

# Follow-up drill sampling confirms high-grade gold results at Juruena

## **Highlights**

- Sampling of individual samples from previously released composite sample results return up to **3m @ 161 g/t gold** (inc. **1m @ 329 g/t gold** from 101m in MR-10/2015 -Dona Maria prospect)
- The original 4m composite sample results from MR-10/2015 returned **12m @ 35.13 g/t gold** from 99m. Single metre samples from this composite were collected in the field, re-submitted to the lab and returned;
  - o 8m @ 62.40 g/t gold from 101m including
    - 3m @ 161 g/t gold from 101m and
    - 2m @ 5.9 g/t gold from 107m
- Individual samples are routinely done on composite samples with results >0.5g/t gold to more precisely define mineralised zones
- New results from follow-up drill core sampling from Dona Maria prospect, increases significant intercept in MD-01/2015 from 3.4m @ 48 g/t gold (from 183.25m) to 8m @ 21.76 g/t gold from 179m
- New results from follow-up drill core sampling from Querosene prospect includes **1.03m @ 58.2 g/t gold** from 88.46m in hole QD-05/2015
- Strong repeatability of composite versus individual samples across all of the prospects drilled in 204/15, is demonstrated and increases confidence in the drilling representivity
- ☐ Global Resource Engineering commissioned to undertake preliminary economic assessment to assist with consideration of potential trial mining operation

Crusader has received encouraging results from a program of re-sampling of composite samples that can better define mineralisation zones at the Juruena Gold Project. This sampling is implemented when the previously received composite drill sample results (see ASX announcements released on 18/12/2014, 17/03/2015, 08/05/2015 and 01/07/2015) return values over 0.5 g/t gold.

The Juruena Project (> 400km² of contiguous tenements, 100% Crusader owned) is located in Central Brazil on the southern fringe of the Amazon basin. Situated on the western end of the prospective Juruena-Alta Floresta gold belt (estimated to have produced ~7Moz Au), Juruena has been worked extensively by artisanal miners (garimpeiros) since the 1980s, producing an estimated 500koz of gold.

Crusader recently announced (ASX Announcement – 29 September 2015) a maiden resource for three prospects at Juruena, including the Dona Maria, Querosene and Crentes prospects. The maiden resource estimated a total of **1.3Mt @ 5.6g/t for 234koz Au.** 



### Drill sample results -Composite comparison

A full table comparing the composite sample results (previously reported) and the newer individual metre results, as well as a graphical summary of the results, is presented below. The data shows that there is no significant bias between the composite sample results and the individual sample results (re-composited for comparison).

Composite sampling (when several intervals of drilling are submitted as a single sample) is routinely implemented in RC drilling as a means to reduce assaying costs. The geologist on the drill rig, logs the hole and selects the most prospective sections- these are sampled on normal spacing- either 0.5m or 1m (depending on the prospect). Areas considered less prospective are composite sampled in order to ensure coverage of the entire hole. Once results are received, composite results above the nominal 0.5 g/t cutoff are re-submitted in their original sample intervals, either 0.5m or 1m.

## New diamond drill results -holes MD-01/2015 and QD-05/2015 (Dona Maria and Querosene prospects)

Crusader has received results from follow-up sampling of diamond core which were recently cut, sampled and sent to the lab. The sections of core which were cut and sampled, were targeted after the initial samples results were received and interpreted, prompting follow-up sampling in several holes. The full results are published in Table 2 below and illustrated in Figure 1. Highlights include;

- MD-01/2015 from 3.4m @ 48g/t gold (from 183.25m), has been extended to;
  - o 8m @ 21.76g/t gold from 179m- Dona Maria prospect
- QD-05/2015 1.03m @ 58.2 g/t gold from 88.46m Querosene prospect

Significant intercepts are calculated based on a 1g/t lower cut-off, no upper cut and up to 2m of consecutive internal dilution.

#### **Preliminary Economic Assessment**

Global Resource Engineering (GRE), a Denver based mining engineering firm specialising in providing geology and engineering services to developing and existing projects, has commenced work to assess the economics of a high-grade trial mining operation at Juruena. This work will involve scoping level underground mine designs for Querosene and Dona Maria. GRE has substantial Brazilian experience and importantly completed work on similar projects also located in the Amazon regions of Brazil.



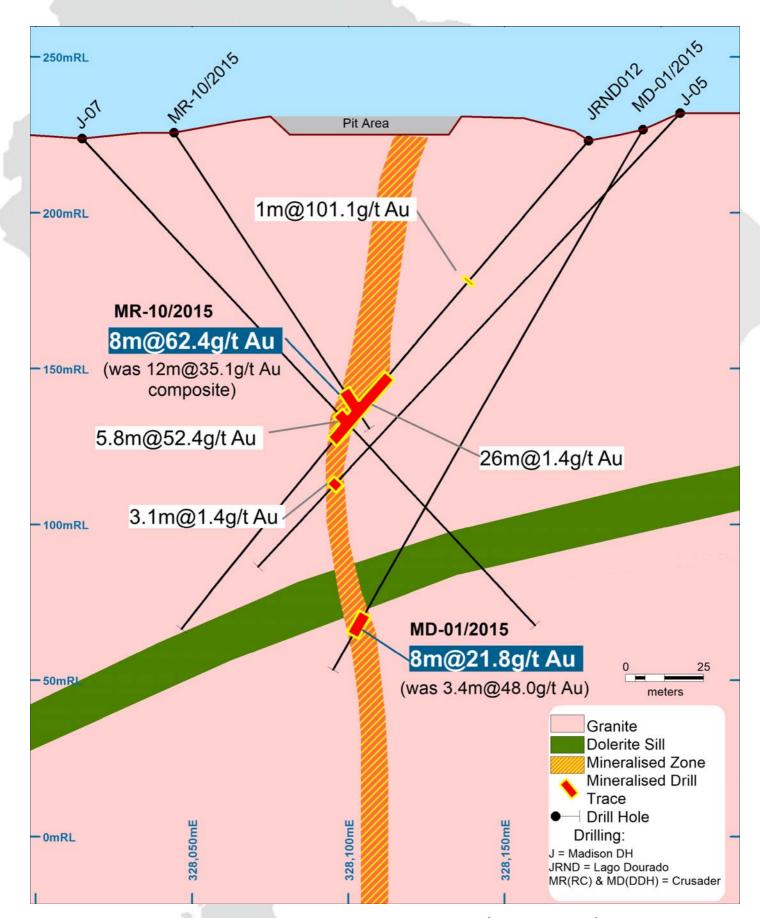


Figure 1: Cross section through Dona Maria prospect showing holes MR-10/2015 and MD-01/2015



Table 1: Juruena drilling results – Composite and individual sample results

Old Composite Sample Results						New Individual Sample Results				
Hole ID	From	То	Interval	Au_ppm		Hole ID	From	То	Interval	Au_ppm
CR-10/2015	121.00	122.00	1.00	0.80		CR-10/2015	121.00	121.50	0.50	1.799
						CR-10/2015	121.50	122.00	0.50	0.051
CR-11/2015	52.00	56.00	4.00	0.67		CR-11/2015	52.00	53.00	1.00	0.714
						CR-11/2015	53.00	54.00	1.00	0.255
						CR-11/2015	54.00	55.00	1.00	0.239
						CR-11/2015	55.00	56.00	1.00	1.399
CR-11/2015	60.00	61.00	1.00	0.53		CR-11/2015	60.00	60.50	0.50	0.633
						CR-11/2015	60.50	61.00	0.50	0.580
CR-11/2015	61.00	62.00	1.00	0.57		CR-11/2015	61.00	61.50	0.50	0.562
						CR-11/2015	61.50	62.00	0.50	0.698
CR-11/2015	68.00	69.00	1.00	0.64		CR-11/2015	68.00	68.50	0.50	0.753
						CR-11/2015	68.50	69.00	0.50	0.757
CR-11/2015	79.00	80.00	1.00	2.57		CR-11/2015	79.00	79.50	0.50	3.781
						CR-11/2015	79.50	80.00	0.50	<b></b>
CR-12/2015	42.00	43.00	1.00	0.65		CR-12/2015	42.00	42.50	0.50	0.340
						CR-12/2015	42.50	43.00	0.50	0.565
CR-12/2015	55.00	59.00	4.00	0.69		CR-12/2015	55.00	56.00	1.00	
						CR-12/2015	56.00	57.00	1.00	1
						CR-12/2015	57.00	58.00	1.00	0.553
						CR-12/2015	58.00	59.00	1.00	0.897
CR-12/2015	79.00	83.00	4.00	0.51		CR-12/2015	79.00	80.00	1.00	
						CR-12/2015	80.00	81.00	1.00	0.957
						CR-12/2015	81.00	82.00	1.00	
						CR-12/2015	82.00	83.00	1.00	1
CR-13/2015	12.00	16.00	4.00	5.19		CR-13/2015	12.00	13.00	1.00	3.886
						CR-13/2015	13.00	14.00	1.00	9.811
						CR-13/2015	14.00	15.00	1.00	<b>†</b>
/						CR-13/2015	15.00	16.00		1
CR-13/2015	44.00	48.00	4.00	1.10		CR-13/2015	44.00	45.00	1.00	0.167
						CR-13/2015	45.00			
						CR-13/2015	46.00			
	10.00					CR-13/2015	47.00			
CR-13/2015	48.00	52.00	4.00	0.94		CR-13/2015	48.00			1
						CR-13/2015	49.00			
						CR-13/2015	50.00	51.00		
05.40/0045	52.00	<b>-</b>	4.00	2.00		CR-13/2015	51.00	52.00		
CR-13/2015	52.00	56.00	4.00	2.83		CR-13/2015	52.00	53.00		
						CR-13/2015	53.00	54.00		1
						CR-13/2015	54.00	55.00		1
CD 42/22:=	F.C. 0.5	60.00		2.25		CR-13/2015	55.00	56.00		
CR-13/2015	56.00	60.00	4.00	0.87		CR-13/2015	56.00	57.00		
						CR-13/2015	57.00	58.00		
						CR-13/2015	58.00			<u> </u>
						CR-13/2015	59.00	60.00	1.00	0.304



Table 1: continued

Old Composite Sample Results						New Individual Sample Results				
Hole ID	From	То	Interval	Au_ppm		Hole ID	From	То	Interval	Au_ppm
CR-13/2015	61.00	62.00	1.00	0.83		CR-13/2015	61.00	61.50	0.50	0.257
						CR-13/2015	61.50	62.00	0.50	0.771
CR-13/2015	62.00	63.00	1.00	0.68		CR-13/2015	62.00	62.50	0.50	0.591
						CR-13/2015	62.50	63.00	0.50	0.443
CR-13/2015	63.00	64.00	1.00	0.57		CR-13/2015	63.00	63.50	0.50	0.562
						CR-13/2015	63.50	64.00	0.50	1.511
CR-13/2015	64.00	65.00	1.00	1.83		CR-13/2015	64.00	64.50	0.50	0.947
						CR-13/2015	64.50	65.00	0.50	1.064
CR-13/2015	65.00	66.00	1.00	1.16		CR-13/2015	65.00	65.50	0.50	0.678
						CR-13/2015	65.50	66.00	0.50	1.332
CR-13/2015	68.00	69.00	1.00	0.79		CR-13/2015	68.00	68.50	0.50	0.148
						CR-13/2015	68.50	69.00	0.50	1.570
CR-13/2015	69.00	70.00	1.00	2.14		CR-13/2015	69.00	69.50	0.50	2.924
						CR-13/2015	69.50	70.00	0.50	0.604
CR-13/2015	79.00	80.00	1.00	1.41		CR-13/2015	79.00	79.50	0.50	0.399
						CR-13/2015	79.50	80.00	0.50	1.619
CR-13/2015	80.00	84.00	4.00	3.11		CR-13/2015	80.00	81.00	1.00	3.730
						CR-13/2015	81.00	82.00	1.00	3.031
						CR-13/2015	82.00	83.00	1.00	0.444
						CR-13/2015	83.00	84.00	1.00	0.229
CR-14/2015	8.00	12.00	4.00	0.81		CR-14/2015	8.00	9.00	1.00	0.098
						CR-14/2015	9.00	10.00	1.00	0.633
						CR-14/2015	10.00	11.00	1.00	1.257
						CR-14/2015	11.00	12.00	1.00	0.451
CR-14/2015	42.00	43.00	1.00	0.98		CR-14/2015	42.00	42.50	0.50	0.059
						CR-14/2015	42.50	43.00	0.50	0.911
CR-15/2015	25.00	26.00	1.00	0.57		CR-15/2015	25.00	25.50	0.50	0.097
						CR-15/2015	25.50	26.00	0.50	0.060
CR-15/2015	26.00	27.00	1.00	0.91		CR-15/2015	26.00	26.50	0.50	0.074
						CR-15/2015	26.50	27.00	0.50	0.946
CR-16/2015	49.00	50.00	1.00	0.86		CR-16/2015	49.00	49.50	0.50	0.252
						CR-16/2015	49.50	50.00	0.50	1.812
CR-16/2015	50.00	54.00	4.00	1.22		CR-16/2015	50.00	51.00	1.00	0.303
						CR-16/2015	51.00	52.00	1.00	1.463
						CR-16/2015	52.00	53.00	1.00	2.866
						CR-16/2015	53.00	54.00	1.00	0.604
CXR-14/2015	37.00	38.00	1.00	0.77		CXR-14/2015	37.00	37.50	0.50	0.254
						CXR-14/2015	37.50	38.00	0.50	1.116
CXR-15/2015	58.00	59.00	1.00	0.78		CXR-15/2015	58.00	58.50	0.50	0.924
						CXR-15/2015	58.50	59.00	0.50	0.608
CXR-15/2015	59.00	60.00	1.00	0.57		CXR-15/2015	59.00	59.50	0.50	0.635
						CXR-15/2015	59.50	60.00	0.50	0.484
CXR-15/2015	62.00	63.00	1.00	1.94		CXR-15/2015	62.00	62.50	0.50	3.317
						CXR-15/2015	62.50	63.00	0.50	0.344



Table 1: continued

Old Composite Sample Results						New Individual Sample Results				
Hole ID	From	То	Interval	Au_ppm		Hole ID	From	То	Interval	Au_ppm
MR-06/2015	27.00	28.00	1.00	3.641		MR-06/2015	27.00	28.00	1.00	3.573
MR-06/2015	126.00	127.00	1.00	6.52		MR-06/2015	126.00	126.50	0.50	2.325
						MR-06/2015	126.50	127.00	0.50	11.803
MR-06/2015	134.00	135.00	1.00	1.14		MR-06/2015	134.00	134.50	0.50	1.436
						MR-06/2015	134.50	135.00	0.50	0.816
MR-06/2015	135.00	136.00	1.00	0.59		MR-06/2015	135.00	135.50	0.50	0.591
						MR-06/2015	135.50	136.00	0.50	0.439
MR-06/2015	139.00	140.00	1.00	0.57		MR-06/2015	139.00	139.50	0.50	0.948
						MR-06/2015	139.50	140.00	0.50	0.108
MR-10/2015	99.00	103.00	4.00	75.07		MR-10/2015	99.00	100.00	1.00	0.837
						MR-10/2015	100.00	101.00	1.00	0.065
						MR-10/2015	101.00	102.00	1.00	321.250
						MR-10/2015	102.00	103.00	1.00	82.249
MR-10/2015	103.00	107.00	4.00	16.04		MR-10/2015	103.00	104.00	1.00	82.433
						MR-10/2015	104.00	105.00	1.00	0.733
						MR-10/2015	105.00	106.00	1.00	0.576
						MR-10/2015	106.00	107.00	1.00	0.138
MR-10/2015	107.00	111.00	4.00	14.27		MR-10/2015	107.00	108.00	1.00	10.182
						MR-10/2015	108.00	109.00	1.00	1.624
						MR-10/2015	109.00	110.00	1.00	0.440
						MR-10/2015	110.00	111.00	1.00	0.361
QR-27/2015	16.00	20.00	4.00	0.63		QR-27/2015	16.00	17.00	1.00	0.068
						QR-27/2015	17.00	18.00	1.00	0.036
						QR-27/2015	18.00	19.00	1.00	0.734
						QR-27/2015	19.00	20.00	1.00	2.221
QR-27/2015	20.00	24.00	4.00	0.58		QR-27/2015	20.00	21.00	1.00	1.082
						QR-27/2015	21.00	22.00	1.00	0.688
						QR-27/2015	22.00	23.00	1.00	0.371
						QR-27/2015	23.00	24.00	1.00	0.185
QR-28/2015	48.00	49.00	1.00	3.00		QR-28/2015	48.00	48.50	0.50	0.345
						QR-28/2015	48.50	49.00	0.50	2.503
QR-28/2015	49.00	50.00	1.00	16.21		QR-28/2015	49.00	49.50	0.50	34.065
						QR-28/2015	49.50	50.00	0.50	0.566
QR-29/2015	30.00	31.00	1.00	2.24		QR-29/2015	30.00	30.50	0.50	3.250
						QR-29/2015	30.50	31.00	0.50	1.277
QR-29/2015	31.00	32.00	1.00	0.65		QR-29/2015	31.00	31.50	0.50	1.133
						QR-29/2015	31.50	32.00	0.50	0.121
QR-29/2015	32.00	33.00	1.00	0.61		QR-29/2015	32.00	32.50	0.50	0.803
						QR-29/2015	32.50	33.00	0.50	0.176
QR-29/2015	33.00	34.00	1.00	0.59		QR-29/2015	33.00	33.50	0.50	1.012
						QR-29/2015	33.50	34.00	0.50	0.101



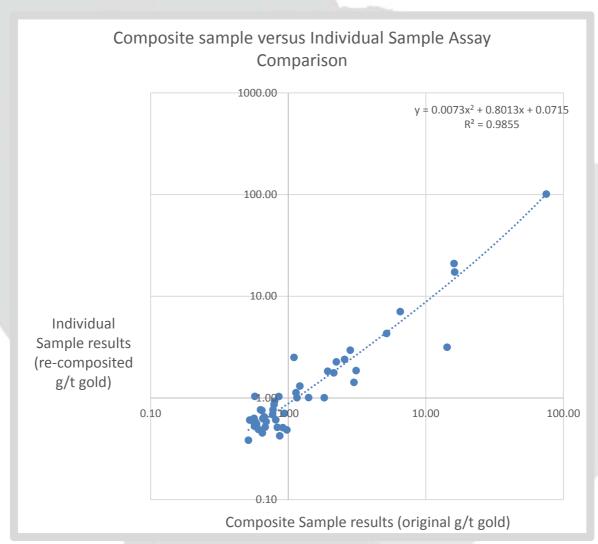


Figure 2: Graph showing the composite samples versus the individual samples (re-composited for comparison purposes). No obvious bias is detected and the polynomial line of best fit shows strong correlation.

Prospect	Hole ID	Final Depth	Easting	Northing	RL	Azimuth	Dip	Fron	n (m)	To (m)	Interval (m)	Au g/t	Comments
									179	187	8	21.76	
								inc.	179	180	1	2.439	New Intersection
								inc.	180	181	1	0.682	New Intersection
					227			inc.	181	182	1	4.706	New Intersection
DONA	MD-	MD- 01/2015 199.78	78 328194	8990109		270	-60	inc.	182	183	1	3.775	New Intersection
MARIA	01/2015					270	-00	inc.	183	183.62	0.62	0.586	New Intersection
								inc.	183.62	184.59	0.97	57.724	
								inc.	184.59	185.49	0.9	113.36	
								inc.	185.49	186.38	0.89	3.258	
								inc.	186.38	187	0.62	1.953	
						90	-55		88.46	89.49	1.03	58.24	New Intersection
QUEROSENE	QD-05/2015	200.45	329648	8989477	244				110.7	111.2	0.5	7.02	
					179.1	179.3	0.2	4.81					

**Table 2: Significant intercepts from Juruena Project** 



## For further information please contact:

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#### **About Crusader**

Crusader Resources Limited (ASX:CAS) is a minerals exploration and mining company listed on the Australian Securities Exchange. Its major focus is Brazil; a country Crusader believes is vastly underexplored and which offers high potential for the discovery of world class mineral deposits. Crusader has three key assets:

#### Juruena Gold

The Juruena Gold Project is located in the highly prospective Juruena-Alta Floresta Gold Belt, which stretches east-west for >400km and has historically produced more than 7Moz of gold from 40 known gold deposits.

The Juruena Project has been worked extensively by artisanal miners (garimpeiros) since the 1980s, producing ~500koz in that time. Historically there is a database of more than 30,000 meters of drilling and extensive geological data.

#### Posse Iron Ore

The Posse Iron Ore Mine is located 30km from Belo Horizonte, a city acknowledged as the mining capital of Brazil and the capital of Minas Gerais state. The project had an indicated and inferred Mineral Resource estimate of 36Mt @ 43.5% Fe when mining began in March 2013. Posse is currently selling DSO into the domestic market. With an experienced mining workforce amongst a population of over 2.5 million people, the infrastructure and access to the domestic steel market around the Posse Project is excellent.

#### **Borborema Gold**

The Borborema Gold Project is in the Seridó area of the Borborema province in north-eastern Brazil. It is 100% owned by Crusader and consists of three mining leases covering a total area of 29 km² including freehold title over the main prospect area.

The Borborema Gold Project benefits from a favourable taxation regime, existing on-site facilities and excellent infrastructure such as buildings, grid power, water, sealed roads and is close to major cities and regional centres. The project's Ore Reserve includes Proven and Probable Ore Reserves of 1.61Moz of mineable gold from 42.4Mt @ 1.18g/t (0.4 & 0.5g/t cut-offs for oxide & fresh).

The measured, indicated and inferred Mineral Resource Estimate of 2.43Moz @ 1.10g/t gold, remains open in all directions.

#### **Competent Person Statement**

The information in this report that relates to Juruena Gold Project exploration results, Posse Iron Ore Project exploration results and Borborema Gold Project exploration results released after 1 December 2013, is based on information compiled or reviewed by Mr.. Robert Smakman who is a full time employee of the company and is a Fellow of the Australasian Institute of Mining and Metallurgy. The information in this report that relates to Mineral Resources at the Juruena Gold Project is based on information compiled or reviewed by Mr. Lauritz Barnes and Mr. Aidan Platel who are independent consultants to the company and Members of the Australasian Institute of Mining and Metallurgy. Each of Mr. Smakman, Mr. Barnes and Mr. Platel have sufficient experience that is relevant to the type of mineralisation and type of deposits under consideration to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr. Smakman, Mr. Barnes and Mr. Platel consent to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to:

- a) Borborema Gold Project and Posse Iron Ore Project Exploration Results released prior to 1 December 2013 is based on information compiled or reviewed by Mr. Robert Smakman who is a full time employee of the company;
- b) Borborema Gold Mineral Resources is based on information compiled by Mr. Lauritz Barnes and Mr. Brett Gossage, independent consultants to the company;
- c) Borborema Gold Ore Reserves is based on information compiled by Mr. Linton Kirk, independent consultant to the company;
- d) Posse Fe Mineral Resources is based on and accurately reflects, information compiled by Mr. Bernardo Viana who was a full time employee of Coffey Mining Pty Ltd,

and who are all Members of the Australasian Institute of Mining and Metallurgy (Rob Smakman and Linton Kirk being Fellows), and who all have sufficient experience that is relevant to the type of mineralisation and type of deposit under consideration, and to the activity which they are undertaking to qualify as a Competent Person as defined in the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Each of Mr. Smakman, Mr. Barnes, Mr. Kirk, Mr. Viana, and Mr. Brett Gossage consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

The information was prepared and disclosed under the JORC Code 2004. It has not been updated since to comply with JORC Code 2012 on the basis that the information has not materially changed since it was last reported



# Juruena Gold Project JORC Code, 2012 Edition Section 1. Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections)

Criteria		JORC Code Explanation		Commentary
Sampling Techniques	ı	Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as downhole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.	٠	Reverse circulation (RC) drill sample: samples were collected at one metre intervals and locally, in the proximity of the main target zone, at 0.5m intervals. In zones of little apparent interest, samples were composited in 4m intervals for submission to the laboratory and 3 - 4kg duplicates of the individual 1m or 0.5m samples retained for future analysis, if required. These are the sample which were sent to the lab for single interval analysis. The sample material passed through a 3 stage Jones riffle splitter. Samples were kept relatively dry through the use of a booster compressor to maintain a high level of air pressure.
	٠	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	•	Diamond drill sample: diamond core was split in half lengthways and sampled typically at 1m intervals, although sampling was to geological boundaries and hence sample length ranged from 0.2 - 2.0m. Samples were placed in high density plastic sample bags and immediately sealed shut with cable ties.
	•	Aspects of the determination of mineralisation that are Material to the Public Report.	•	A 1.5 - 2.5kg sample was collected into a high density plastic bag before being sent for analysis, FAA (50g charge) for gold only and ICP-MS (15g charge). All efforts were made to ensure sample contamination was minimised and that all samples could be deemed representative of the interval that they originated from. Based on statistical analysis of field duplicates, there is no evidence to suggest samples are not representative.
		In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.	•	Sampling procedures followed by historic operators were in line with industry standards at the time (personal communication with senior staff in charge of previous work), as are Crusader's current procedures.
Drilling techniques		Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, facesampling bit or other type, whether core is oriented and if so, by what method, etc.).	•	Crusader completed 73 RC drill-holes in 2014 and 2015 (7,749.50m) using a nominal 5 ½ inch face sampling hammer. Hole conditions were mostly dry, with sufficient air pressure available to keep water from entering the drill-hole. Where high water inflows potentially threatened sample integrity, the drill-hole was abandoned and subsequently re-drilled with a diamond rig . Drill-hole inclinations ranged from -55 to -67 degrees. In early 2015 Crusader also completed 11 diamond drill-holes (1,863.81m) of NQ2 diameter with HQ pre-collars in unconsolidated material.



Criteria	JORC Code Explanation	Commentary
Drilling Techniques (cont.)		Down-hole surveys were completed for the diamond drill-holes, but the core was not oriented.
		<ul> <li>Crusader's resource drill-hole database includes 90 RC drill-holes (6,618m) and 70 diamond drill-holes (22,497.81m) completed between 2010 and 2013 by Lago Dourado Minerals Ltd ("Lago"). The RC drill-holes were drilled with a nominal 5 inch face sampling hammer, and the diamond drill-holes were of NQ2 diameter with HQ pre-collars. All diamond core was oriented, initially with a spear and subsequently with a Reflex ACT II instrument. Drill-hole inclinations ranged from -50 degrees to vertical.</li> </ul>
		<ul> <li>Crusader's resource drill-hole database also includes 91 diamond drill-holes (15,821.89m) completed between 1994 and 1998 by Madison Minerals Ltd ("Madison"). The diamond drill-holes were of NQ2 diameter with HQ pre-collars. Drill-hole inclinations ranged from -45 to -62 degrees.</li> </ul>
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> </ul>	<ul> <li>RC drill sample recoveries were verified by weighing every sample; diamond core recovery by measuring the length of core recovered compared to the drill run. For the whole database (i.e. combined Crusader and Lago drill-holes) over 90% of measured recoveries are above 80%.</li> </ul>
	<ul> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> </ul>	<ul> <li>For both Crusader and Lago drill-holes, recovery data has been recorded, and field duplicates submitted and analysed. No sample recovery information is available for Madison</li> </ul>
	<ul> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<ul> <li>Gold mineralisation does not apparently correlate to zones of low sample recovery; sample bias due to poor sample recovery is therefore not believed to be an issue.</li> </ul>
Logging	<ul> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> </ul>	All Crusader and Lago drill-holes have been geologically and geotechnically (core) logged in detail, and the data stored in a digital database. Summary logs exist for the Madison holes.
	<ul> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.</li> </ul>	<ul> <li>Logging of diamond drill-core and RC samples recorded lithology, mineralogy, mineralisation, structure (core only), weathering and colour. Core photographs also exist for all drill-holes.</li> </ul>
	<ul> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>Lithological data exists for all Crusader, Lago and Madison drill-holes in the database that were utilized in the resource estimation.</li> </ul>



Criteria	JORC Code Explanation			Commentary
Sub-sampling techniques and sample preparation	<ul> <li>taken. If non-core, whether rift and whether sampled wet or of and whether sampled wet or of the sample types, the nature the sample preparation technology.</li> <li>Quality control procedures additional maximise representivity of samples and the in situ material collected, if duplicate/second- half sampling.</li> </ul>	re, quality and appropriateness of ique. opted for all sub-sampling stages to mples.  It the sampling is representative of including for instance results for field	•	RC samples were collected using a 3-stage Jones riffle splitter, a high density plastic bag was placed directly over the sample chute on the rifle splitter. The sample size was 3-4 kilograms and the size of the chips was predominantly 0.4-0.8 centimetres with a few chips greater than this. The comportment of gold is fine and evenly distributed normally associated with fine disseminated sulphides. Sampling was generally conducted on dry samples.  Diamond drill-core was cut in half lengthways on site using a diamond saw; for duplicate samples quarter-core was used.  Sample preparation was undertaken by SGS-Geosol Laboratories ("SGS") in Brazil for Crusader samples and Acme Analytical Laboratories ("Acme") in Brazil for Lago samples. Madison used SGS in Brazil for sample preparation and analysis with check assaying performed at X-RAL labs in Toronto. All used industry standard methods (dry – crush – split – pulverise) which are considered appropriate for the style of mineralisation intersected in the drill-holes. The sample preparation method used by SGS-Geosol laboratories is presented in the following section.  Standards (certified reference material), blanks and duplicates were inserted into the sample stream at the rate of 1:25, 1:25 and 1:40 samples, respectively for both Crusader and Lago drill-holes.
Quality of assay data and laboratory tests	<ul> <li>laboratory procedures used an considered partial or total.</li> <li>For geophysical tools, spectrol etc., the parameters used in dinstrument make and model, in applied and their derivation, explicitly control procedures, duplicates, external land</li> </ul>	meters, handheld XRF instruments, letermining the analysis including reading times, calibrations factors etc. edures adopted (eg standards,	•	The samples were assayed for Au by Fire Assay of 50g aliquots followed by Atomic Absorption Spectroscopy (AAS), a technique designed to report total gold.  No geophysical tools were used to determine any element concentrations.  The coarse and pulp sample rejects from the preparation and analytical laboratories were retained and stored at the laboratory, allowing for re-assaying in the future if required. Splits of all samples were stored in secure heavy duty plastic bags in an enclosed storage facility on-site at the Juruena Project.



Criteria	JORC Code Explanation	Commentary
Quality of assay data and laboratory tests (cont.)		<ul> <li>Quality Control procedures were adopted by both Lago and Crusader including field duplicates (1 every 40 samples), blanks (1 every 25 samples) and standards (1 every 25 samples). Field duplicates are defined as a second sample split via the riffle splitter at the drill rig for RC samples, or quarter core samples for the diamond drill-holes.</li> <li>Crusader employees took 18 samples from drilling at Querosene were re-split (from the coarse rejects) and submitted to ALS labs in Brazil. Samples included low, medium and very high-grade samples. Results were very close to the original sample results in the Lago Dourado database.</li> </ul>
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> </ul>	<ul> <li>Significant intercepts were generated by Crusader personnel and verified by Rob Smakman, the qualified person for previous releases comprising the significant intersections.</li> <li>A number of RC drill-holes were partially twinned by diamond drill-holes; the drill-holes compare well visually, but it. was not possible to compare assay results due to lack of sampling. This has been flagged for ongoing work</li> </ul>
	<ul> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	All drill-hole data are recorded in Microsoft Excel spreadsheets and then stored in a digital database (Microsoft Access). Only Crusader's database administrator has the capacity to enter or change data. Standardised geological codes and checks have been employed to ensure standardised geological logging and required observations performed. The database is stored on a central server which is backed up weekly. Work procedures exist for all actions concerning data management.  All historical (Lago) drill-hole data were sourced from Lago data files; Crusader is in possession of the original electronic laboratory files.  Original text files for assay, collar and survey were received for the Madison drilling. Original maps and reports and digital data were received from Lago Dourado.  No adjustments or calibrations were made to any assay data used in this estimate.
Location of data points	<ul> <li>Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul> <li>Collar surveys have been used from the supplied database. Where discrepancies occurred, these coordinates were edited only after checking against hard copy logs and survey field pick-ups. This process will continue as part of the database enrichment. All drill-holes have been checked spatially in 3D and all obvious errors addressed.</li> <li>The grid system used for all data types, was in a UTM projection, Zone 21 Southern Hemisphere and datum South American 1969. No local grids are used.</li> <li>Topographic control in the area is basic. The topographic surface was sourced from digital satellite imagery (Aster). Further surveying work is planned prior to future resource estimation work.</li> </ul>



Criteria	JORC Code Explanation	Commentary
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul> <li>The drilling carried out is on an approximate 50m x 50m grid, both horizontally and vertically (in the plane of the mineralised structure, which is sub-vertical). It is anticipated that this density of information will be sufficient for conducting a mineral resource estimate to the standards required by the JORC 2012 mineral resource code.</li> <li>4 metre sample compositing was carried out in portions of the drill holes outside the interpreted principal zone of interest. In some instances, composite results are included in this release. Original single metre samples will be re-assayed on composite samples &gt;0.5g/tAu.</li> </ul>
Orientation of data in relation to geological structure	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul> <li>Mineralised structures were targeted and planned to be intersected so that minimal sample bias would occur. All structures were planned to be intersected as perpendicular as possible and to pass through the entire structure. Mineralised structures had relatively sharp contacts and all material was sampled together i.e. the structure and the hangingwall / footwall.</li> <li>Where ever possible all reverse circulation drill holes were oriented to intersect the intended structure perpendicular to the strike and approximately 40 degrees to the dip of the mineralised zone. The mineralised structures are visible from within the artisanal miners' workings which allowed drill holes to be oriented to minimise introducing a sample bias. None of the reported significant intersections are a result of intentional sample bias.</li> </ul>
Sample security	The measures taken to ensure sample security.	• No sample security issues were raised or noted by Crusader during the transportation of the samples from the project site to the preparatory laboratory. All samples were sealed with double cable ties in strong high density plastic bags, two sample ID tags were placed in different locations inside the sample bags, all sample bags were clearly marked on the outside with permanent marker pen. All sample bags were checked off the dispatch list before being placed into a heavy duty and highly durable sacks for transportation to the laboratory. A packing list (confirming the number of sacks for transport) was received from the freight company transporting the sample bags to their destination. Upon receipt at the laboratory, samples were checked in and the list of received samples immediately sent back to the company's database administrator as a security check that all samples were received and all were fully intact and not opened.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	No external audits were commissioned by Crusader. The sampling techniques and data were reviewed by the Competent Persons as part of the Mineral Resources estimation process and were found to be of industry standard.



# **Section 2. Reporting of Exploration Results**

Criteria	JORC Code Explanation	Commentary
Mineral tenement and land tenure status	<ul> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> </ul>	<ul> <li>Results are from exploration tenement 866.080/2009, 100% owned by a wholly owned subsidiary of Crusader, Lago Dourado Mineração Ltda. There is an existing 1% net smelter return payable to a previous owner. There is one garimpo mining licences within the tenement package, allowing the garimpeiro to legally work under certain restrictions. The Dona Maria tenement is not subject to any native title interests, no known historical sites, wilderness or national park, but is located within the border zone around a national park. Within this border zone further conditions may be required to gain an operating licence. Cattle grazing and legal timber felling are the two primary industries and land uses for the area.</li> </ul>
	<ul> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</li> </ul>	The tenement is in good standing and there are no material impediments to operating in the area.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	• Garimpeiros first discovered the mineralised areas around Juruena in the 1970's. Garimpeiros have been active in the region since, recovering gold from alluvial, colluvial and some oxidised rock. The area has been explored on and off from the mid 1990's through to the present, with the majority of drilling taking place over the last four to five years. Madison Minerals Ltd first explored and carried out some drilling evaluation of the Juruena core area in 1995/1996. The drill information of Madison would not be useable in a JORC compliant mineral resource estimate, however Crusader considers the information relevant from an exploration perspective and will use these results to guide future exploration work. Lago Dourado Minerals drill tested several anomalies and zones from 2010 to 2013. All work undertaken by Lago Dourado Minerals was performed to a JORC compliant standard and the data generated is considered sufficient to be used for a JORC compliant mineral resource estimate, should further results confirm continuity, grade and geological interpretation in the future.



Criteria	JORC Code Explanation	Commentary
Geology	Deposit type, geological setting and style of mineralisation.	The Juruena mineralisation is considered to have resulted from magmatic activity (intrusions and fluids) which could be sourced from a gold porphyry system or intrusive-related gold system, whilst still containing characteristics commonly associated with epithermal systems. The mineralisation is hosted by Paleoproterozoic volcanic and granitoid rocks of varying composition. The host rocks are found within the Juruena-Rondonia block of the Amazon Craton.
Drill hole Information	<ul> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:</li> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level - elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth hole length.</li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	No new results reported
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and / or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul> <li>Significant intercepts were calculated using a 1ppm lower cut-off, no upper cut, and up to 2m of consecutive dilution.</li> <li>No metal equivalent values considered.</li> </ul>



Criteria	JORC Code Explanation	Commentary
Relationship between Mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results.	As far as practically possible and with the geological interpretation available, the drill targets were tested with the aim of intersecting the interpreted mineralised structure as perpendicular as possible to the strike. All positive holes to date intersected the mineralisation at approximately 40 degrees to the dip, which will cause an overstatement of the actual intercept width.
4	<ul> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> </ul>	<ul> <li>Results are reported as downhole widths, in most cases, true width is approximately 75% of downhole length.</li> </ul>
	<ul> <li>If it is not known and only the downhole lengths are reported, there should be a clear statement to this effect (e.g. 'downhole length, true width not known').</li> </ul>	
Diagrams	<ul> <li>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	See included Figure(s)
Balanced reporting	<ul> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	Results from holes sampled in the follow-up sampling program for which assays have been received are reported.
Other substantive exploration data	<ul> <li>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples - size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul>	Historical exploration data has been presented previously and includes soil sampling, auger drilling, geophysical surveys, geological mapping and interpretation. No material additional exploration data has been generated by Crusader at Juruena to date. No historical metallurgical sampling has been previously reported from Dona Maria.
Further work	<ul> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	Future exploration will continue to target the already identified mineralised areas.