of frequency histograms. Consideration was also given to the size of the blocks in the model. On the basis of the available information, RPA believes that a composite length of one metre for all samples is reasonable. All samples contained within the mineralized wireframes were composited to a nominal one metre length using the best-fit function of the MineSight software package.

VARIOGRAPHY

Jaguar verified the analysis of the spatial continuity of the mineralization contained within the LB1 wireframe models as presented in Machado (2011) using the variography package contained in the SGeMS software package. Its work resulted in construction of a successful omnidirectional variogram using the capped, composited sample data. The analysis proceeded with the evaluation of any anisotropies that may be present in the data which resulted in a successful variogram with reasonably good model fits for the down-plunge direction.

Unfortunately, no successful model fits were possible for the LB2 deposit due to the lack of sufficient sample pairs.

A summary of the variography and interpolation parameters for the two deposits is presented in Table 14-18.

TABLE 14-18 SUMMARY OF VARIOGRAPHY AND INTERPOLATION PARAMETERS
Jaguar Mining Inc. – Pontal Deposit

Item	LB1 Deposit	LB2 Deposit
Nugget (C0)	3.0	3.0
Sill, Major Axis (C1)	2.9 (90 m)	2.9 (30 m)
Model Type	Spherical	Spherical
Orientation*	115/-60/-15	0/0/0
Anisotropy Ratio (Major/Semi-Major)	2.37	1.0
Anisotropy Ratio (Major/Minor)	9.0	3.0
Minimum Number of Samples	3	3
Maximum Number of Samples	8	8
Maximum Number of Samples per Hole	2	2
Maximum Number of Samples per Quadrant	2	2

BLOCK MODEL CONSTRUCTION

The block model was constructed using the MineSight version 7.60 software package and comprised an array of 2 m x 2 m x 2 m sized blocks using a partial percentage attribute. The selection of the block size for this model was based upon the block size employed at the mine.

Gold grades were estimated into the blocks by means of ID^2, ID^3, OK, and NN interpolation algorithms. A total of four interpolation passes were carried out using distances derived from the variography results and the search ellipse parameters presented above. Pass #1 used search ellipses that were one-half of the variogram ranges, Pass #2 used search ellipses with the variogram ranges as defined, Pass #3 used twice the variogram ranges, and Pass #4 used four times the variogram ranges. The number of samples per quadrant was relaxed from two to one for passes #3 and #4, and the maximum number of composites per hole were relaxed from two to one for pass #4.

In general, "hard" domain boundaries were used along the contacts of each of the 16 individual mineralized domain models. Only data contained within the respective individual wireframe model were allowed to be used to estimate the grades of the blocks within the wireframe in question, and only those blocks within the wireframe limits were allowed to receive grade estimates.

CUT-OFF GRADE

The conceptual operational scenarios considered during preparation of previous Mineral Resource estimates envisioned that the fresh, unoxidized mineralization from the Pontal deposit would be excavated on a satellite deposit basis and transported by truck to the existing Turmalina plant for processing. Preliminary metallurgical tests have been completed on samples of fresh, unoxidized mineralization from the Pontal deposit from that conceptual perspective. They have yielded unacceptably low recoveries when the material is considered as potential feed to the existing Turmalina plant, and have concluded that the mineralization at the Pontal deposit is refractory. While the arsenical nature of the mineralization at Pontal is suspected to play a role in the poor recoveries, RPA believes that the testwork completed to date has not definitively supported this conclusion.

An alternative conceptual operational scenario was developed for the current update of the Mineral Resources in which the mineralized material will be excavated by means of underground mining methods and transported to the Turmalina plant for processing. A gold-rich flotation concentrate is envisioned to be generated after appropriate upgrades have been made to the existing plant. The gold-rich flotation concentrate would then be shipped or sold to a domestic source for recovery of the gold.

Input parameters to the estimate of an appropriate reporting cut-off grade considered this revised conceptual operating scenario along with the potential mining methods that are suitable for the mineralized wireframes at the Pontal deposit. Consideration was also given to the actual costs incurred at the Turmalina plant where appropriate.

A cut-off grade of 2.9 g/t Au is used for reporting of Mineral Resources. This cut-off grade was arrived at using a gold price of US$1,400/oz, average gold recovery of 85% to flotation concentrate, 2014 actual cost data for the Turmalina Mine, along with estimated transportation and treatment charges. The gold prices used for resources are based on consensus, long term forecasts from banks, financial institutions, and other sources.

MINERAL RESOURCE ESTIMATE

The Mineral Resources are dominated by fresh, unoxidized material, but also contain a small proportion of oxide- and transition-hosted weathered material.

At a cut-off grade of 2.9 g/t Au, the Mineral Resources at the Pontal deposit total 410,000 tonnes at an average grade of 4.72 g/t Au containing 62,200 ounces of gold in the Measured and Indicated Resource category and 130,000 tonnes at an average grade of 5.0 g/t Au containing 21,000 ounces of gold in the Inferred Mineral Resource category (Table 14-19).

No Mineral Reserves are present at the Pontal deposit.

TABLE 14-19 SUMMARY OF MINERAL RESOURCES AS OF DECEMBER 31, 2014 - PONTAL DEPOSIT
Jaguar Mining Inc. – Pontal Deposit

Category	Tonnes (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
		Oxide	
Measured	30	4.13	4
Indicated	1	3.41	0
Sub-total M&I	**31**	**4.11**	**4**
Inferred	9	6.24	2
		Transition	
Measured	9	4.33	1
Indicated	2	3.34	0
Sub-total M&I	**11**	**4.17**	**1**
Inferred	2	7.28	1
		Fresh	
Measured	212	5.16	35
Indicated	157	4.29	22
Sub-total M&I	**369**	**4.79**	**57**
Inferred	119	4.89	19
		Total: Oxidized, Transition and Fresh	
Measured	251	5.00	40
Indicated	159	4.28	22
Sub-total M&I	**410**	**4.72**	**62**
Inferred	130	5.03	21

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 2.9 g/t Au.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
4. Mineral Resources are estimated using an average long-term foreign exchange rate of 2.5 Brazilian Reais: 1 US Dollar.
5. A minimum mining width of approximately 2 m was used.
6. Bulk density is 1.46 or 1.52 t/m^3 for oxidized material, 2.24 or 2.28 t/m^3 for transition, and 2.73 t/m^3 for fresh, un-weathered material.
7. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples.
8. No Mineral Reserves exist for the Pontal deposit.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

15 MINERAL RESERVE ESTIMATE

Mineral Reserves for Turmalina are based on the Mineral Resources as of December 31, 2015, mine designs, and external factors. Table 15-1 summarizes the Mineral Reserves.

TABLE 15-1 MINERAL RESERVE ESTIMATE – DECEMBER 31, 2015
Jaguar Mining Inc. – Turmalina Mine

Orebody	Classification	Tonnes (000)	Grade (g/t Au)	Contained Metal (000 oz Au)
A	Proven	387	5.70	71
A	Probable	440	5.92	84
C	Proven	73	2.51	6
C	Probable	180	4.13	24
Total	**Proven & Probable**	**1,080**	**5.31**	**185**

Notes:
1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves were estimated at a break-even cut-off grade of 2.57 g/t Au. Some stopes were included using an incremental cut-off grade of 1.38 g/t Au.
3. Mineral Reserves are estimated using an average long-term gold price of US$1,150 per ounce, and an exchange rate of US$1.00=BRL3.80.
4. A minimum mining width of 3 metres was used.
5. Bulk density is 2.7 t/m^3.
6. Numbers may not add due to rounding.

The reserves consist of selected portions of the Measured and Indicated Resources that are within designed stopes and associated development, designed by MCB. A breakdown by location is given in Table 15-2 and illustrated in Figure 15-1.

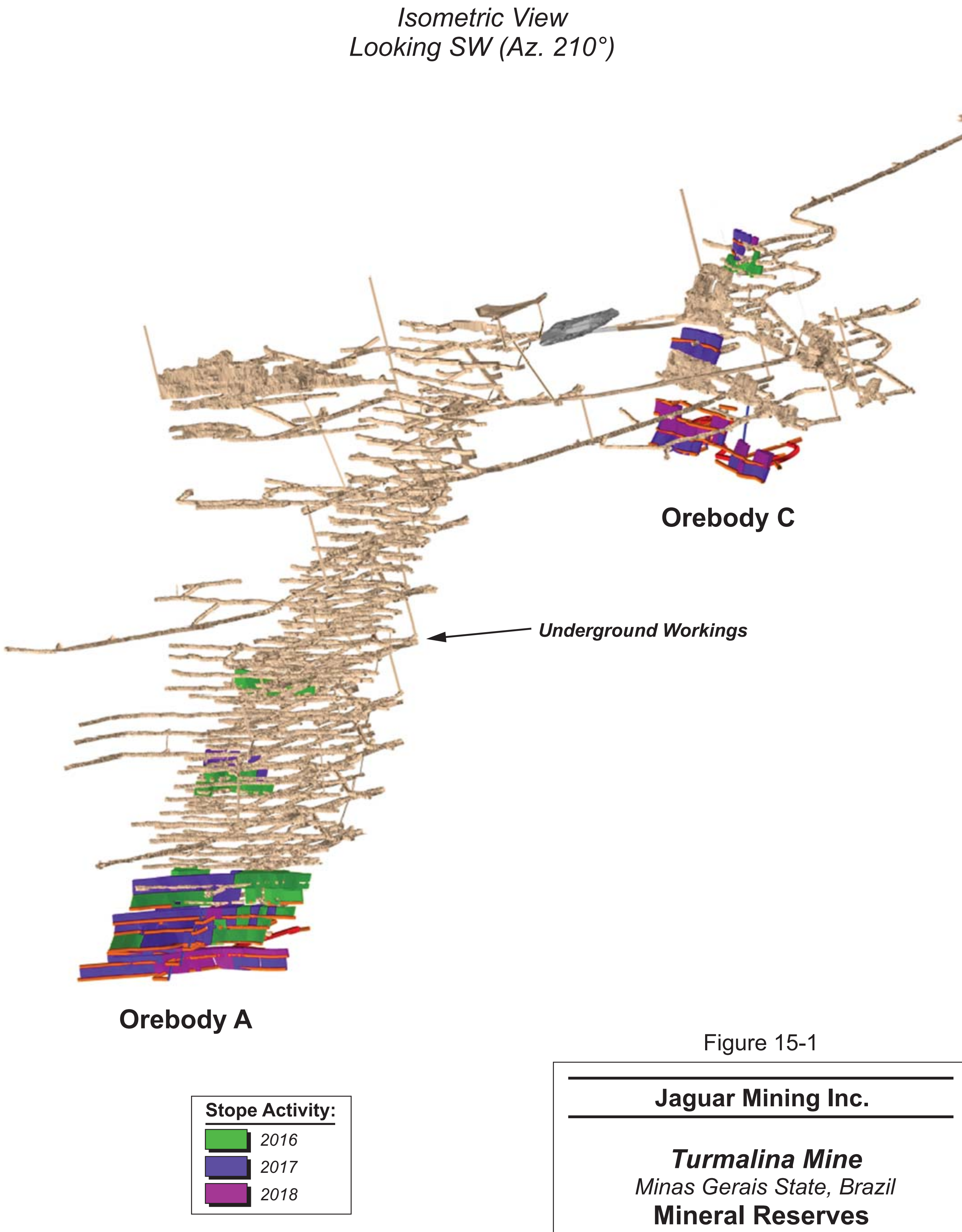

Figure 15-1

Jaguar Mining Inc.

Turmalina Mine
Minas Gerais State, Brazil
Mineral Reserves

May 2016

Source: RPA, 2016.

TABLE 15-2 MINERAL RESERVES BY LOCATION

Jaguar Mining Inc. – Turmalina Mine

Orebody	Area	Tonnes (000)	Grade (g/t Au)	Contained Metal (000 oz Au)
A	Level 6	45	3.50	5
	Level 7	65	3.93	8
	Level 8	84	7.30	20
	Level 9	468	6.23	94
	Level 10	165	5.28	28
C	Level 1	33	1.95	2
	Level 2	40	2.96	4
	Level 3	180	4.13	24
Total		**1,080**	**5.31**	**185**

DILUTION AND EXTRACTION

Dilution and extraction (mining recovery) have been included in the reserve estimate through the following:

- Areas within the stope designs below 2.57 g/t Au. The resource wireframes were constructed at a cut-off grade of 0.5 g/t Au, and therefore include material below the reserve cut-off grade for continuity.
- In Orebody A, planned dilution includes areas where the stope designs run outside of the resource wireframe, to achieve minimum width and due to irregularities in geometry. An allowance of 0.5 m on each of the hangingwall and footwall sides has been added. This allowance is built into the stope design.
- In Orebody C, ground conditions are good, and planned dilution due to geometry was deemed sufficient. Stope designs do not include the extra allowance of 0.5 m.
- In both A and C, unplanned dilution from over-break into the surrounding rock was based on an estimate of 15%.
- Extraction is assumed to be 100%. Although some losses are encountered during blasting and mucking, they are minimal, and reconciliation to mill results indicates that high dilution/high extraction assumptions match up well.

CUT-OFF GRADE

A break-even cut-off grade of 2.57 g/t Au was estimated for Mineral Reserves, using a gold price of US$1,150/oz, and average gold recovery of 90% and 2015 cost data for the Turmalina Mine. Gold prices used for reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources.

Cost data was stated in US dollars, using the exchange rate at the time (approximately 3.8 BRL to the US dollar). A majority of Turmalina costs are denominated in BRL, which means that the US dollar costs stated in this report are likely to be conservative estimates.

An incremental cut-off grade of 1.38 g/t Au was estimated using variable costs only. Some stopes with diluted grades between 1.38 g/t Au and 2.57 g/t Au were included in Mineral Reserves. These stopes comprise approximately 10% of the Mineral Reserves.

Although the cost data available from Turmalina is not easily categorized by Orebody, it is reasonable to assume lower costs in Orebody C, given better ground conditions and shorter haulage to surface.

The mill has excess production capacity, not otherwise put to use. Additional incremental ore will not displace better grade material. On this basis, RPA considers the inclusion of incremental material to be acceptable.

RPA recommends that Jaguar undertake a detailed incremental cost analysis, split by Orebody, to ensure that uneconomic material is not sent to the mill.

16 MINING METHODS

The Turmalina Mine consists of a number of tabular bodies known as Orebodies A, B, and C.

The main production of the mine has been from Orebody A, which is folded, steeply east dipping, with a strike length of approximately 250 m to 300 m and an average thickness of six metres (Figure 16-1). Mineralization has been outlined to depths of 900 m below surface. The southern portion of Orebody A is composed of two parallel narrow veins. The northern portion of Orebody A is much the same as the southern, however, the two parallel zones nearly or completely merge and therefore the zone is much wider overall (up to 10 m).

Orebody B includes three thinner, lower grade lenses parallel to Orebody A. Two of the lenses are located approximately 50 m to 75 m in the structural hangingwall and are accessed by a series of cross-cuts that are driven from Orebody A. The third lens is located possibly along the axial plane. The mineralization in this deposit has been outlined along a strike length of approximately 350 m to 400 m and to depths of 900 m below surface. Orebody B is narrow along its entire strike length.

Orebody C is a series of 14 lenses that are located to the west in the structural footwall of Orebody A and are generally of lower grade. They strike northwest and dip steeply to the northeast. A minor amount of production has been achieved from these lenses to date. The mineralization in this deposit has been outlined along a strike length of approximately 800 m to 850 m and to depths of 400 m to 450 m below surface (Figure 16-2).

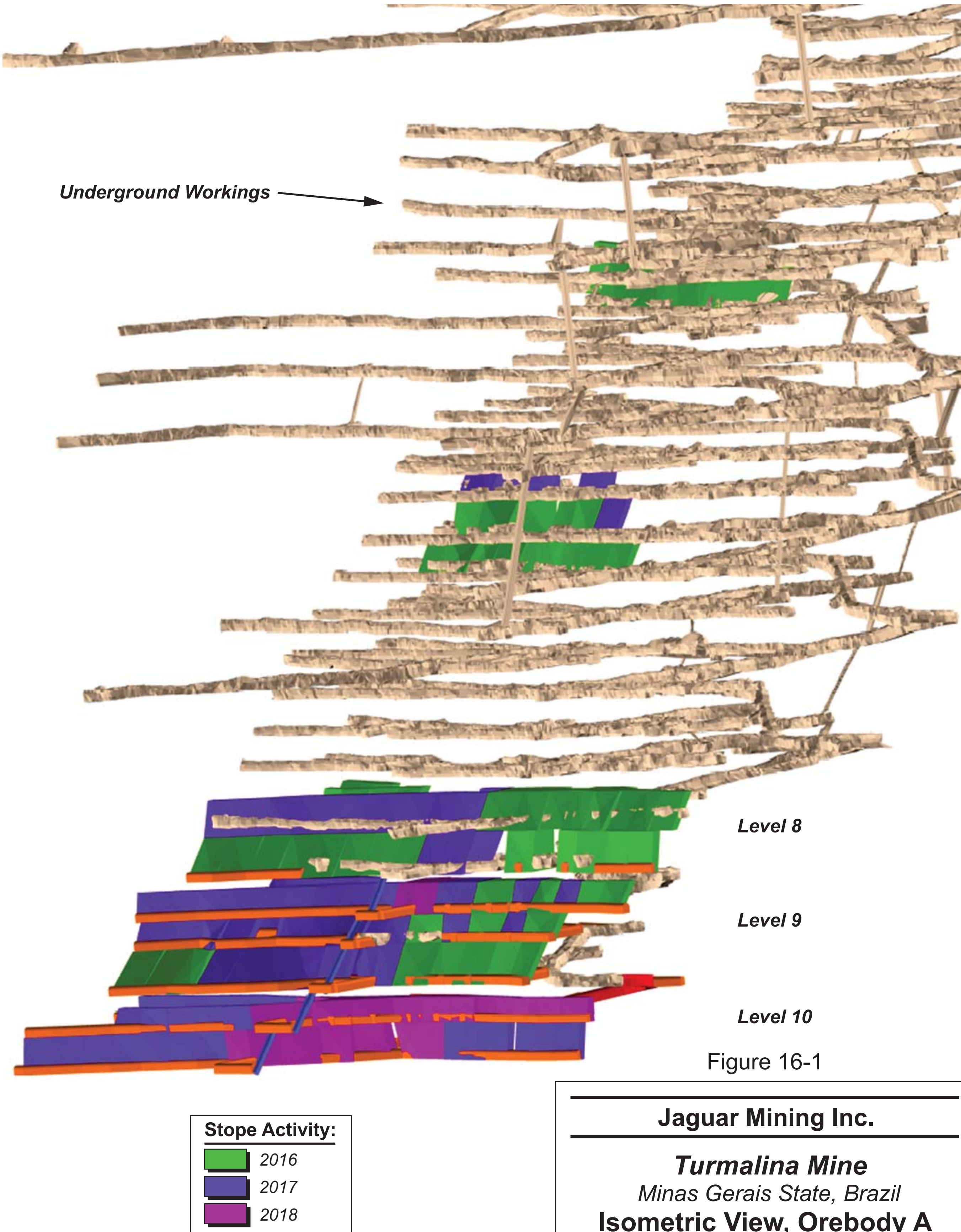

Figure 16-1

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Isometric View, Orebody A (Looking SW Az. 210°)

May 2016

Source: RPA, 2016.

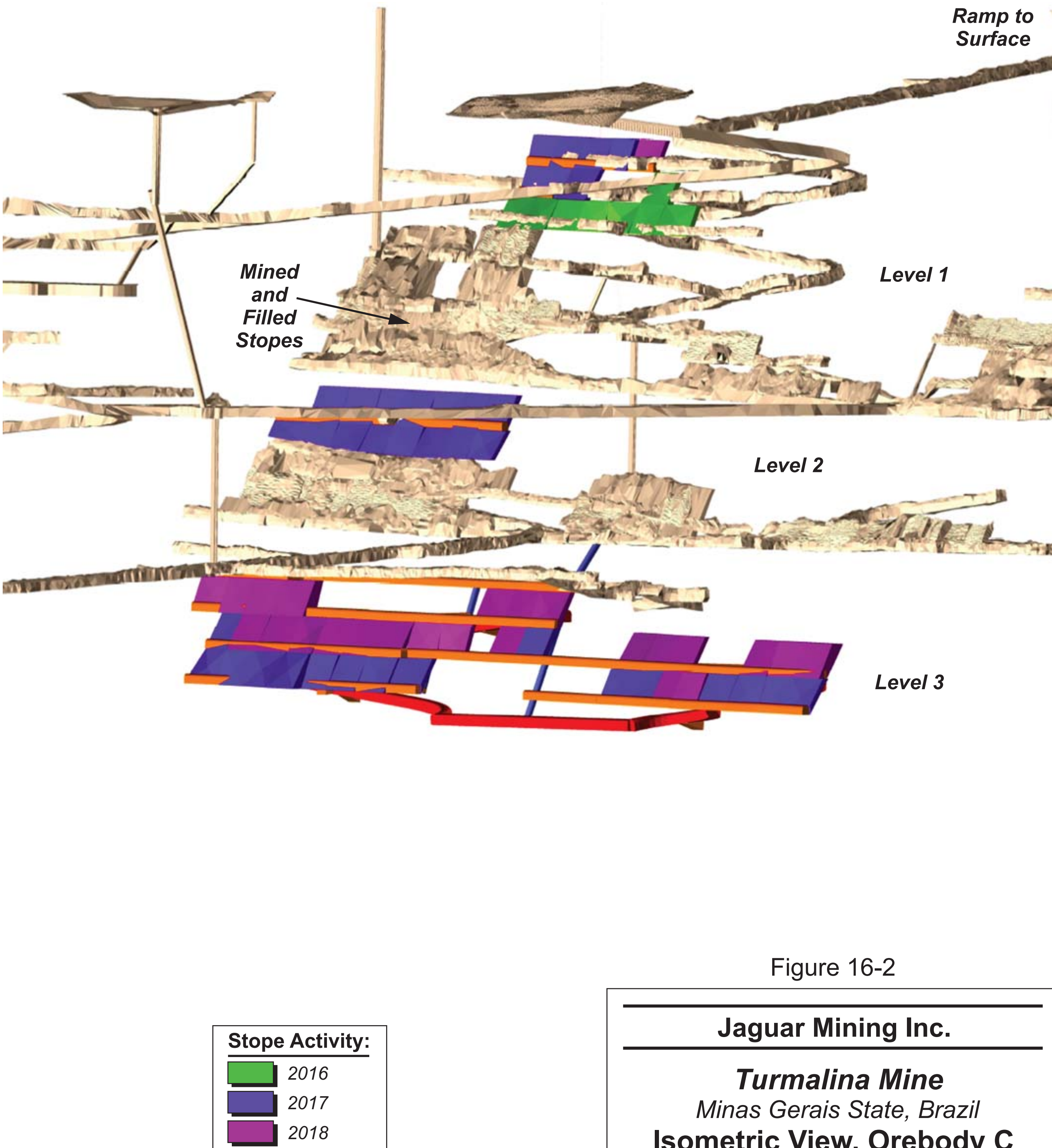

Figure 16-2

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Isometric View, Orebody C (Looking SW Az. 210°)

May 2016

Source: RPA, 2016.

MINING METHOD

The mining method currently in use is longhole sublevel stoping with delayed backfill.

The mine is accessed from a five metre by five metre primary decline located in the footwall of the deposit. The portal is located at elevation 695 m. The mine is divided into levels with Level 01 established at elevation 626 MASL (Table 16-1). Starting at this level, the vertical clearance between levels is 114 m in the upper portions of the mine (i.e., Level 02 is at elevation 512 m). Five sublevels, spaced 20 m apart vertically, are driven from the main ramp. A three metre thick sill pillar was left below each main level, except for Level 3.

Since the initial development phases, level spacing has been modified so that the mining method could more easily adapt to changing conditions and modifications to the mining method. The current level spacing is 75 m with five sublevels spaced 15 m apart vertically, driven from the main ramp. A five metre thick sill pillar is left below each main level.

At each level and sublevel, drifts are developed in the mineralized zone to expose the hangingwall contact. The drift is extended in both directions along strike, under geological control for alignment, continuing to expose the contacts until the limits of the orebody are reached.

Orebodies A and C are the primary structures being mined, while mining in Orebody B has recently been halted. Orebody A is located in the footwall of the shear zone and Orebody B in the hangingwall of the shear structure.

Orebody A is closest to the main ramp and is accessed first. Development is currently progressing to Level 10 in Orebody A.

Orebody C is a secondary system being mined to the west of the portal. It is of lower grade than Orebodies A or B. Orebody C is accessed from the main ramp at Level 02. A separate internal ramp was recently completed for Orebody C, which will reduce the haul distance to the run-of-mine ore stockpile, and reduce traffic on the main ramp.

TABLE 16-1 DISTRIBUTION OF LEVELS AND SUBLEVELS, OREBODIES A AND B
Jaguar Mining Inc. – Turmalina Mine

Level	Level/Sublevels	Elev. (m)	Height (m)
Level 1 29 m - 1 Sublevel of 15 m and 1 Sublevel of 14 m	AN1SN2	640	15
	AN1SN1	626	14
	Total		***29***
	SILL PILLAR (5m)	621	
Level 2 109 m	AN2SN6	606	15
	AN2SN5	586	20
	AN2SN4	566	20
	AN2SN3	546	20
	AN2SN2	526	20
	AN2SN1	513	13
	Total		***108***
	SILL PILLAR (5m)	508	
Level 3 95 m - 5 Sublevels of 15 m and 1 Sublevel of 20 m	AN3SN6	493	15
	AN3SN5	475	20
	AN3SN4	460	15
	AN3SN3	445	15
	AN3SN2	430	15
	AN3SN1	415	15
	Total		***95***
Level 4 75 m - 5 Sublevels of 15 m	AN4SN5	400	15
	AN4SN4	385	15
	AN4SN3	370	15
	AN4SN2	355	15
	AN4SN1	340	15
	Total		***75***
	SILL PILLAR (4m)	336	
Level 5 60 m - 1 Sublevel 5 m + 1 Sublevel 10 m + 3 Sublevels of 15 m	AN5SN5	331	5
	AN5SN4	321	10
	AN5SN3	306	15
	AN5SN2	291	15
	AN5SN1	276	15
	Total		***60***
	SILL PILLAR (5m)	271	
Level 6 65 m - 1 Sublevel 5 m + 3 Sublevels of 20 m	AN6SN4	266	5
	AN6SN3	246	20
	AN6SN2	226	20
	AN6SN1	206	20
	Total		***65***
	SILL PILLAR (5m)	201	
Level 7 72 m - 1 Sublevel 12 m + 4 Sublevels of 15 m	AN7SN4	189	12
	AN7SN3	174	15
	AN7SN2	159	15
	AN7SN1	144	15
	AN7SN0	129	15
	Total		***72***
	SILL PILLAR (5m)	124	

Level	Level/Sublevels	Elev. (m)	Height (m)
Level 8 72 m - 1 Sublevel 12 m + 4 Sublevels of 15 m	AN8SN4	112	12
	AN8SN3	97	15
	AN8SN2	82	15
	AN8SN1	67	15
	Total		***57***
	SILL PILLAR (5m)	62	
Level 9 72 m - 1 Sublevel 12 m + 4 Sublevels of 15 m	AN9SN4	47	15
	AN9SN3	32	15
	AN9SN2	17	15
	AN9SN1	2	15
	AN9SN0	-13	15
	Total		***75***
	SILL PILLAR (5m)	-18	
Level 10 72 m - 1 Sublevel 12 m + 4 Sublevels of 15 m	AN10SN4	-33	15
	AN10SN3	-48	15
	AN10SN2	-63	15
	AN10SN1	-78	15
	AN10SN0	-93	15
	Total		***75***
	SILL PILLAR (5m)	-98	

Past mining used a longitudinal retreat sequence for Orebodies A and B – stope extraction began at the ends of the levels and retreated back towards the access. Stopes were 50 m in length along strike and separated by a five metre to ten metre wide pillar, depending on the thickness of the zone. Once mining of each longhole stope was completed, the excavation was filled using a combination of development waste and pumped paste fill. A bund was constructed using development waste to contain the backfill. Once the cement content of the paste fill was set, the next stope in the sequence was mined. The sequence continued until the entire level/sublevel was mined. Mining then proceeded upward to the next sublevel until the sill pillar was reached. Stopes were mined from several individual levels simultaneously in order to provide the required number of active workplaces needed to meet production targets.

The retreat sequence, and the need to complete Orebody B mining before cutting off access by mining Orebody A, reduced productivity by limiting the number of stopes available for mining at a given time.

The current Life of Mine plan (LOMP) does not consider mining of Orebody B, and involves a change in mine design. Orebody A is now being mined in a primary/secondary sequence via transverse access to the thick centre portion of Orebody A, requiring additional accesses developed in waste. Each primary or secondary stope is 15 m along strike, with no pillars.

The design change has the effect of increasing the number of available workplaces, and de-links the narrow, lower-productivity ends from the centre.

In RPA's opinion, this innovation is critical to improving the mine's ability to fill the mill to capacity with high grade ore.

Development waste is used for backfill, on an unconsolidated basis in secondary stopes, and with the addition of cement in primary stopes. Paste fill is used to tight fill the stopes immediately below the sill pillars, where consistent product is critical. The paste fill product is prepared from detoxified CIP tailings in a shear mixer and batch plant located near the mill.

Although Orebody B is not in the LOMP, and no longer included in Mineral Reserves, future access is possible, either by mining through cemented paste fill and supporting appropriately, or by mining concurrently with the thinner ends of Orebody A.

GEOMECHANICS

Ground conditions were observed by RPA to be very good. The main decline, portions of which were developed up to ten years ago, did not exhibit any roof or wall deterioration. Primary support in the mine is provided by the use of Swellex, grouted rebar and, in the wider areas, grouted cable bolts. In areas of friable ground, split-sets are used to hold welded-wire mesh in place.

MINING EQUIPMENT

Development is completed using two-boom jumbos and six cubic yard load-haul-dump (LHD) units. In order to create adequate working space for the equipment, minimum widths of four metres must be maintained, causing excessive quantities of dilution in areas where the orebodies are narrow.

Development drilling is undertaken using the four two-boom electric-hydraulic jumbos. Two single-boom jumbos and a RDH Boltmaster with mesh-handling capability are used for the installation of ground support.

Drilling of the production holes is completed using a fleet of four Atlas Copco Simba longhole drills.

Development and stope mucking is completed using a fleet of seven 10 t to 14 t capacity LHD units (one ST14 and six ST1030 units), with development waste hauled to stopes or remuck areas, using two rented Atlas Copco MT431 haul trucks equipped with pusher plates.

Ore haulage to surface is by a fleet of seven Volvo 30 t off-highway surface trucks. An Atlas Copco MT42 truck is currently in use on a trial basis.

LIFE OF MINE PLAN

Stope and development designs, and production scheduling were carried out by MCB using Deswik mine design software, and modified by Jaguar to deplete for stopes mined out as of December 31, 2015.

The production schedule covers a mine life of four years based on Mineral Reserves, and it is summarized in Table 16-2.

TABLE 16-2 LOMP PRODUCTION SCHEDULE
Jaguar Mining Inc. – Turmalina Mine

Item	Units	2016	2017	2018	Total
Total Mill Feed	Tonnes (000)	376	408	296	**1,080**
	g/t Au	5.76	5.36	4.68	**5.31**
Recovery	%	90.0%	90.0%	90.0%	**90.0%**
Gold Produced	Ounces (000)	63	63	40	**166**

Scheduling was based on productivities achieved in recent operations. Development was limited to 50 m per month.

Stope scheduling follows the primary/secondary sequence and includes delays for backfilling and cement curing.

17 RECOVERY METHODS

The plant has a nominal processing capacity of 2,000 dmt per day, or 610,000 dmt per year. Since inception, the plant has been achieving annual overall recoveries of between 87% and 92%. The process flowsheet includes two-stage crushing and screening to minus 3/8 inches, primary grinding, thickening, cyanide leaching, CIP, elution, electrowinning, and smelting. The tailings are conveyed to a detoxification unit for arsenic removal and cyanide destruction and then are pumped to the paste fill plant to be used either for mine backfill or deposited on a purpose-built dry-stack storage area. Process tailings have also been stored in completed open pits on the mine site (Figure 17-1).

A process control system has been established at the supervisory level via a conventional PLC (programmable logic controller) system. It is based on a process control philosophy that is compatible to harbor an online optimizing system (Advanced Control System, or ACS) in the future. The ACS entails both Expert and AI-based levels, the highest objective-function being throughput. PIMS, LIMS, and MES Corporate Systems are also envisioned to be implemented when appropriate. The control room is located close to the hydrometallurgical plant. Three dedicated PLCs control the crushing and screening plant, the thickener, grinding plant, hydrometallurgical plant, the paste fill plant, and the Detox plant.

The current flowsheet is shown in Figure 17-2 and is described below. A summary of the mill production history and recovery has been presented in Table 6-1 in Section 6 of this report.

CRUSHING AND SCREENING

Run-of-mine material is stored in a surge pile and fed to the primary jaw crusher using a front end loader at a nominal rate of 140 tonnes per hour (tph). The crushing plant has a design capacity of 180 tph. Oversized material is managed with a grizzly and rock breaker. The primary crusher product is fed to secondary cone crushers. The final product, minus 3/8 inches, is stored in a grinding plant surge bin.

GRINDING, CLASSIFICATION AND THICKENING

The feed grade to the grinding mills is determined by sampling with an automatic sampler. Material is fed from the surge bin to the grinding circuit that consists of ball mills of three different sizes set up in parallel, although only two mills are currently operating on a continual basis. The first ball mill is 10.5 ft x 15.5 ft in size with a maximum capacity of 25 tph and is operated by a 1,000 HP motor. The second mill is 12.5 ft x 18 ft in size with a maximum capacity of 60 tph and is operated with a 1,800 HP motor. The third mill is 13 ft x 21.8 ft in size with a maximum capacity of 70 tph and is operated by a 2,000 HP motor. Lead nitrate [$Pb(NO_3)_2$] is added at a rate of 50 g/t in the grinding feeds in order to avoid excessive NaCN consumption by the formation of thiocyanides (SCN), ferrocyanides $(Fe(CN)_6)^{4-}$, and ferricyanides $(Fe(CN)_6)^{3-}$.

The milling products are sized with cyclones to 80% passing 200 mesh (P80 = 200 mesh), with the overflow passing on to the thickener and the underflow recycled. The grinding circuit is automated.

The secondary cyclone overflow stream is fed to a 100 ft thickener where flocculants are added to optimize the settling cycle of the pulp. The thickener underflow, 53% solids by weight, is pumped to the pulp conditioning system of the CIP plant, which is instrumented to maintain the pulp at a density of approximately 48% to 50%, by weight, solids. The water addition flow rate is monitored and controlled by a magnetic flow meter and pulp densitometer. The thickener overflow is directed to the process water tank as make-up water.

LEACHING CIRCUIT

The leaching circuit consists of seven agitation tanks. Lime is added to the first tank to adjust the pH. Cyanidation begins in the first tank with the addition of sodium cyanide (NaCN). Lead nitrate is also added in the grinding circuit to control excessive NaCN consumption. Compressed air is injected in the bottom of all the tanks at a rate of 2,000 cfm and at a pressure of 3.5 kg/cm^2, as the process consumes large amounts of oxygen. The residence time in the leaching circuit is approximately 25 hrs.

ADSORPTION CIRCUIT

The adsorption circuit is a conventional CIP circuit. The gold-bearing pulp passes through five adsorption tanks arranged in series. Activated carbon with a size range of 8 mesh to 16 mesh and a minimum pulp concentration of 20 g/L is added to the last in the series of tanks, and is pumped in the opposite direction from the sludge flow. Thus, the carbon adsorbs the gold from the pulp as the process continues. When the adsorption cycle is completed, approximately ten hours, the loaded carbon, containing approximately 1.5 kg of gold per tonne of carbon, is pumped from the bottom of the first tank in the series to the elution and electrowinning circuit.

ELUTION AND ELECTROWINNING

The loaded carbon is screened and the minus 28 mesh material is redirected back to the adsorption circuit. The oversize feeds the elution circuit, comprising four columns, two of which are stripping while the other two are loading. The estimated carbon load in each column (1.25 m in diameter and 6.25 m high) is approximately 2.7 t. Loaded carbon is stripped using caustic soda, injected into the elution columns from bottom to top at a concentration of 1% by weight with 200 L of ethylic alcohol (per batch) kept at 95°C. The pregnant solution is stored in a tank, with overflow to feed the electrowinning circuit. The electrowinning circuit consists of six cathodes and seven anodes, energized with a 360 A current and a voltage of 3.5 V to 4.0 V.

Up to 2012, Jaguar was shipping the steel wool and sludge to the refinery. Since 2012, it has shipped the cake resulting from alcoholic carbon elution of the steel wool.

ACID WASHING

The activated carbon first undergoes a stripping process in the elution columns, where the adsorbed gold is removed by a 1% (by weight) NaOH alcoholic solution at 95°C. It is then conveyed to a surge tank via an ejector directed towards a 28 mesh screen for the removal of fines (undersize). The screen oversize is conveyed to a 8 m^3 fibreglass acid washing tank. Acid washing is necessary to maintain the loading capacity of the activated carbon since the mineral matrix possesses other cations such as calcium, iron, copper, zinc, and lead that compete with gold in the interstices of the activated carbon. The acid washing is completely effected by passing an acid solution of HCl at 10%, removing the impurities that diminish the capacity of the carbon to adsorb gold, mainly carbonates and basic metals.

The acid solution of HCl at 10% (by weight) is prepared in a fibreglass HCl solution tank by adding water and HCl at 33% by weight. This solution is injected at the bottom and discharged at the top of the acid washing tank by overflow, returning to the HCl solution tank by gravity. The time involved in the acid washing is approximately 16 hours.

Once acid washing is completed, the acid solution is drained towards a neutralization tank. The carbon will be neutralized with a 1% (by weight) NaOH solution using a procedure identical to the one used for the acid solution. The neutralization time ranges from one to two hours, depending on the pH control of the recycled solution. The remaining solution is also drained to the neutralization pond. Thereafter, the carbon is washed with water in open circuit with regard to the neutralization pond. This operation lasts approximately two hours. After these stages, the carbon is transferred to the 28 mesh screen and can be conveyed to the carbon addition circuit in the volumetric control vessel, and then to the last adsorption tank in the CIP circuit.

DETOXIFICATION PLANT

The adsorption tank tailings (86 tph at 42% solids) are conveyed by gravity to a belt screen in order to avoid carbon loss and then to a tailings pulp treatment plant (TPTP or Detox plant) and then to the paste fill plant. This material is used as backfill in the mine for structural purposes, when required. In some cases, its addition to a mechanical waste fill is required.

PASTE FILL PLANT

The treated tailings from the Detox plant, a pulp at 42% solids by weight, are conveyed to a pumping station where they are sent by rubber lined centrifugal pumps (75 HP – one operating and one standby) to the paste fill plant, which is located about one kilometre away from the pumping station. The slurry is received in a pulp storage tank, from which it is pumped to a hydrocyclone cluster, and the overflow feeds a thickener. The cyclone underflow, together with thickener underflow, feeds three drum filters (10 ft x 16 ft). The filtration process generates a cake and a filtrate (liquid phase). The thickener overflow is recycled to the industrial water tank, while the filtrate (up to 8% ultra-fines solids) is conveyed to the tailings dam.

The cake from the filters, after having gone through the stages of the filtration cycle (cake formation, washing, drying, blow, and discharge), contains approximately 30% moisture. It is conveyed through a 36 in. wide, 27 m long conveyor belt to the cake preconditioning hopper, after which the cake is sent to the weigh hopper where additives such as Portland cement or, alternatively, “Fosbinder” are added in proportion to the cake mass flow. Other binders aimed to impart structural properties to the paste, as well as to neutralize excess acidity due to its high carbonate content, can also be added. The cake is then directed to the paste mixer for the final paste production. The paste will be used as fill in the underground mine.

During periods when paste fill is not needed for structural purposes in the mine, the tailings bypass the paste fill plant and are directed to the tailings dam, along with the filtrate (8% ultra-fine solids).

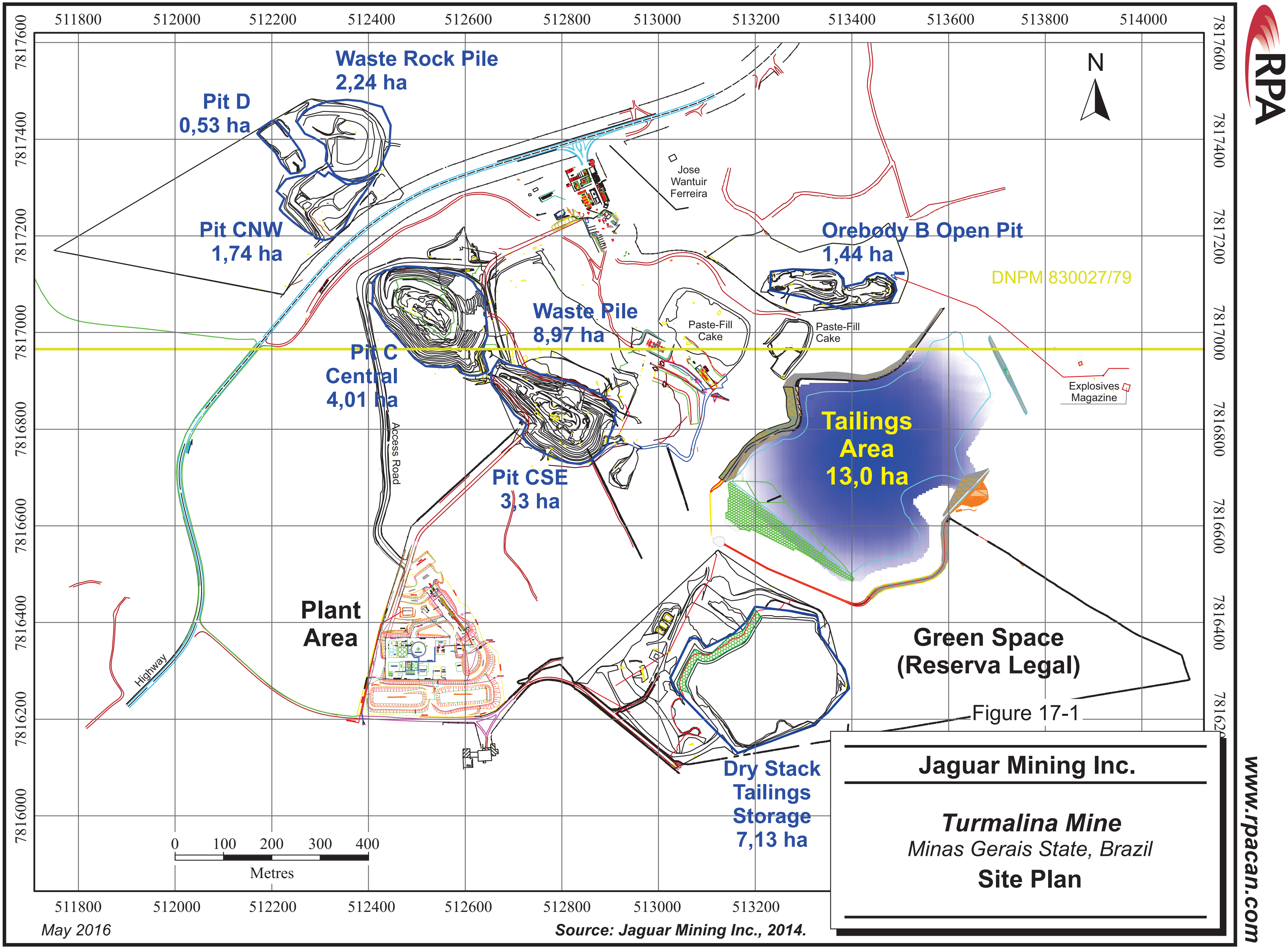

Figure 17-1

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Site Plan

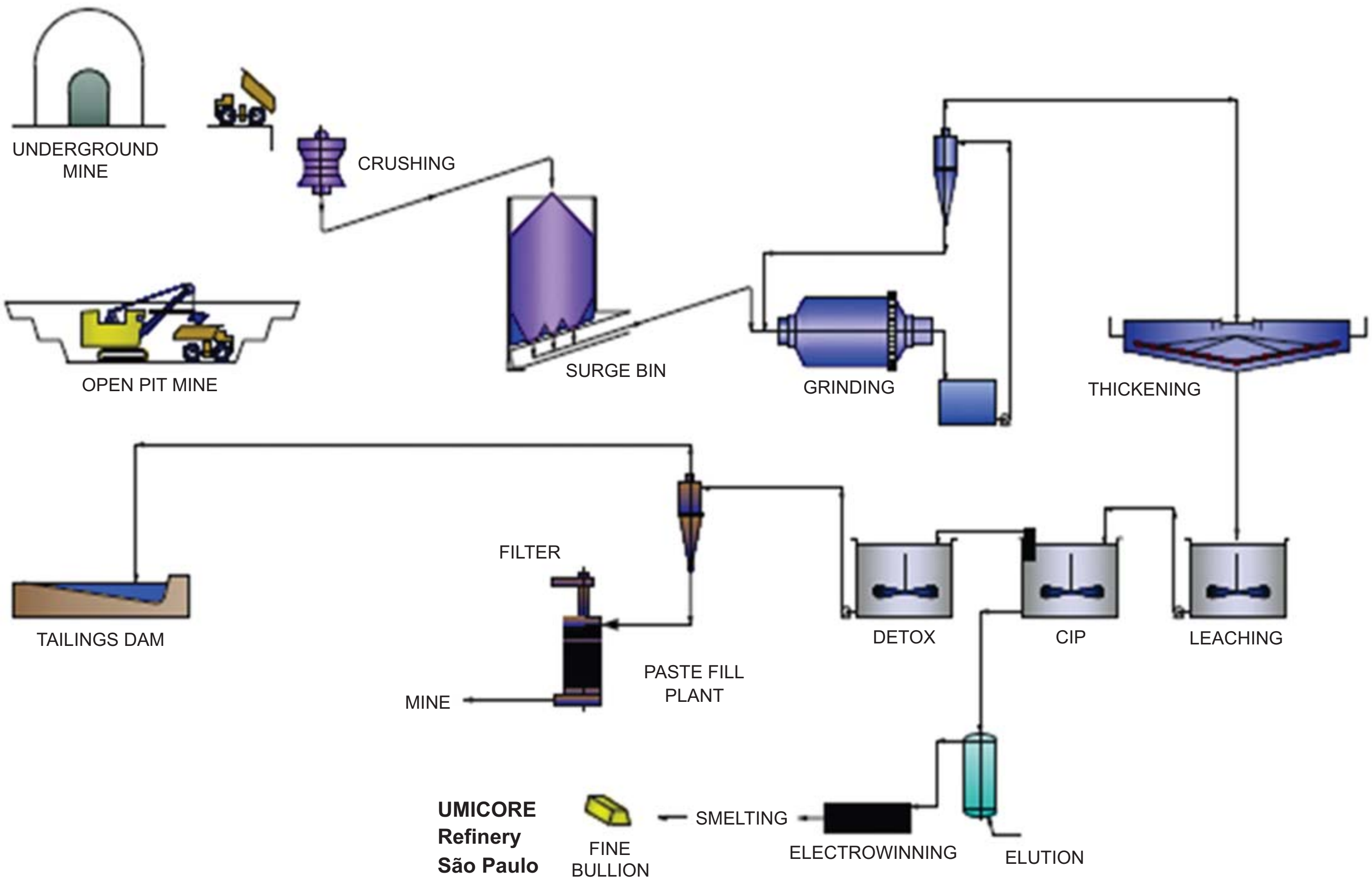

Figure 17-2

Jaguar Mining Inc.

Turmalina Mine

Minas Gerais State, Brazil

Process Flowsheet

May 2016

Source: Jaguar Mining Inc., 2014.

18 PROJECT INFRASTRUCTURE

The Turmalina Mining Complex includes a nominal 2,000 tpd processing plant and tailings disposal area. Electrical power is obtained from the national grid.

All ancillary buildings are located near the mine entrance: gate house including a reception area and waiting room, administration building, maintenance shops, cafeteria, warehouse, change room, first aid, and compressor room. The explosives warehouse is located 1.2 km away from the mine area, in compliance with the regulations set forth by the Brazilian Army.

Other ancillary buildings are located near the processing plant and include an office building, a laboratory, warehousing, and a small maintenance shop.

RPA noted that the Turmalina Mine Complex was well run and organized, a reasonably safe environment for the mine workforce, and had well maintained maintenance and equipment facilities.

There is no infrastructure related to the Faina and Pontal historic open pit operations.

19 MARKET STUDIES AND CONTRACTS

MARKETS

Gold is the principal commodity at the Turmalina Mine and is freely traded, at prices that are widely known, so that prospects for sale of any production are virtually assured. A gold price of $1,150 per ounce was used for estimation of Mineral Reserves.

CONTRACTS

RPA reviewed recent costs for transportation, security, insurance, and sales of doré, and considers them to be within industry norms.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

ENVIRONMENTAL STUDIES

Environmental studies related to the acid mine drainage potential have been carried out as requested by SUPRAM, the state environmental agency, on “Licença de Operação” (Operation Licence, or LO) 012/2008. These studies will continue through 2016. Planning is underway to carry out kinetic tests of the potential for acid mine drainage, as it is believed that the previously completed static tests were not conclusive.

PROJECT PERMITTING

ORIGINAL TURMALINA PROJECT LICENCES

In 2005, Jaguar applied for the “Licença Prévia” (Previous Licence, or LP) related to the original Turmalina Gold Project, for both the open pit and underground exploitation of the sulphide mineralized body, in connection with Mining Concession DNPM 812.003/75 and the mineral processing plant. The LP (LP 078/2005) was granted to Jaguar in October 2005. The submitted environmental study, along with the LP application, formed a “Relatório de Controle Ambiental” (Environmental Control Report, or RCA). The “Licença de Instalação”- (Installation Licence, or LI) for the original Turmalina Gold Project was applied for in November 2005. In August 2006, COPAM, the State Environmental Policy Council, upon review of the “Plano de Controle Ambiental” (Environmental Control Plan, or PCA), granted Jaguar the LI (LI 114/2006).

The LO for the original Turmalina Gold Project was applied for in February 2007 and was granted in June 2008 (LO 012/2008). The LO did not cover the tailings disposal system, which passed through an exclusive licensing process at SUPRAM, since the system originally foreseen was revised by Jaguar. The revalidation of LO 012/2008 was applied for in March 2012, renovating all the operations at the Project, including the tailings disposal system, underground mine, open pit operations, and the plant. A specific licensing process (AAF – a simple licensing) was initiated for the fuel station (30 m^3) in 2015. This licence application is conditional on the AVCB (fire station authorization) to formalize the process.

A list of the existing permits is presented in Tables 20-1 and 20-2.

TABLE 20-1 LIST OF EXISTING OPERATING LICENCES
Jaguar Mining Inc. – Turmalina Mine

Enterprise	Certificate number	Process number (PA COPAM)	DNPM	Granting date	Expiring date	Observation
Plant	LO 012/2008	01154/2005/003/2007	NA	19/06/2008	19/06/2012	This licence is in revalidation process since 2012 (PA COPAM 01154/2005/012/2012)
Tailings dam	LO 012/2009	01154/2005/008/2009	831.617/2003	17/12/2009	17/12/2013	This licence is in revalidation process since 2012 (PA COPAM 01154/2005/012/2012)
Underground mining Open pit mining Waste pile	LOC 076/2009	01154/2005/007/2009	812.003/1975	17/12/2009	17/12/2013	The LOC 076/2009 improved the first licence (LO 012/2008). This licence is in revalidation process since 2012 (PA COPAM 01154/2005/012/2012)
Wastewater treatment system	AAF 04913/2012	01154/2005/013/2012	NA	12/09/2012	11/09/2016	NA

Note 1: Application to renew these permits has been submitted; renewal approvals are pending. Some complementary information was requested by SUPRAM and has been supplied by environmental team.

TABLE 20-2 LIST OF WATER USE LICENCES
Jaguar Mining Inc. – Turmalina Mine

Ordinance	Grant Date	Expiration Date	Procedure Number	Watercourse	Permitted Rates	Status
00716/2011	05/04/2011	17/03/2017	12594/2010	Pará river	Surface water - 28,3 L/s	Valid
00579/2010	10/03/2009	09/03/2014	07142/2008	Dam	24 L/s	In revalidation process
03404/2012	26/11/2012	23/11/2017	03962/2010	Lowering water Level for Mining	470,9 m³/h	Valid
01129/2009	15/05/2009	12/05/2014	03924/2006	Water well	4,6 m³/h	In revalidation process
02783/2009	20/10/2009	20/10/2013	01170/2008	Water well	6,77 m³/h	In revalidation process
Insignificant use PC: 15139/2013	03/07/2013	03/07/2016	P: 1347122/2013	Un-named Stream	1,0 L/s	Valid

EXPANSION PROJECT LICENCES

Minas Gerais State Decree 44.844/2008 of June 25, 2008, establishes that given the operating situation and production status at the Turmalina Mining Complex, Jaguar was allowed to apply directly for an LO for the Expansion Project, which was granted in December 2009 (LO-C 076/2009). In order to be able to start the development works at the Expansion Project, Jaguar applied for Environmental Authorization for Operation (AAF), as reported below.

The operations in Orebody C, located on DNPM 803.470/1978, were licensed by two AAFs (a simplified licensing process). Both AAFs were applied for in April 2008. The AAF for the underground operations was granted in September 2008 (AAF 04524/2008) and the AAF for the open pit was granted in January 2009 (AAF 00001/2009).

For the open pit operations at Faina (DNPM 812.003/1975), an AAF was applied for in September 2009 at SUPRAM and granted in June 2010 (AAF 01822/2010).

Each AAF for an open pit mine allows for the mining of 50,000 tpa, while the AAF for an underground mine permits mining of 100,000 tpa.

In November 2009, an LP+LI was applied for the expansion project, and granted in February 2011 (LP+LI 001/2011).

TURMALINA AND TURMALINA EXPANSION TAILINGS DISPOSAL SYSTEMS LICENCES

The LI for the tailings disposal system was applied for in November 2007, when the Environmental Impact Assessment/Report of Impacts on the Environment (EIA/RIMA) and the PCA were submitted. The tailings disposal system comprises a tailings dyke and a tailings dam. The tailings dyke is a starting unit and will later be integrated into the tailings dam. The application and pertinent documents were analyzed by SUPRAM, and the LI was granted in August 2009 (LI 005/2009).

In regard to the tailings disposal system operations, the LO was applied for in September 2009 and was granted in December 2009 (LO 012/2009).

The upper portion of the central Orebody C was mined using the open pit method, which is now completed. Part of the mine surface area does not belong to Jaguar. The benches were designed to have a slight incline (1.0%) from slope crest to toe to allow drainage of storm and ground water. Benches between elevations 750 m and 720 m also had an incline of 1% to their toes at the natural ground level. Below elevation 720 m, sumps were constructed to collect all ground and storm water, which were pumped to the mine's water treatment system.

Orebody C is currently being mined using a sublevel stoping method. Underground mining of Orebody C was fully integrated with the remainder of Turmalina's underground mining operations, including the opening of a ramp and access drifts to the bodies from the main decline. After being mined, panels are filled with paste fill from the current Turmalina paste backfill plant. This underground method is considered to be favourable from an environmental impact perspective, since placing paste backfill in the stope panels reduces the requirement for surface tailings storage.

Waste rock is stored in the designed waste stockpile, adjacent to the existing Turmalina waste stockpile. It has the same configuration as the existing one: bench height of 10 m, bench width of 5 m, slope face angle of 30°, and overall stockpile angle of 26°.

The tailings dyke capacity is approximately 260,000 m^3 of tailings and is currently in operation. The dam is capable of accumulating approximately 3,000,000 m^3 including the dyke. The detailed engineering project was completed by the local consulting company Engeo Ltda (ENGEO).

All tailings disposed of in the dam are first detoxified in a Caro acid Detox plant (CyPlus technology – “cold”), as described below. The detoxification plant was constructed by EVONIK in Mobile, Alabama, USA. The process was conceived by CyPlus, a Degussa technology company that specializes in the application of peroxide, SO_2, and/or Caro’s acid to detoxify cyanide residue and arsenic from the tailings of gold processing plants. The selected treatment uses Caro’s acid as a reagent to promote the decomposition of cyanide to cyanate and to reduce the concentration of arsenic in the tailings that will be used in the production of the paste fill.

In order to generate Caro’s acid, concentrated sulphuric acid is mixed with 50% oxygenized water in a teflon/stainless steel reactor. Caro’s acid promotes the oxidation of cyanide to cyanate, and cyanate is considered to be 1,000 times less toxic than cyanide. The cyanate then decomposes into carbon dioxide and ammonia by hydrolysis.

Caro’s acid acts with efficiency to eliminate arsenic while in solution, causing the oxidation of As(III) to As(IV), and As(IV) is easily precipitated with ions from iron, calcium, and magnesium. Under these conditions, the used metal becomes immobilized in the paste fill, neither interacting with the environment nor undergoing any type of leaching being dissolved by the underground water or by rainfall (if the paste is not contained and piled outside).

After the detoxification process, the pulp is sent to two 10 in. cyclones, where it is either thickened to make paste fill or, if there is no current need for paste, sent to the tailings disposal system.

When required for use as backfill, the cyclone underflow from the plant, with 70% solids, is used in the production of the paste fill and then returned to the mine as fill to the mining stopes. The overflow, with fine solid particles and the majority of the water, is thickened and also used in the production of the paste fill. In the event of a temporary malfunction of the above process, the referred material is sent to the emergency chambers or to the tailings disposal system. The detoxified solution, separated from the tailings, is then recirculated for use in the processing plant, thus closing the circuit for the process water.

SOCIAL OR COMMUNITY REQUIREMENTS

The Turmalina operations are located close to the border of the municipality of Conceição do Pará in the central western part of the state of Minas Gerais, near the small town of Casquilho, where the area of influence is most noticeable in terms of socioeconomic impact.

Casquilho's community is considered a district of Conceição do Pará. This town does not offer quality infrastructure services. Its small community utilizes the services of a nearby larger town, Pitangui, which offers better infrastructure services and is located 15 km from Conceição do Pará.

Casquilho's community is virtually divided by state road MG 423 into Casquilho de Baixo (lower Casquilho) and Casquilho de Cima (upper Casquilho). The total population amounts to 130 families. The vast majority of the Casquilho de Cima housing is currently occupied and most residents work in Pitangui. Only about five houses are used as weekend properties.

Casquilho de Cima's community is supplied with water from a well located on site, and power is supplied by the state-run utilities company CEMIG. The community does not have any sanitation sewage system. Old fashioned farm-like sanitation holes/ditches, typically built in the backyards, are used. No additional public service is available to the Casquilho de Cima residents.

Since the beginning of the Turmalina Mine operation, continuous sprinkling of the mine and plant access roads have been in place. Both the flow rate and water quality have been monitored using piezometer wells and all necessary steps have been taken by Jaguar in order to avoid any water supply deficit to the population. No impact on the water availability for the Casquilho de Cima community has been identified to date.

In addition, the company invests in environmental education projects and supports traditional festivals in schools of the Casquilho community. In 2015, Jaguar signed an agreement with the Pitangui City Hall for the development of a public lighting project of the city in honor of its 300 year anniversary. In 2016, in partnership with the municipality of Conceição do Pará, the company will make the donation of a dental office with capacity to service the entire community of Casquilho.

These actions foster the good relationships with its stakeholders and helps to maintain the social licence to operate the Turmalina Mine.

Other positive socioeconomic impacts of the Mine on the local communities include employment by Jaguar and its subcontractors (Conceição do Pará and Pitangui) of local manpower and direct family revenue increase as a result. In addition, taxes collected by the municipality of Conceição do Pará have significantly increased.

MINE CLOSURE REQUIREMENTS

Two years before the mine is exhausted, the company must present the "Plano de Fechamento de Mina" (Mining Closure Plan, or PAFEM) to SUPRAM for approval, according to the "Deliberação Normativa COPAM nº 127". This regulation also enforces that all mining activities in the state of Minas Gerais must include the rehabilitation plan of degraded areas.

The actions and steps for the environmental recovery of the areas impacted by mining activity were adopted when the LI was granted and will continue until after the mine is exhausted.

The recovery of the surface areas will follow the following stages:

- Removal and stockpiling of the fertile soil layer;
- Waste and backfill paste disposal;
- Rehabilitation of the mined areas;
- Topographical regularization;
- Re-vegetation of the impacted areas, mainly those in connection with ultimate slopes;
- Rehabilitation of drainage ditches, contention sumps, contention dykes, and the like;
- Spontaneous succession and creation of niches in the areas in rehabilitation.

The following actions are accomplished with regard to the underground mine:

- Gradual refill of the exhausted panels.
- Obstruction of the initial 50 m of the ramp with waste, to be previously stocked near the mine entrance.
- Construction of a cut at the mine entrance at an inclination of 35º to fill out the slope created during the mine entrance development with the removed material. It will be

done in such a way as to totally obstruct it. This cut and the fill will be re-vegetated as specified above.

- Obstruction of the entrances to the ventilation and emergency raises with a 10 m deep reinforced concrete wall. These 10 m will be filled out with waste material to be stocked for this purpose. The related surface areas will be re-vegetated.

As of December 31, 2015, Jaguar maintained progressive rehabilitation and reclamation provisions of R$20.3 million which represent the undiscounted, uninflated future payments for the expected rehabilitation costs (Table 20-3).

TABLE 20-3 PROGRESSIVE REHABILITATION AND CLOSURE COST ESTIMATES
Jaguar Mining Inc. – Turmalina Mine

	R$ (000)														
Description	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**Total**
Waste Pile	206	183	99	92	63			43	59						745
Pit		39	9	99							285				433
Dam											1,495	270			1,765
Infrastructure									51	2,494	4,546	26			7,117
Plant										4,391	79				4,470
G&A	20								99	395	1,803	547	547	540	3,951
Contingency		22	11	19	6				21	728	821	84	55	54	1,821
Total	**226**	**245**	**120**	**210**	**69**	**-**	**-**	**43**	**231**	**8,008**	**9,028**	**927**	**601**	**594**	**20,301**

*Note: Numbers may not add due to rounding. No inflation or discount factors applied.

21 CAPITAL AND OPERATING COSTS

Costs for the LOMP were estimated in BRL, based on recent operating results and Jaguar budgets.

Recent strengthening of the US dollar against the BRL has had a significant impact in reducing US$ unit costs. Jaguar used an exchange rate of US$1.00 = 3.8 BRL for 2016, and assumed a 6% annual devaluation of the BRL. Although current exchange rates have improved from recent lows (over 4.1, now 3.6), the exchange rate assumptions are consistent with forecasts.

CAPITAL COSTS

A summary of capital requirements anticipated over the LOMP is summarized in Table 21-1.

TABLE 21-1 LOMP CAPITAL COST SUMMARY
Jaguar Mining Inc. –Turmalina Mine

Capital Cost	Units	Total	2016	2017	2018	2019+
Primary Development	US$ '000	8,769	6,728	2,023	19	
Raise	US$ '000	599	397	202	-	
Exploration	US$ '000	1,981	932	562	487	
Engineering	US$ '000	2,646	2,225	226	195	
Mine Equipment	US$ '000	10,734	5,470	2,821	2,443	
Plant Equipment	US$ '000	2,376	1,007	733	635	
G&A Sustaining Capital	US$ '000	75	-	40	35	
Reclamation and Closure	US$ '000	5,073	59	65	30	4,919
Total	US$ '000	32,251	16,818	6,671	3,843	4,919

Primary development consists of approximately 2,263 m and 688 m of horizontal development and 151 m and 75 m of vertical development in years 2016 and 2017 respectively. Although no capital development is required in years 2017 and 2018 to access Mineral Reserves, it is expected that in-fill drilling will continue to develop resources down-dip, and expenditures similar to 2016/2017 will carry on to access them.

Exploration drilling will continue, with an aim to extend and define resources at depth.

Reclamation and closure costs are as described in Section 20.

Due to struggles with profitability in recent years, Jaguar has elected to defer capital spending, to the extent possible, on areas such as mobile equipment rebuilds and replacements. In RPA's opinion, this is a short-term solution, and higher expenditures will be necessary at some point in the future.

OPERATING COSTS

Operating costs for the LOMP are shown below in Table 21-2.

TABLE 21-2 LOM OPERATING COST SUMMARY
Jaguar Mining Inc. – Turmalina Mine

Unit Costs	Unit	Total	2016	2017	2018
Mining (Underground)	US$/t milled	**61.50**	61.86	61.06	61.64
Processing	US$/t milled	**21.87**	21.38	21.28	23.31
Total Unit Operating Cost	**US$/t milled**	**83.37**	**83.24**	**82.34**	**84.95**

Total Costs	Unit	Total	2016	2017	2018
Mining (Underground)	US$ '000	**66,425**	23,277	24,887	18,261
Processing	US$ '000	**23,625**	8,047	8,673	6,905
Total Operating Cost	**US$ '000**	**90,050**	**31,324**	**33,560**	**25,166**

Operating cost estimates include mining and processing (general and administration (G&A) expenses are included in mining). Operating costs are budget cost projections based on actual costs incurred over the past year.

There are additional corporate overhead costs associated with the Belo Horizonte and Toronto offices, as well as royalties and refining costs, which are not included in the operating cost estimate.

All-In Sustaining cost (as defined by the World Gold Council) for the Turmalina Mine is $791/oz, including reclamation and closure.

22 ECONOMIC ANALYSIS

This section is not required as the property is currently in production, Jaguar is a producing issuer, and there is no material expansion of current production. RPA has verified the economic viability of the Mineral Reserves via cash flow modelling, using the inputs discussed in this report.

23 ADJACENT PROPERTIES

There are no adjacent properties relevant to the Turmalina Mine Complex.

24 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.

25 INTERPRETATION AND CONCLUSIONS

The Turmalina plant has processed approximately 5.0 million tonnes of ore to produce a total of approximately 530,000 ounces of gold at an average recovered grade of 3.29 g/t Au. Both open pit and underground mining methods have been employed on the property, however, only the underground mine is currently operating.

GEOLOGY AND MINERAL RESOURCES

- The mineralization at the Turmalina Mine consists of a number of tabular bodies. These tabular bodies are grouped together according to spatial configuration and gold content into three Orebodies (Orebodies A, B, and C). The Faina and Pontal deposits are satellite deposits that are located to the northwest of Orebodies A, B, and C. Orebody D is located in close proximity to the northwest strike extension of Orebody C. At present, the Faina, Pontal, and Orebody D deposits are viewed as being refractory using the existing plant configuration.

- The main production of the underground mine has been from Orebody A, which is a folded, steeply northeast dipping tabular deposit with a steep southeasterly plunge, located in a biotite schist host rock. The mineralization in this deposit has been outlined along a strike length of approximately 250 m to 300 m and to depths of 900 m below surface. The down-plunge limit of the gold mineralization in Orebody A has not been defined. Additional tonnage is supplied from Orebody C. Mining activities were discontinued in Orebody B in 2015.

- Collection of bulk density data through 2015 has confirmed that the average bulk density of the mineralized material in Orebody A is slightly higher and the average bulk density of the mineralized material in Orebody C is slightly lower than was presented in Clow and Valliant (2006).

- On-going drilling programs carried out in 2015 have targeted the immediate down-plunge areas of Orebody A, below the current active mining area. A number of the drill holes that targeted this area were successful in demonstrating that the gold grades persist to a depth of approximately 150 m below the bottom of the ramp. The down-plunge limits of the gold grades have not been defined by the drilling completed to date. In RPA's opinion, it is clear that down-plunge continuation of Orebody A warrants a program of in-fill drilling in support of Mineral Resource estimates and detailed mine planning.

- Similarly, the down-plunge limits of the gold grades in portions of Orebody C have not been defined by the drilling completed to date. Drilling programs and analysis by Jaguar staff have been successful in outlining local trends of the mineralized shoots in this Orebody. In RPA's opinion, it is clear that down-plunge continuation of the mineralized shoots within Orebody C warrants a program of in-fill drilling in support of Mineral Resource estimates and detailed mine planning.

- Contouring of gold grades from channel samples and available drill holes have highlighted a series of pronounced steeply plunging high grade mineralized shoots throughout Orebody A. Contouring activities of the gold grades in Orebody C have highlighted a number of less pronounced shoots of higher grade mineralization.

- The updated Mineral Resource estimate for the Turmalina Mine was prepared based on drilling and channel sample data using a data cut-off date of December 31, 2015. The database comprises 2,700 drill holes and 12,679 channel samples. The estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of two metres. Raw assays were capped to 50 g/t Au for all three Orebodies. The gold grades are interpolated using the ID^3 interpolation algorithm using the capped composited assays.

- Updated Mineral Resource estimates were prepared for the Faina and Pontal deposits, incorporating higher cut-off grades to reflect a revised conceptual operating scenario for the refractory mineralization and a mining method appropriate to the style of mineralization at each deposit. The estimation methodology for these two deposits was similar to that used in the preparation of the Turmalina Mineral Resource estimates.

- Reconciliation studies on a monthly basis show a wide variance in the block model versus mine production (F1') tonnage data throughout much of the year, with a reduction in the variance occurring in the last quarter. The grade data show a low degree of variance for most of the year with the block model grades generally being lower than the mine production grades. The monthly mine production versus plant production (F2') results show a very good correlation between the mine and the plant data throughout most of the year. The monthly block model versus plant production (F3') results show a similar behaviour in the tonnage and grade variances as were observed in the F1' reconciliation results.

- In RPA's opinion, the observed variance in the monthly tonnage data can be ascribed to two factors. Firstly, given the relatively small volumes that are involved and the slight time delays that are inherent in the mining process, in some cases the mined volumes from a given stope may be ascribed to a different monthly period between the planning and production departments. Secondly, it must be noted that the 2015 block model was not implemented until the second half of the period. Therefore, analysis of the block model performance for the January to June period is not appropriate. Similarly, conclusions drawn from analysis of the annual block model performance must be regarded with caution.

- Reconciliation studies on a quarterly basis show a wide variance in the F1' tonnage data for the first three quarters of the year, with a reduction in the variance occurring in the last quarter. The grade data show an increasing variance for the first three quarters with the block model grades generally being lower than the mine production grades. Improvement is noted in the fourth quarter. The quarterly F2' results show a very good correlation between the mine and the plant data throughout the year. The quarterly F3' results show a similar behaviour in the tonnage and grade variances as were observed in the F1' reconciliation results. Improvement is noted in the fourth quarter with the tonnage, grade, and gold contents all being within or close to a variance of 10%.

- As discussed with the monthly reconciliation results, RPA believes that it is important to note that the revised block model was not implemented until the second half of the year; consequently, conclusions drawn from the data of the first two quarters and from the annual data must be regarded with caution. The improvement noted in the data for the fourth quarter is encouraging.

- RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other factors that could materially affect the Mineral Resource estimates.

- It is RPA's opinion that the Turmalina Mineral Resource estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014).

MINING AND MINERAL RESERVES

- Proven and Probable Mineral Reserves total 1.08 million tonnes at a grade of 5.31 g/t Au, containing 184,502 ounces. Mineral Reserves are limited to Orebodies A and C.

- Mineral Reserves support a mine life of three years.

- The thicker portions of Orebody A, now considered for transverse mining in a primary/secondary sequence, comprise the highest grade, most productive portion of the Mineral Reserves.

- Comparing Levels 7, 8, 9 and 10 shows that the thicker, high-grade portion of Orebody A is increasing in lateral extent with depth.

- There is good potential for increasing Mineral Reserves by completing infill drilling of Inferred Resources at depth in Orebody A.

- RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimates.

- It is RPA's opinion that the Turmalina Mineral Reserve estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014).

METALLURGY AND PROCESSING

- The plant at the Turmalina Mine is well run and achieves consistent recoveries.

- Production capacity for the plant exceeds the ability of the mine to deliver ore.

CAPITAL AND OPERATING COSTS

- Life of Mine operating costs are forecast to average $83/t. Recent strengthening of the US dollar against the BRL has had a significant impact in reducing US$ unit costs. Jaguar used an exchange rate of US$1.00 = 3.8 BRL for 2016, and assumed a 6% annual devaluation of the BRL. Although current exchange rates have improved from recent lows (over 4.1, now 3.6), the exchange rate assumptions are consistent with forecasts.

- Sustaining capital costs are estimated to be $32 million, including reclamation and closure costs of $5.1 million. Due to struggles with profitability in recent years, Jaguar has elected to defer capital spending, to the extent possible, on areas such as mobile equipment rebuilds and replacements. In RPA's opinion, this is a short-term solution, and higher expenditures will be necessary at some point in the future.

- All-In Sustaining cost (as defined by the World Gold Council) for the Turmalina Mine is $791/oz, including reclamation and closure.

26 RECOMMENDATIONS

GEOLOGY AND MINERAL RESOURCES

GENERAL

- Complete updating the written procedures for the collection of geological and sampling information. Conduct a training session to present the procedures to all geological staff. The written procedures for entry of this data into the central database and its management should also be completed.

- Continue with database validation exercises focusing specifically on reducing the error rates for the collar and survey tables in the drill hole database.

- Make a slight modification to the logging procedures whereby detailed information regarding the mineralized intervals will be brought forward from the remarks column and inserted as a major level entry in the drill logs to assist in preparation of future updates to the Mineral Resources.

ASSAY LABORATORY

- The QA/QC results should be disseminated to all relevant parties.

- The data collected from programs implemented by the site geologists is entered into the Jaguar internal database (the BDI database), which is set up to automatically validate the results. However, the database does not have the functionality to easily extract the data and prepare control charts. The database should be amended as a minimum to improve the data extraction functionality so that standard control charts can be prepared.

- The QA/QC program should be amended to include the channel samples.

- Analysis of the QA/QC results should be carried out on a regular and timely basis to permit correction of any out-of-bounds results.

- At present, the pulverizers are cleaned with compressed air and a polyester fiber brush, after each sample. As a minimum, the pulverizers should be cleaned with a wire brush. No special protocols are in place to clean the pulverizers after passing a sample of known high gold grade (e.g., Orebody A). The pulverizers should be cleaned with silica sand after processing each known high grade sample (e.g., Turmalina quartz veins).

- All gold grades are determined by fire assay (FA)–atomic absorption (AA). The AA unit is currently calibrated to direct-read gold values up to 3.3 g/t. Any samples containing gold values in excess of this are analyzed by diluting the solute. High grade samples should be determined using a gravimetric method.

- The assay laboratory automatically re-assays all samples containing gold grades greater than 30 g/t Au, and the average of the re-assays are reported to the sites. All sample results should be reported to the site, without averaging.

- The threshold of 30 g/t Au is high. Re-assay thresholds of 10 g/t Au to 15 g/t Au are commonly used in other gold operations.

- The certificate number for each assay batch should be included into the central BDI database.

- The central BDI database should be updated to store drill core recovery, channel sample recovery, and sample tracking (lost sample) information. This will assist in deciding how to address null values in future resource estimates.

MINERAL RESOURCES

- The property-scale geological units should be incorporated into the resource block model.

- High gold grades in Orebody A are associated with narrow quartz veins that have been deformed. The site geologists collect structural data, however, this data does not seem to be incorporated as part of the Mineral Resource estimation process. The structural data should be entered into the BDI database.

- For future updates of the Mineral Resource estimates, mineralization wireframes should be created using a stope incremental grade that is closer to the reporting cut-off grade. This will allow improvement of the measurement of the amount of planned and unplanned dilution.

- Sample information for Orebody C should be extracted and used to estimate block grades for each lens individually.

- The average bulk density used to estimate the ore tonnes for Orebody A should be amended to 2.86 tonnes/m^3 while the average bulk density used to estimate the ore tonnes for Orebody C should be amended to 2.90 tonnes/m^3. The average bulk density of the waste materials should be amended to 2.82 tonnes/m^3 and 2.87 tonnes/m^3, respectively.

- Condemnation drilling should be carried out for the planned area where the cross-cuts to the hangingwall ventilation raise or hangingwall exploration drift intersect Orebody A to assist in planning the location of the cross-cut. Contouring of gold grades from channel samples and available drill holes should be implemented on a routine basis to identify the location of high grade plunging shoots. This information will assist the mine planning staff to maximize profitability, by locating pillars away from the wide, high-grade areas.

- Contouring of grade, thickness, and the grade-thickness product on Orebody B will be useful in identifying trends on gold distribution as well as potential areas where mining activities may be resumed.

- Reconciliation activities should continue to monitor the block model performance through to at least the second half of 2016 to provide sufficient information for determining whether changes to the estimation procedures are required.

- Reconciliation studies should be carried out at least on a quarterly basis, or more frequently as required.

- Slight revisions should be made to the workflow followed in preparation of reconciliation studies. For the revised work flow, the block model tonnes and grade are derived using the planned excavation shapes (drifts and stopes) while the mined tonnes are determined using the actual excavated volumes.

- Consideration should be given towards a program of taking muck samples from the stope draw points as an additional method of determining the as-mined stope grades.

- Detailed, in-fill, and exploration drilling of the down-plunge and along-strike projection of Orebody A with the goal of increasing the Mineral Resources and supporting detailed mine planning is warranted and justified.

- In-fill and step-out drilling on selected portions of Orebody C to upgrade the status of, and increase, the Mineral Resources is warranted.

MINING

- Review costs separately for Orebodies A and C, at up-to-date exchange rates, to determine if incremental cut-off grades can be lower and excess processing capacity more fully utilized.

- Monitor geotechnical performance of primary/secondary mining as it progresses.

- Assess planned and unplanned dilution performance separately for development and stoping, by comparing resource wireframes, planned excavation outlines, and surveys of the resulting excavations.

MINERAL PROCESSING AND METALLURGICAL TESTING

- It may be possible to reduce costs by reducing fineness of grind.

- According to the information provided, the metallurgical testwork on samples from the Faina, Pontal, and Orebody D deposits has been carried out to a preliminary level only. While these deposits are considered as refractory, a full set of testwork has not been completed for these deposits. Metallurgical testing should continue on these deposits and should include mineralogical characterization of the tailings samples from the testing programs.

- Options for processing refractory mineralization from Faina and/or Pontal should be investigated.

- Options for the use of excess processing capacity for toll milling should be investigated.

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28 DATE AND SIGNATURE PAGE

This report titled "Technical Report on the Turmalina Mine, Minas Gerais State, Brazil" and dated May 24, 2016 was prepared and signed by the following authors:

(Signed & Sealed) ***"Jason Cox"***

Dated at Toronto, ON
May 24, 2016

Jason Cox, P.Eng.
Principal Mining Engineer

(Signed & Sealed) ***"Reno Pressacco"***

Dated at Toronto, ON
May 24, 2016

Reno Pressacco, M.Sc.(A), P.Geo.
Principal Geologist

29 CERTIFICATE OF QUALIFIED PERSON

JASON COX

I, Jason Cox, P.Eng., as an author of this report entitled “Technical Report on the Turmalina Mine, Minas Gerais State, Brazil”, prepared for Jaguar Mining Inc. and dated May 24, 2016, do hereby certify that:

1. I am a Principal Mining Engineer and Director, Mining Engineering, with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.

2. I am a graduate of the Queen’s University, Kingston, Ontario, Canada, in 1996 with a Bachelor of Science degree in Mining Engineering.

3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #90487158). I have worked as a Mining Engineer for a total of 20 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on numerous mining operations and projects around the world for due diligence and regulatory requirements
   - Operational experience as Planning Engineer and Senior Mine Engineer at three North American mines
   - Contract Co-ordinator for underground construction at an American mine

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I visited the Turmalina Mine on November 20, 2014.

6. I am responsible for Sections 13, 15 to 24, and contributed to Sections 1, 25 and 26 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I co-authored a Technical Report on the Turmalina Mine in 2015.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 24th day of May, 2016

(Signed & Sealed) ***"Jason Cox"***

Jason Cox, P.Eng.

RENO PRESSACCO

I, Reno Pressacco, M.Sc., P.Geo., as an author of this report entitled "Technical Report on the Turmalina Mine, Minas Gerais State, Brazil", prepared for Jaguar Mining Inc. and dated May 24, 2016, do hereby certify that:

1. I am Principal Geologist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave., Toronto, ON, M5J 2H7.

2. I am a graduate of Cambrian College of Applied Arts and Technology, Sudbury, Ontario, in 1982 with a CET Diploma in Geological Technology, Lake Superior State College, Sault Ste. Marie, Michigan, in 1984, with a B.Sc. degree in Geology and McGill University, Montreal, Québec, in 1986 with a M.Sc.(A) degree in Mineral Exploration.

3. I am registered as a Professional Geologist in the Province of Ontario (Reg. #939). I have worked as a geologist for a total of 28 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on numerous exploration and mining projects around the world for due diligence and regulatory requirements, including preparation of Mineral Resource estimates and NI 43-101 Technical Reports.
   - Numerous assignments in North, Central and South America, Finland, Russia, Armenia and China in a variety of deposit types and in a variety of geological environments; commodities including Au, Ag, Cu, Zn, Pb, Ni, Mo, U, PGM and industrial minerals.
   - A senior position with an international consulting firm.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

5. I visited the Turmalina Mine on November 20, 2014.

6. I am responsible for Sections 2 to 12, 14, and 27 and contributed to Sections 1, 25 and 26 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I participated in an audit of Jaguar's Brazilian operations in February 2014 and co-authored a Technical Report on the Turmalina Mine in 2015.

9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 24th day of May, 2016

(Signed & Sealed) ***"Reno Pressacco"***

Reno Pressacco, M.Sc.(A)., P.Geo.