

## BIDJOVAGGE AU-CU-PROJECT MINERAL RESOURCE UPDATE JANUARY 2012



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# Outotec

## **Update Notes**

*This report is an update to the mineral resource modeling sections of the original report "Bidjovagge Au-CU-project, Mineral Resource Estimation, December 2010" dated 31. December 2010.*

*This update adds in the results from the summer 2011 drilling campaign and some other additions to the drill hole database since the last Mineral Resource Estimate update of 31.3.2011.*

*The number of new holes, drilled in 2011 is 42 and the total length drilled is 7378.67 meters.*

*Since the previous mineral resource update the existing underground development data have been transferred from the Outokumpu's Minenet system to the Surpac format increasing the confidence to the location of the mined out areas.*

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1. Certificates of Authors

## 1. INTRODUCTION

Outotec (Finland) Oy has been commissioned by Arctic Gold Ab to provide Mineral Resource Estimation update for the Bidjovagge project.

The following section describes the methodology used by Outotec (Finland) Oy in estimating the Mineral Resources for the Bidjovagge Au-Cu Project completed at the end of January, 2012.

Markku Merilainen and Pekka Lovén of Outotec (Finland) Oy, both Competent Persons as defined by Joint Ore Reserves Committee (JORC) prepared the Bidjovagge Project Mineral Resource estimate update of January 31st 2012.

The resource estimate complies with recommendations in the Australasian Code for Reporting of Mineral Resources and Ore Reserves (Joint Ore Reserve Committee – JORC-code).

The scope of work

- Revision of the data updates
- Update of the orebody model
- Creation of resource block model
- Mineral resource estimate
- Mineral resource classification according to the JORC code
- Mineral Resource Statement

Limitations

In preparing this report, Outotec (Finland) Oy has relied on information provided by Arctic Gold Ab. Outotec (Finland) Oy has no reason to believe that this information is materially misleading, incomplete or contains material errors. The content of this report as expressed by Outotec (Finland) Oy is based on the assumption that all the data provided by the Arctic Gold Ab is complete and correct to the best of the Arctic Gold Ab's knowledge.

## 2. DATA

Outotec received a copy of the Bidjovagge Access database in the 11<sup>th</sup> January, 2012. The database has been updated by Arctic Gold Ab with the new, 2011 drilling campaign holes and some other holes found from the archives since the last resource estimate of 31.3.2011. In addition to the new information the old data have been checked and corrected based on the old documents found.

The Bidjovagge database contains information on 1621 drill holes with a total length of 162294.96. The number of assayed intervals is 43489. The database does not include records of the density measurements.

Since the last resource update the Outokumpu era underground development data have been transferred from Outokumpu's mine planning system to the Surpac software. This has increased the confidence on the location of mined out areas and made it possible to include part of the A-zone into the mineral resources.

### 3. RESOURCE MODELLING

Mineral resources in Bidjovagge are situated mainly directly below the past ore production areas.

The geological model defining the remaining resource is based on a nominal 2.0 g/t Au-equivalent ( $aueq=au+2.1*cu$ ) cut off.

The resource model was constructed using Surpac Vision software. The resources were outlined in vertical sections using the cut-off of 2.0 g/t Aueq for all the resource areas. The distance between the drilling profiles varies from 10 m to 20 m. The direction of drilling is mainly from East to West, in some occasion from West to East.

From these 3D-strings 3D-digital solid models were created separately for each resource area.

The resource areas include the following areas: North field, B, Karin, Franciska , A, D, Hilde, C and Laura.

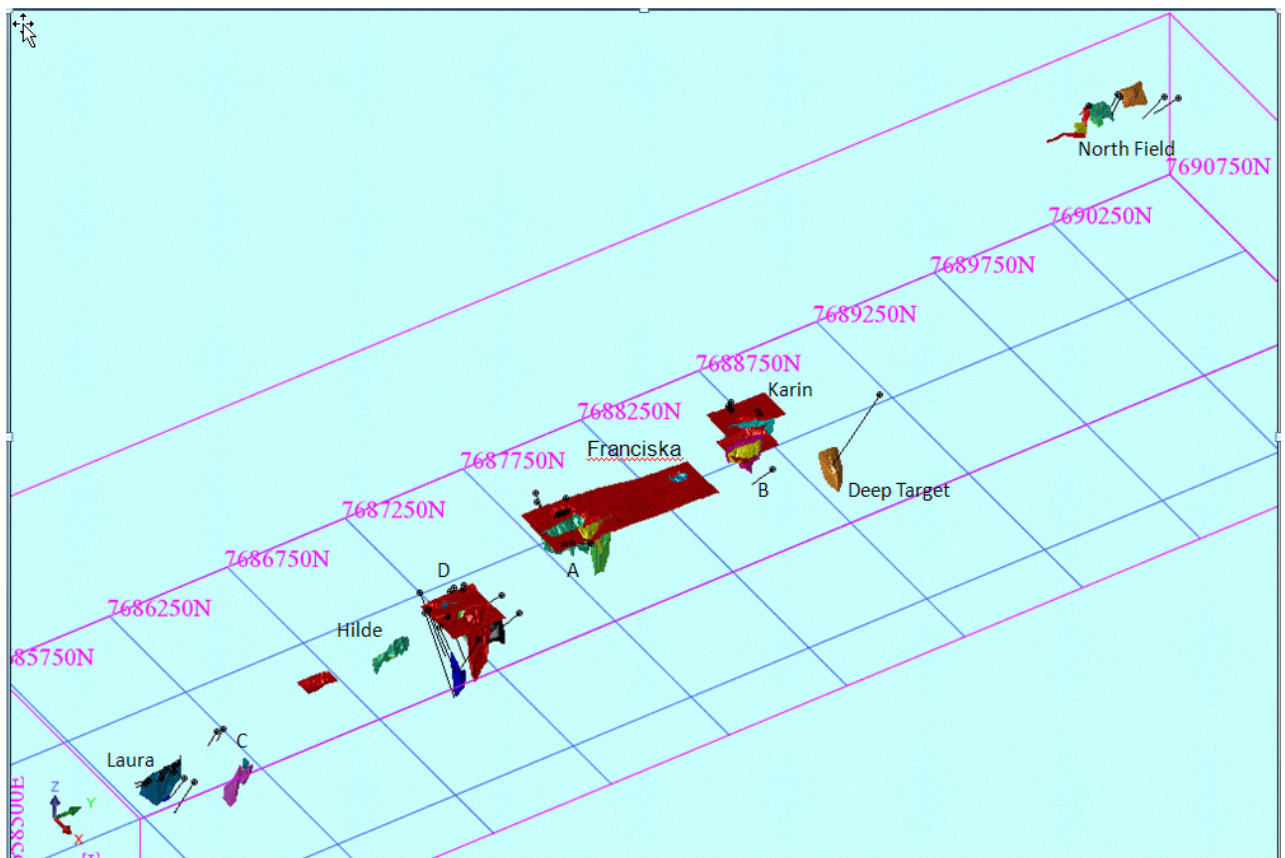


Figure 1. Bidjovagge resource areas and 2011 drill campaign holes.

## **4. STATISTICAL ANALYSIS**

### **4.1. Drill hole coding**

The assay data was coded using the wireframes of the mineralized zones to define the resource intersections. The intersection codes were used to extract samples for statistical analysis and for compositing the data for grade interpolation.

### **4.2. Data compositing**

Prior to the grade interpolation the assay data was composited into 1.5 m downhole composites honoring the mineralised lens boundaries. Compositing of drill hole samples is carried out in order to standardize the database for further statistical and geostatistical evaluation. This step eliminates any effect relating to the sample length, which exist in the data.

### **4.3. Basic statistics**

The basic statistics of the composites used in the grade interpolations of the resource areas are summarized in the table 4.1 below. It should be noted that the composites represent the original, pre mining situation including the already mined out portions of the deposits.

North			Franciska		
Variable	Au	Cu	Variable	au	cu
Number of samples	174	174	Number of samples	155	155
Minimum value	0.01	0.01	Minimum value	0.00	0.01
Maximum value	111.59	13.15	Maximum value	32.61	6.16
Mean	5.34	1.29	Mean	2.95	1.05
Median	0.41	0.81	Median	1.34	0.59
Geometric Mean	0.60	0.62	Geometric Mean	NA	0.46
Variance	287.70	2.96	Variance	21.60	1.36
Standard Deviation	16.96	1.72	Standard Deviation	4.65	1.17
Coefficient of variation	3.18	1.33	Coefficient of variation	1.57	1.11
Skewness	4.60	3.94	Skewness	3.38	1.57
Kurtosis	25.03	24.13	Kurtosis	16.40	5.24
B			D		
Variable	Au	Cu	Variable	Au	Cu
Number of samples	656	647	Number of samples	969	969
Minimum value	0.02	0.01	Minimum value	0.00	0.01
Maximum value	65.45	9.24	Maximum value	417.06	7.51
Mean	2.92	1.07	Mean	3.81	0.96
Median	1.20	0.79	Median	1.00	0.70
Geometric Mean	1.29	0.67	Geometric Mean	NA	0.55
Variance	28.17	1.07	Variance	336.81	0.98
Standard Deviation	5.31	1.03	Standard Deviation	18.35	0.99
Coefficient of variation	1.82	0.96	Coefficient of variation	4.82	1.03
Skewness	5.97	2.36	Skewness	15.54	2.67
Kurtosis	55.55	12.33	Kurtosis	304.05	13.20
Karin			Hilde		
Variable	Au	Cu	Variable	au	cu
Number of samples	810	810	Number of samples	414	414
Minimum value	0.10	0.01	Minimum value	0.00	0.00
Maximum value	433.67	9.17	Maximum value	32.25	7.57
Mean	9.40	0.68	Mean	1.83	1.19
Median	3.02	0.43	Median	0.80	0.92
Geometric Mean	3.01	0.39	Geometric Mean	NA	NA
Variance	614.97	0.70	Variance	10.82	1.22
Standard Deviation	24.80	0.84	Standard Deviation	3.29	1.10
Coefficient of variation	2.64	1.23	Coefficient of variation	1.80	0.93
Skewness	9.35	4.23	Skewness	4.93	2.37
Kurtosis	128.65	30.72	Kurtosis	33.65	10.38
C			Laura		
Variable	au	cu	Variable	Au	Cu
Number of samples	244	244	Number of samples	172	172
Minimum value	0.00	0.00	Minimum value	0.11	0.02
Maximum value	20.25	4.63	Maximum value	44.31	6.04
Mean	0.99	0.95	Mean	1.62	1.24
Median	0.61	0.75	Median	0.83	0.94
Geometric Mean	NA	NA	Geometric Mean	0.87	0.86
Variance	3.16	0.71	Variance	14.58	1.15
Standard Deviation	1.78	0.84	Standard Deviation	3.82	1.07
Coefficient of variation	1.80	0.88	Coefficient of variation	2.35	0.87
Skewness	7.12	1.98	Skewness	8.73	1.90
Kurtosis	67.70	7.74	Kurtosis	92.86	6.95

Table 4.1 Basic statistics of the composites used in the grade estimation.

## 5. MINERAL RESOURCE ESTIMATION

### 5.1. Block model

The block model in the Surpac modeling system was setup with the dimensions and parameters shown in the Table 5.1. The block size was selected partly based on the data density and partly based on geometric constraints.

Block Model Summarybidjo.mdl				
Type	Y	X	Z	
Minimum Coordinates	7685000	557400	250	
Maximum Coordinates	7690750	559500	750	
User Block Size	10	5	5	
Min. Block Size	10	5	5	
Rotation	0	0	0	
Total Blocks	92624			
Storage Efficiency %	99.61			
Attribute Name	Type	Decimals	Backgrou	Description
au	Float	3	0	
au <sub>eq</sub>	Calculated	-	-	au+2.1*cu
avgdst	Float	1	-1	
cu	Float	3	0	
cut_100_au	Float	3	0	
cut_30_au	Float	3	0	
dst2ns	Float	1	-1	
ns	Integer	-	0	

Table 5.1. Blockmodel summary

### 5.2. Top cuts

The reconciliation work carried out by Markus Ekberg in 1992 (Malmiarvion toteutuminen Bidjovaggen kultakaivoksella) suggests that the cutting point of high gold values varies between 3 g/t and 30 g/t depending on the ore type and the ore lens. Based on the statistical analysis for each of the mineralized zones the following top cut limits were applied:

Mineralized zone	Au top cut limit (g/t)
North zone	15
B	15
Karin	20
Fransesca	10
A	15



D	10
Hilde	30
C	5
Laura	10

Table 5.2 The top cut limits of the mineralizations.

### 5.3. Grade interpolation

Inverse Distance squared method was used to interpolate the Au, Cut(x)Au, and Cu grades into the blocks.

Resource areas were estimated with the composites inside the resource wireframes. The maximum search distance was 60m for all estimations. The minimum of 3 and maximum of 20 composites were used to estimate the block grade. The search ellipsoid was oriented to match the assumed grade continuity directions.

### 5.4. Resource estimate validation

The resource estimates were validated using visual checks to confirm that the block model grades represent the drill hole grades.

Outotec reviewed sections and plans throughout the resource and found the association between samples and block grades to be adequate.

## 6. RESOURCE CLASSIFICATION

The Remaining mineralization below the old open pits and/or underground workings of the B & K, F,A, D, C and Hilde areas and unmined areas on the northernmost (North Field) and southernmost (the Laura area) extensions of the mineralized zone is classified mainly as Indicated Mineral Resource and few minor lenses, including the Deep Ore, as Inferred Mineral Resources. The bottom level and other dimensions of the old pits of these areas are known in detail and are included into the used data base.

The resource estimate and the classification are based on diamond drilling done from the surface, from the bottom of open pits and from the production drifts and some limited mapping data from the old open pits and underground workings. The average drill hole spacing is considered to be adequate to define the grade continuity and geological framework with a reasonable degree of confidence.

Measured Mineral Resource class was not used at all in this stage, even if the drilling density is high enough below the old open pits and grade continuities are well defined in the known geological frame work. Measured Mineral Resource classification needs that Quality Assurance/Quality Control procedures will be completed. Also the original geological mapping data from the bottom levels of the old pits, if available, will support significantly classification into measured resource.

The available drill hole spacing (profile distance and distance of holes in profiles) is shown by resource area in the following table:

	Indicated Profile Distance (m)	Resource Hole Spacing (m)	Inferred Profile Distance (m)	Resource Hole Spacing (m)
North Field	20 - 40	10 - 40	40	30 - 50
B & K	10 - 20	5 - 30	-	-
Pit F	10	5 - 20	-	-
Pit D	10 - 20	5 - 30	20	30 <sup>1</sup>
Hilde	10 - 20	5 - 25	-	-
C-Area	10 - 20	5 - 20	-	-
L (Laura)	20	20 - 40	-	-

<sup>1</sup> Two holes parallel with the main continuity of the mineralization. The thickness of the mineralization is not sufficiently confirmed.

The mineralizations, which have good grade continuation in albitic felsites or in graphitic albitic felsites conforming the general stratigraphy, are classified as Indicate Mineral Resource. In many cases the mineralizations are controlled also by tuffites and graphitic felsites, which form the limiting hangingwall or footwall contact layer. In this resource estimate no other more detailed grade controlling factors are used, like U-Th grade or radiation, actinolite-chlorite-hematite alteration, some indicator elements or elemental ratios etc.

Some small, mineralized layers including the Deep Ore are classified as Inferred Mineral Resource. In these layers drilling density is low or not done in optimal direction.

## 7. RESOURCE STATEMENT

The tables below summarize the Mineral Resource Estimate by Outotec (Finland) Oy. The North Field and Laura deposits are unmined whereas the other deposits represent the remaining resource under the old open pits.

The bulk density used in all tonnage calculations is 2.8.

The Au equivalent (Aueq g/t), used as cut off, has been calculated using formula:

$$\text{Aueq} = \text{Au} + 2.1 \cdot \text{Cu}$$

assuming the gold price of 950 Us\$/oz and copper price of 5500 Us\$/t.

The Table 7.1 summarizes the Indicated Mineral Resource of the Bidjovagge project as of 31.1.2012.

Indicated Mineral Resource			
Aueq cut off	Tonnes	Au	Cu
1	2 307 000	1.48	1.09
2	2 059 000	1.60	1.15

Table 7.1. Indicated Mineral Resource, 31.1.2012

The Inferred Mineral Resource is presented in the Table 7.2.

Inferred Mineral Resource			
Aueq cut off	Tonnes	Au	Cu
1	250 000	2.49	0.90
2	240 000	2.57	0.92

Table 7.2. Inferred Mineral Resource, 31.1.2012

The breakdown of the Indicated and Inferred Mineral Resources into resource areas are shown in the tables 7.3 and 7.4.

Indicated Mineral Resource				
North Field				
Aueq cut off	Tonnes	Au	Cut15au	Cu
1	333900	2.49	1.13	1.28
2	232400	3.47	1.52	1.53
B				
Aueq cut off	Tonnes	Au	Cut15au	Cu
1	104300	1.91	1.61	1.00
2	87500	2.21	1.80	1.06
Karin				
Aueq cut off	Tonnes	Au	Cut20au	Cu
1	188300	3.08	2.94	0.55
2	175000	3.25	3.10	0.56
Franciska				
Aueq cut off	Tonnes	Au	Cut10au	Cu
1	74200	2.34	1.85	1.10
2	70000	2.42	1.87	1.15
A				
Aueq	Tonnes	Au	Cut15au	Cut5au
1	161000	1.07	1.02	0.89
2	160300	1.08	1.02	0.89
D				
Aueq cut off	Tonnes	Au	Cut10au	Cu
1	937300	2.24	1.56	1.08
2	903700	2.29	1.58	1.11
Hilde				
Aueq cut off	Tonnes	Au	Cut 30 Au	Cu
1	60200	1.30	1.29	1.22
2	58100	1.33	1.32	1.24
C				
Aueq cut off	Tonnes	Au	Cut5au	Cu
1	144900	1.13	0.88	0.89
2	107800	1.33	0.99	1.02
Laura				
Aueq cut off	Tonnes	Au	Cut10au	Cu
1	302400	1.38	1.15	1.14
2	264600	1.50	1.24	1.22

Table 7.3 Indicated Mineral Resource by resource area.

Inferred Mineral resource				
North Field				
Aueq cut off	Tonnes	Au (uncut)	Cut15au	Cu
1	56700	1.6	1.6	1.1
2	47600	1.9	1.9	1.3
Deep target, 16				
Aueq cut off	Tonnes	Au (uncut)	Cut15au	Cu
1	196000	2.8	2.7	0.8
2	194600	2.8	2.7	0.8

Table 7.4 Inferred Mineral Resource by resource area.

31. January 2012

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## APPENDIX 1

### CERTIFICATE of AUTHOR

I, **Pekka Lovén**, MAusIMM, MSc (Mining), do hereby certify that:

1. I am a Senior Technology Advisor – Mining of Outotec (Finland) Oy, Riihitontuntie 7 E, 02200 Espoo, Finland
2. I graduated with MSc degree in Mining Engineering from Helsinki University of Technology in 1980.
3. I am a Member(CP) of the Australian Institution of Mining and Metallurgy (Member# 301822).
4. I have worked as a mining engineer for a total of 31 years since my graduation from the university.
5. I am a Competent Person in accordance with the JORC Code (2004).
6. I am responsible for the preparation of resource estimate for the Bidjovagge Au-CU-project, Mineral Resource Estimation, 13th December 2010
7. I am not aware of any material fact or material change with respect to the subject matter of the report that is not reflected in the report, the omission to disclose which makes the report misleading.
8. I am independent of Arctic Gold Ab
9. I have read the guidelines of JORC (2004) with regards to the reporting of mineral Resources and Reserves
10. I consent to the filing of the Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public.

Dated this 31st day of January, 2012



Pekka Lovén

## Certificate of Competent Person

I **Markku Meriläinen**, AusIMM, MSc. Do hereby certify that:

1. I am a Senior Technology Advisor – Geology of Outotec (Finland) Riihitontuntie 7 E, 02200 Espoo, Finland
2. I graduated from the University of Helsinki with a Master of Science (Geology and Petrology) in 1979.
3. I am a member of the Australian Institute Of Mining and Metallurgy (AusIMM; Member # 224922).
4. I have worked as a geologist for a total of 30 years since my graduation from the university.
5. I am a Competent Person in accordance with the JORC Code (2004)
6. I am responsible for the geological interpretation and 3D modeling of the resource estimation, Mineral Resource Estimation, 13<sup>th</sup> December 2010
7. I am not aware of any material fact or material change with respect to the subject matter of the report that is not reflected in the report, the omission to disclose which makes the report misleading.
8. I am independent of Arctic Gold AB
9. I have read the guidelines of JORC (2004) with regards to the reporting of Mineral Resources and Reserves

Dated this 31st Day of January, 2012



Markku Meriläinen