ASX Announcement
28 November 2023

Metallurgical Test Work Results for Project Block 103 / Iron Bear

Cyclone Metals Limited (ASX: **CLE**) (**Cyclone** or **the Company**) is pleased to report the results of the first phase of metallurgical test work performed on its flagship Block 103 / Iron Bear Magnetite Iron Ore Project (**Block 103 / Iron Bear**) in Canada.

- **Blast furnace magnetite concentrate** produced grading **68.7% Fe** with very low deleterious elements and **silica below 3.5%**
- **Very high recovery > 97%** for magnetite Fe
- The current market price for this class leading blast furnace magnetite concentrate **is USD 159/t CFR China**[1] – representing a **premium of 25 USD/t** above the 62% Fe benchmark
- Sediment bulk sample of 1.6t used with magnetic Fe of 17%; **representative of overall deposit** which has an average magnetic Fe of 18%
- Flow sheet for production of blast furnace grade concentrate being defined with high yields, recovery rates and low grinding costs
- Specifications of Block 103/ Iron Bear base blast furnace concentrate are **class leading** with high Fe and low silica, alumina and deleterious elements
- Metallurgical test work is ongoing to define a Block 103 / Iron Bear premium direct reduction (DR) magnetite concentrate with Fe of 70% and **silica below 1.5%** to enable **ultra-low carbon steel production**

Cyclone CEO, Paul Berend, commented: *"We have achieved a major milestone in the development of our flagship Iron Bear Project by demonstrating that we can easily produce a class leading 68.7% Fe grade iron ore product with a 97% magnetite recovery. Given the massive scale of the deposit, the access to rail and port infrastructure, this is starting to look like the future. We are working hard to define a premium ultra-low silica direct reduction magnetite product which will be very attractive to European steel makers looking to reduce their carbon footprint. We are targeting to introduce this unique premium product to the steel industry as early as first quarter next year."*

[1] Fastmarkets 67.5% Fe blast furnace pellet feed concentrate index, 23 Nov 2023

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Flash Operational Update

Cyclone is pleased to report that it is currently on track to achieve all its SOAP (Strategy On A Page) operational milestones planned in calendar year 2023, specifically milestones 4 and 5.

Work is currently ongoing to produce a premium DR grade magnetite concentrate (milestone 4) leveraging reverse flotation and other separation methods to reduce the levels of silica whilst maintaining high Fe recovery levels. The outcome of this metallurgical test work is anticipated by mid-December 2023, and if successful, would potentially make Block 103/ Iron Bear one of a handful of iron ore producers with the capability to produce premium DR grade concentrates.

Concurrently, we are also working to upgrade the mineral resource (milestone 5), in terms of size, and more importantly quality. Specifically, we are aiming to upgrade a portion of the mineral resource to JORC indicated status. Cyclone has been able to locate a high-quality magnetic survey of its Block 103 claims and we are working with Perth-based, Resource Potentials, to correlate this data with the existing drilling results and to leverage this to upgrade the mineral resource. This is a complex endeavour, and the outcome remains uncertain. However, if successful, this endeavour would enable Cyclone to forego a costly drilling program.

Cyclone is committed to being transparent with stakeholders and investors and will update progress on the SOAP on a regular basis.

Blast Furnace Concentrate Specifications

Cyclone has engaged Corem based in Quebec City, Canada to complete the metallurgical test work for Block 103 / Iron Bear. Corem established that the following blast furnace (**BF**) magnetite concentrate can easily be achieved with three stage Wet Low Intensity Magnetic Separation:

BF Conc.	Fe	SiO_2	Al_2O_3	P_2O_2	MgO	CaO	Na_2O	K_2O	MnO
% by weight	**68.7**	3.4	0.1	0.01	0.18	0.15	0.1	0.01	0.08

BF Conc.	Fe	V_2O_5	ZrO_2	ZnO	TiO_2	Fe_2O_3	FeO	LOI	Other	Sum
% by weight	**68.7**	0.01	0.02	0.01	0.01	98.2	31.6	-3.11	0.32	99.47

This concentrate is achieved at P80 @ 32 microns with a 97% recovery of magnetite Fe. Based on a benchmark 62% Fe iron price of USD 134 / t as of 24/11/23, and the applicable premiums, the estimated price of the Block 103 / **Iron Bear Blast Furnace Magnetite Concentrate is USD 159 /t CIF China which is a 25 USD/t premium over the benchmark**

Overview of Metallurgical Test Work

The key objectives of the metallurgical test work being undertaken by Corem are:

a) Define the optimum flow sheet for the beneficiation and pelletisation which minimises operating and capital costs and maximises the quality and yield of the product.

b) Establish optimum specifications for the blast furnace grade concentrate and premium direct reduction concentrate,

c) Build a pilot plant and produce bulk samples blast furnace grade and direct reduction grade concentrate for client validation and testing,

d) Complete pelletising test work and validate pellets for use in the main DR processes (Midrex and Energiron)

e) Produce bulk samples of blast furnace and DR grade pellets for client validation and testing

The metallurgical test work program is split into four phases, summarised in figure 1, which we aim to complete by August 2024. The first phase will be completed by end of December 2023.

The bulk sediment core samples of 1.6t for phase one are currently being processed at Corem and are expected to produce 100kg of bulk concentrate samples by the end of the year.

After the successful completion of the winter field operations, a further 10+ tonnes of core sediments have been delivered to Corem in anticipation of phase two which will start early 2024. Phase two will involve building a pilot plant to test the performance and optimise the process flow sheet. Refer to figure 2 for an overview of the Corem pilot plant set up.

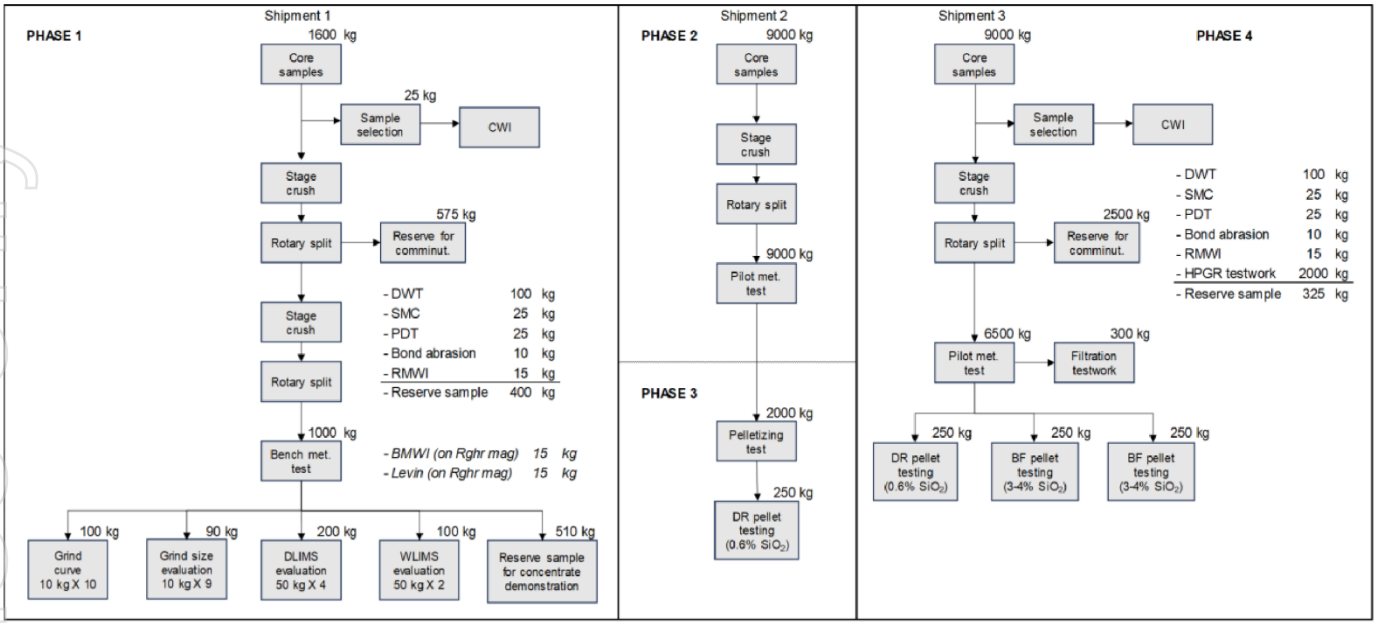


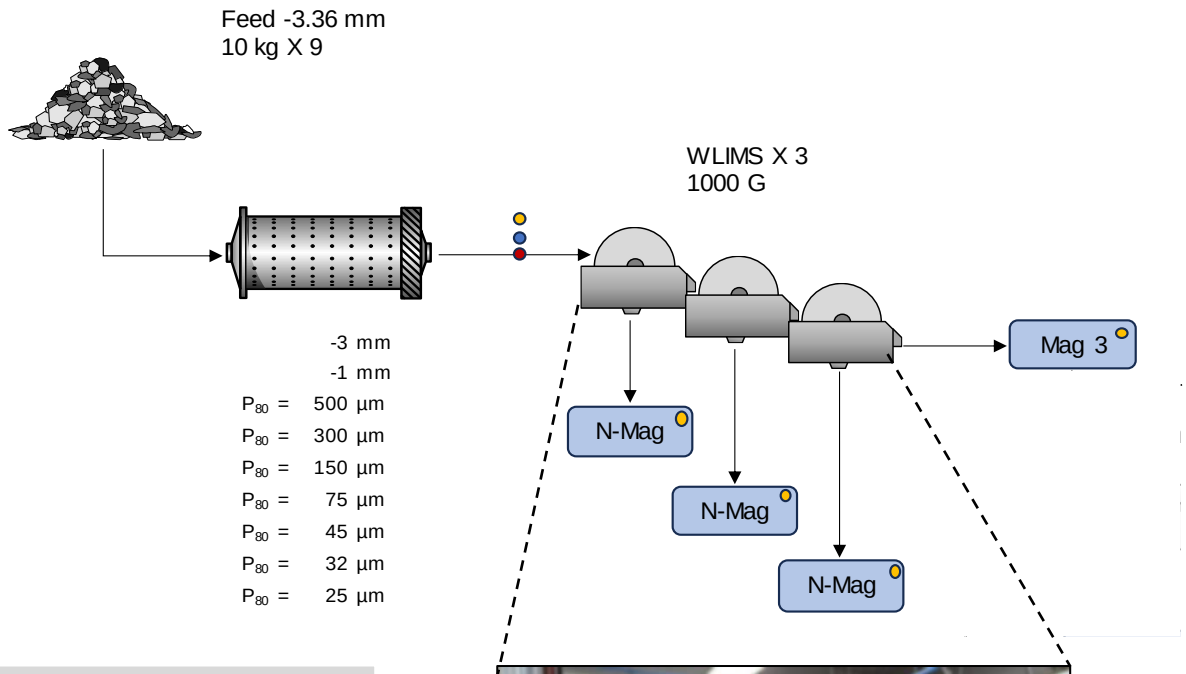
Figure 1: Sample preparation and testing of each phase

Figure 2: Corem pilot plant set up.

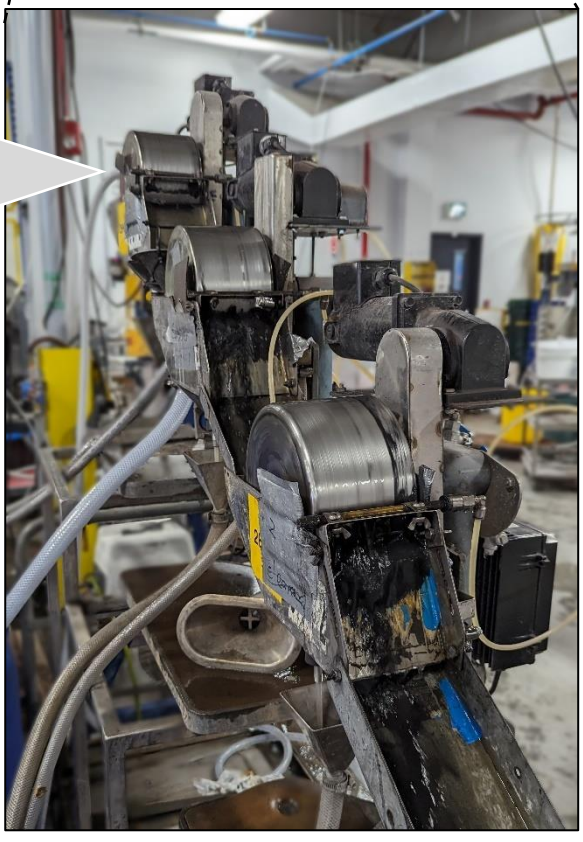
The blast furnace magnetite concentrate will be our 'base' magnetite product which will be produced by leveraging three stage magnetite separation to minimise the production costs. Further processing steps (such as reverse flotation) to improve the Fe grade and/or reduce the silica levels are reserved for the more premium DR grade product.

Corem performed eight tests at different grind sizes with three stage Wet Low Intensity Magnetic Separation (**WLIMS**) at a field intensity of 1000G. The optimum results were achieved at P80 of 32 microns which delivered the blast furnace product specifications with a Fe grade of 68.7% and silica of 3.4% with an excellent magnetite recovery of over 97%.

The chart below summarises the test work:



The test work was completed by Corem with pilot test work equipment which replicates on a small scale a true industrial continuous magnetite operation. Most of our competitors report results from Davis Tubes which are small batch laboratory tools which typically heavily overestimate the achievable grades and recovery rates. Steel mills are aware of this and require large bilk samples provided with pilot plants which Cyclone will provide soon.



This announcement is intended to lift the trading halt requested on 24 November 2023.

Announcement authorised for release by the board of Cyclone.

Competent Person Statement

The information in this report that relates to the Block 103 Project has been reviewed and compiled by Jeremy Peters FAusIMM CP (Mining, Geology), a Director of Burnt Shirt Pty Ltd, who has sufficient experience which is relevant to the style of mineralisation and type of deposit 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 Jeremy Peters consents to the inclusion of this information in the form and context in which it appears in this report.

ENDS

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JORC Code 2012 Table 1

Section 1 Sampling techniques and data.
(Criteria in this section apply to all succeeding sections)

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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 down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* *Aspects of the determination of mineralisation that are Material to the Public Report.* *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.*	For the 2011 drilling, sampling was done on a geological basis, with mostly 3 m samples split coaxially using a mechanical core splitter. Neither field standards or blanks were inserted into the sample stream, but core duplicates were collected. Samples were marked in the core trays using aluminium tags etched with the sample numbers and stapled to the core tray at the end of each sample interval. Neither hand-held measurements of core magnetic susceptibility nor core photography were completed. Core for the 2012 programme was taken to a dedicated core yard where it was similarly split, sampled and photographed.
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, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).*	The 2011 diamond core drilling programme comprised 42 BTW (42.0 mm Ø) drill holes for 5,662.3 m The 2012 programme consisted of 72 drillholes for 22,359 m at mostly BTW and then NQ (47.6 mm Ø)
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.* *Measures taken to maximise sample recovery and ensure representative nature of the samples.* *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.*	Drill sample recovery was recorded for all drillholes, measuring block to block core recovery against stated depth. The Competent Person considers that due to the nature of the drilling and geology, sample bias is unlikely to result from poor recovery.

Criteria	JORC Code explanation	Commentary
Logging	*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.* *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* *The total length and percentage of the relevant intersections logged.*	All core was logged qualitatively and quantitatively for the 2012 downhole geophysics exercise. For the 2011 drilling, logging recorded drillhole azimuth and dip, rock code, rock description, foliation/banding angle with respect to core axis and estimate of magnetite by unit. The above was undertaken with the 2012 drilling in addition to geotechnical logging, core photography and downhole geophysics (refer Section 4.3 of this Report) The Competent Person considers that the logging protocols are sufficient to support estimation of a Mineral Resource.
Subsampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.* *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* *Quality control procedures adopted for all subsampling stages to maximise representivity of samples.* *Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.* *Whether sample sizes are appropriate to the grain size of the material being sampled.*	For the 2011 programme, core was split in the field with a mechanical splitter. For the 2012 programme, core was sawn in half at a dedicated core yard with a diamond saw. Half core was submitted for assay, with some whole core being submitted for both assay, density determination and metallurgical testing. In all cases, appropriate blanks, standards and duplicates were taken or added to demonstrate sample representativity and identify any sampling bias (refer Section 4.4 of this Report). The Competent Person considers to be appropriate the measures taken to demonstrate that sample protocols were appropriate and unbiased.
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	Samples were sent to one of three laboratories, with standards, blanks, duplicates and cross-laboratory checks undertaken to an appropriate standard (refer Section 4.4 of this Report). Geophysical tools were calibrated at site with the exception of density, where a relative measurement was made (refer Section 4.3 of this Report). The Competent Person considers the measures taken to be appropriate to support estimation of a Mineral Resource.

Criteria	*JORC Code explanation*	Commentary
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.* *The use of twinned holes.* *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* *Discuss any adjustment to assay data.*	Samples were verified with random duplicate samples taken by an independent Mineral Resource estimation consultant (refer Section 6.1.2 of this Report) and cross-check laboratory assaying. The Competent Person considers the measures taken to be appropriate to support estimation of a Mineral Resource
Location of data points	*Accuracy and quality of surveys used to locate drillholes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* *Specification of the grid system used.* *Quality and adequacy of topographic control.*	The 2012 drilling campaign was surveyed by handheld GPS, with resurveying of collars being undertaken by professional surveyor in 2012. The licences are defined by NAD27 UTM datum and various working grids are NAD83 or NAD84 datum and the relationship between NAD27 and the later systems is not completely defined for the region. Burnt Shirt understands that there are no material errors in location
Data spacing and distribution	*Data spacing for reporting of Exploration Results.* *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.* *Whether sample compositing has been applied.*	Most cross sections contained at least three holes and many had more than ten holes passing through the mineralised zones. Sampling was undertaken on lithological boundaries, composited to 3m intervals in all cases
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* *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.*	Drilling was oriented in the field according to field observations of the strike of the mineralisation, in order to intersect it perpendicularly. The Competent Person considers this to be appropriate and does not consider that this approach will introduce material bias.
Sample security	*The measures taken to ensure sample security.*	Samples were transported from the field to a secure yard in Schefferville where they variously processed and stored. All work was undertaken under a Supervising Geologist.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	The Cap-Ex drilling, sampling and assaying protocols were independently checked by the Mineral Resource estimation consultant in 2013. No material discrepancies or biases were identified.

Section 2: Reporting of Exploration Results
(Criteria listed in the preceding section also apply to this section)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*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.* *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.*	Block 103 comprises ten graticular licenses totalling 7,275 ha under applicable Labrador and Newfoundland mining law. Six of the ten licenses were staked by prior owner, Cap-Ex and the other four Licenses were acquired through purchase and sale agreements and remnant royalties remain. Four Aboriginal parties claim Native Title over various parts of Block 103. Refer to Section 2.2 of this Report for details.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Block 103 was originally explored by IOCC and the Canadian Government. Most of the exploration was undertaken by Cap-Ex Iron Ore, of Vancouver, the predecessor company to M3 Metals Inc, vendor of the project. Refer to Section 4 of this Report for details.
Geology	*Deposit type, geological setting, and style of mineralisation.*	The deposit is a taconite banded ion formation of the Lake Superior type, partially metamorphosed to greenschist facies and subject to thrust faulting that has resulted in tectonic repetition and thickening of mineralisation.
Drillhole information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:* • *easting and northing of the drillhole collar* • *elevation or RL (Reduced Level – elevation above sea level in metres) of the drillhole collar* • *dip and azimuth of the hole* • *down hole length and interception depth* • *hole length.* *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.*	Drillhole information is presented in Sections 4.3 and 6.1 of this Report. Mineralised intersections have not been reported in detail because the Competent Person advises that reporting of magnetite mineralisation at Block 103 is complicated by the complex structural geology of the deposit and the nature of reporting mineralisation based on both grade and metallurgical recovery. The Competent Person observes consistent broad intersections of recoverable magnetite, associated with haematite and is satisfied that the drilling information supports this interpretation.
Data aggregation methods	*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.* *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.* *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	Drillholes were sampled according to geology and the resultant information composited into 3m composites for modelling, inclusive of internal waste. Magnetite grades were determined by Davis Tube or proprietary Satmagan analysis and compared to the results of downhole magnetic susceptibility measurements. This results in formation of a regression that estimated magnetite grade from total iron grade. The Mineral Resource estimate was based on assay results.

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