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#### **ASX Symbol**

MRF, MRFOA

# Tests find MRL graphite suitable for lithium batteries

MRL Corporation (ASX: MRF) has received a significant boost in its strategy to become a lucrative graphite producer, with key metallurgical test work showing its graphite exceeds the grades required for use in lithium ion battery anodes.

Testing conducted at the Wuhan University of Technology (WUT) found graphite from MRL's Aluketiya project in Sri Lanka contained 99.98% Total Graphitic Carbon (TGC).

Further test work will be conducted to refine the process flow sheet and provide more detail on the suitability of MRL's graphite for premium-end product use.

Tests using an acid leaching process returned 99.66% TGC and those using acid roasting returned 99.96% TGC. Testing is ongoing with a view to simplifying the metallurgical flow sheet and achieving grade of at least 99.95% TGC though acid leaching techniques.

MRL believes the results were particularly pleasing because the graphite used was the lowest-grade unprocessed bulk sample material, which had an initial grade of 93.1% TGC. The expected average grade of vein graphite to be mined by MRL is more than 95% TGC.

Typical high-grade Sri Lankan graphite achieves a greater recovery rate than most disseminated flake graphite deposits due to its reduced physical processing requirement and much higher starting TGC purity.



#### About MRL Corporation Ltd (ASX: MRF)

MRL is aiming to develop an underground mining operation to extract high-grade, crystalline vein graphite, which is unique to Sri Lanka. The Company holds exclusive rights to exploration licenses covering approximately 6,300 hectares in area, with historical workings located within nearly all license grids.

#### **About Graphite**

Natural graphite occurs in three forms: amorphous graphite, flake graphite and the most rare and highest quality form being crystalline vein graphite. Sri Lanka is famed for being the only commercial producer of crystalline vein graphite (lump or Ceylon graphite), the highest quality of naturally occurring material in the world. The quality of vein graphite produced in the country has a purity level in excess of 90% TGC (Carbon as graphite) which means little upgrading and processing is required to make a high quality saleable product.

Amorphous (micro crystalline) graphite is the least pure form of naturally occurring graphite and commercial deposits usually have a carbon content of 70-85%, and are found as lenses or lumps with flat fracture cleavages. It is normally formed by metamorphism of previously existing anthracite coal seams.

Flake (crystalline) graphite is the more common form of graphite and typically has carbon content in the range of 80-99%, and is usually formed in metamorphic rock in concentrations of 5%-12% of the ore body. Mining and processing of these deposits is similar to open pit gold or copper mines, requiring 'large scale' mining and processing to extract the graphite. Large-scale mining and processing plants typically equates to high capital expenditures and relatively high operating costs.

Vein (crystalline) graphite is the purest form of graphite with TGC grades typically >90%, with some grade as high as 99.5% TGC. Mining vein graphite may be considered analogous to high-grade gold vein mining, requiring considerably less capital expenditure when compared to large-scale open pit mining. That is, development, mining equipment and processing plants will be of a significantly smaller scale. Operating unit costs will also be lower than those for typical large-scale open pit mining.

#### Nature of vein graphite

Sri Lankan graphite deposition model is best described from the 'bottom up': tension fractures formed in the metamorphic sediments, caused by the folding of the sediments, creating 'conduits' for the hydrothermal deposition of high quality vein graphite. Historically, mining of these veins has found the veins generally increase in thickness and grade quality with increasing depth. Graphite veins generally dip steeply at -70° to near vertical, enabling 'narrow vein' extraction mining techniques similar to those used on narrow vein, high-grade gold deposits. The method commonly used is an overhead retreat stoping technique where the high-grade vein graphite is mined and hauled to surface without contamination. The graphite selvages, in contact with the surrounding waste, is hauled to surface and stockpiled for upgrading. The balance of the waste is used to fill the floor of the stope.

Due to the nature of the vein graphite, it is anticipated vein widths of ~25cm, using narrow vein mining techniques can be economically extracted from underground operations.

For further information:

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Information in this report relating to Metallurgical interpretation, analysis, mineral distribution and recommendations has been compiled by Mr Denis Geldard, MAusIMM in consultation with Dr Slobodanka Vukcevic, Senior Metallurgist at Nagrom the Mineral Processors. Dr Slobodanka Vukcevic has sufficient experience and expertise relevant to this type of test work through her job experience and expertise and qualifies as a competent person in the field of metallurgy. Mr Geldard consents to the inclusion in the report of the matters based on the information reported in the form and context in which it appears.

Information in this report relating to Exploration Results is based on information compiled by Mr Denis Geldard, MAusIMM working in consultation with consulting Geologist Mr Gary Powell, MAusIMM and MRL's Senior Sri Lankan Geologist who has 35 years of vein graphite experience in Sri Lanka. Their experience is relevant to the type of deposit under consideration. Mr Geldard is signing as competent person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Geldard consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

## JORC TABLE 1 Report for Exploration Locations Section 1 Sampling Techniques and Data

Criteria	Explanation
Sampling techniques	Diamond core is collected and stored in core trays of 5m per tray. Vein graphite is readily identified visually (black in colour) and intersections recorded accordingly. Intersections will then be cut using a small hand held diamond saw under the supervision of MRL's Senior Sri Lankan Geologist and prepared for transport to Nagrom (Australia) for analysis.
Drilling techniques	All future drilling will be undertaken utilising NQ Triple Tube (NQTT) drilling.
Drill sample recovery	<ul> <li>Diamond core recovery is recorded between core runs by the geological crew in the Core Logging Record. The unconsolidated surface material will be drilled using rotary wash method until competent material is intersected</li> </ul>
Logging	<ul> <li>All holes are logged on site by MRL geological personnel under the supervision of MRL's Senior Sri Lankan Geologist, using MRL's Core Logging Procedure Manual.</li> <li>Logging will record geological and geotechnical observations, and is undertaken on a continual basis throughout the entire drill hole.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <li>Half-core intersections of Vein Graphite will be submitted for analysis to Nagrom laboratories in Perth Western Australia. The remaining half-core is stored in the core boxes. Core &amp; bulk samples may be provided to potential off-take parties.</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>All Vein Graphite core intersections will be analysed by Nagrom the Mineral Processors in Perth Western Australia and or Wuhan University of Technology (WUT). Nagrom and WUT will follow industry practice QA/QC procedures to ensure high quality sample assurance.</li> <li>Certified Sample Standards will be inserted routinely into sample analysis.</li> </ul>
Verification of sampling and assaying	<ul> <li>All diamond core will be logged and photographed by MRL geologists under the supervision of MRL's Senior Sri Lankan Geologist. Independent consulting geologist will visit the MRL operation sites on a regular basis to oversee QA.</li> </ul>
Location of data points	<ul> <li>All drill locations have been positioned using hand-held Garmin GPS systems. MRL has completed a full topographical survey of the Pandeniya – Bopitiya &amp; Aluketiya area's. All drill collars will be geo-referenced to the Sri Lankan Transverse Mercator Projection.</li> </ul>
Data spacing and distribution	<ul> <li>Drill holes have been orientated in a position to intersect the expected vein mineralisation (based on historical shafts / adits and geophysical information) at the optimal angle for evaluation, whilst minimising surface land disturbance.</li> </ul>
Orientation of data in relation to geological structure	<ul> <li>Diamond Core Drill holes are designed to intersect potential graphite vein mineralisation perpendicular to strike, wherever possible, whilst taking into account expected deviation in dip and azimuth.</li> </ul>



Sample security	<ul> <li>Core Samples are collected and stored in core trays under the supervision of MRL geological crews and then transported at the end of each day, and secured in a locked container at the MRL site facility for further detailed logging. Security is managed by MRL's Senior Sri Lankan Geologist and the MRL country General Manager.</li> </ul>
Audits or reviews	<ul> <li>A review was undertaken by the consulting Geologist of all procedures, including retrieving of core samples from the core tube, through to logging and storage of core samples, during drilling activities. Consulting Geologist will undertake further reviews into the future.</li> </ul>

### Section 2 Reporting of Exploration Results

Criteria	Explanation							
Mineral tenement and	The Warakapola / Bopitiya / Pandeniya project exploration license areas EL228 are 100% owned							
land tenure status	by MRL Graphite	(Pvt) Ltd	. The explor	ation Lic	enses when	granted hav	e a two year term	which
	can be renewed prior to the 2 year anniversary.							
	Lic	ense	MRL	Status	-	General Lo	ocation	
	No		Interest	Julia	)	GCTICTALLO	Cation	
		/225	100%	Grant	ed	Central		
		/226	100%	Grant		Central		
		/227	100%	Grant		South Cen	tral	
		/228	100%	Grant		Central	crai	
		/231	100%	Grant		South Wes	:t	
		/243	100%	Grant		Central	50	
		/244	100%	Grant		South Wes	it .	
		/262	100%	Grant		Central	50	
							granted licenses	are in
					_	_	ne exploration licer	
Exploration done by							Pandeniya projec	
other parties								
'	carried out by Geological Survey and Mines Bureau (GSMB) Technical Services (Pvt) Ltd with reports provided to MRL. MRL has established a regional office in the EL228 area							
	to support the company geologists and underground exploration crews.							
				_	everal shafts			
Geology	<ul> <li>Warakap</li> </ul>	ola / Bopi	tiya / Pander	niya / Alu	ketiya			
							g to the Wanni Co	
							by thick sequence	
							d granodioritic gne	
	These rocks represent a series of antiformal and synformal structures. A characteristic feature of the exploration area is the alignment of identified abandoned grap							
								mines
	_			ng corrid	or,.(GSMB 20	13)		
Drill hole Information	Planned Diamon	d Core Di	rill Holes					
	Drill Hole	Eastin	g Nortl	ning	Dip /	Hole	Comments	
				0	Azimuth	Depth		
	DHE228-02	135,95	50 219,2	250	47 °/ 115°	300 -	Suspended at	
						380m	261m awaiting	
							larger drill rig	
	DHE228-03	136,37	75 219,0	)52	50 °/ 295°	300 -	Suspended at	
						350m	250m awaiting	
							larger drill rig	
	All Diamo	nd Core	Drill holes ar	e plann	ed to be accu	rately surve	eyed for dip and az	imuth
	using a GlobalTech Pathfinder multi-shot, electronic, down-hole survey tool.							
	<ul> <li>A GlobalTech core orientation tool is being used to orientate the core during the</li> </ul>						core during the d	rilling.



Data aggregation methods	<ul> <li>Intersections of diamond core containing vein graphite will be visually selected for analytical testing with accurate lengths recorded to ensure 100% of mineralisation is analysed and reported.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul> <li>Planned Drill hole orientation is based on observations from historical shafts / adits and geophysics, and planned to intersect any vein graphite mineralisation as close to perpendicular as practical.</li> </ul>
Diagrams	• N/A
Balanced reporting	MRL Corporation Ltd will endeavour to produce balanced reports accurately detailing the results from any exploration activities.
Other substantive exploration data	No other substantive exploration data is available at this time.
Further work	<ul> <li>MRL Corporation Ltd continues to complete further site investigations on its other licenses. Following the completion of progressive site investigations and evaluation the next phase of exploration for each location will be undertaken and reported.</li> <li>Land access agreements continue at Pujapitiya, Dedigama and Hikkaduwa</li> <li>Further drilling is planned at Aluketiya, Pujipatia and other license areas as land access is obtained.</li> </ul>