



Republic of the Philippines
Department of Environment and Natural Resources
MINES AND GEOSCIENCES BUREAU

North Avenue, Diliman, Quezon City, Philippines

Tel No. (+63 2) 920-9120/920-9130 Trunkline No. 667-6700 loc. 134 Fax No. (+63 2) 920-1635 Email: central@mgb.gov.ph.

MEMORANDUM

FOR : **The Director**
This Office

THRU : **The Assistant Director** *Alley*
This Office *7/17/18*

FROM : **The Officer-in Charge** *7/16/18*
Lands Geological Survey Division

SUBJECT : **TECHNICAL REPORT ON THE MINERAL RESOURCE
VALIDATION FOR THE EVALUATION OF DECLARATION OF
MINING PROJECT FEASIBILITY (DMPF) OF JDVC
RESOURCES CORPORATION'S OFFSHORE MAGNETITE
SAND PROJECT COVERED BY MINERAL PRODUCTION
AGREEMENT DENOMINATED AS MPSA No. 338-2010-II-OMR
LOCATED IN THE OFFSHORE AREAS OF THE
MUNICIPALITIES OF SANCHEZ MIRA, PAMPLONA, ABULUG,
BALLESTEROS, APARRI, BUGUEY and GONZAGA, CAGAYAN
PROVINCE**

DATE : July 17, 2018

Respectfully endorsing herewith the report on the field validation of the Mineral Resource Estimates of JDVC Resources Corporation's (JDVCRC's) Offshore Magnetite Mining Project located in the Offshore areas of the Municipalities of Sanchez Mira, Pamplona, Abulug, Ballesteros, Aparri, Buguey and Gonzaga, Cagayan Province, as part of the requirements in connection with the evaluation of the company's Declaration of Mining Project Feasibility (DMPF).

The said validation was conducted by the MGB-CO Field Validation Team composed of Messrs. Resty C. Gomez, Senior Science Research Specialist, Anne Karla M. Navarro, Geologist II, Mario V. Asis, and Cerilo V. Samuya, both Geologic aides of the Lands Geological Survey Division, Mines and Geosciences Bureau - Central Office (MGB-CO) from June 13 to 17, 2018 upon the request of **Mr. Napoleon M. De Leon Jr** – President of JDVCRC. The following are the highlights of the Mineral Resource Validation Report:

- As provided for in Chapter XXVII, Section 252(f) of the Consolidated Department Administrative Order No. 9210356, the verification fee was paid for by JDVCRC under Official Receipt No. 9086364 dated June 08, 2018 in the amount of Fifty Thousand Pesos Only (PhP 50,000.00);

**"MINING SHALL BE PRO-PEOPLE AND PRO-ENVIRONMENT
IN SUSTAINING WEALTH CREATION AND IMPROVED QUALITY OF LIFE."**

20-167326

- The JDVCRC Final Exploration Report dated April, 2015 was prepared and signed by **Mr. Rafael R. Liwanag**, a Philippine Mineral Reporting Code (PMRC) accredited Competent Person (CP) for Reporting Exploration Results with PMRC Registration No. 08-03-02. The JDVCRC Final Exploration Report is compliant with Philippine Mineral Reporting Code (PMRC) of 2007 guidelines and Department of Environment and Natural Resources (DENR) Administrative Order (DAO) No. 2010-09. The estimated mineral resources declared by JDVCRC were computed based on the data obtained from the drilling exploration works conducted at cut-off date July 31, 2015 exploration period;
- The deposit type in the JDVCRC MPSA area is an Iron Ore that can be classified Titano-Magnetite sand offshore deposit. The sand is being transported materials from the weathering of volcanic rocks, intrusive rocks and sedimentary derivatives of the older rocks of Abuan and Dibuluan Formations from the hinterlands. The sand and the contained titano-magnetite being the most resistant materials transported by rivers and creeks to the seas and re-worked by long shore current;
- The magnetite bearing sediment built-up in the MPSA area is influenced by the supply of sediments coming from the Cagayan River and the Kuroshio. The Kuroshio Current is a northward flowing ocean current induced by West Pacific Current in the North Pacific Ocean and intrudes into the West Philippine Sea and South China Sea through the Luzon Strait. The Kuroshio Current flows from the east coast of Luzon through Taiwan and thence to Japan. The effects of the northeast monsoon cause the deflection of the Kuroshio Current towards the deeper portion of the Babuyan Channel. The Kuroshio Current contributes significantly to the dispersal pattern and accumulation of sediments in the Babuyan Channel including the delta built-up in northeast of Appari;
- The undersigned MGB personnel validated the acceptability of the declared mineral resources of JDVCRC through: 1) Confirmation of deposit/mineralization type in the project site and collection of check samples for variance and statistics study; 2) In-situ assessment and quality acceptability of the mining contractor's existing set up of analytical laboratory for sampling, assaying, and handling of assay results; 3) confirmation of parameters used in the resource estimation and resource models; and 4) gathering of basic exploration data and validating the integrity of database;
- A total of 10 drillholes and 28 sample intervals were used for the resource estimate at cut-off grade of 5%MF (Magnetite Fraction). The histogram for the MF shows that the samples are distributed along 5%MF. The procedure of the mineral resource estimation by MGB included basic statistical analysis, geological modelling and volumetrics and tonnage calculations. The construction of the polygons signifying the area of influence of each drillhole was done using SURPAC v6.8.1. Statistical analysis, geological modelling and resource computations were done using GEMS v6.8.1. A bulk density of 1.69 dmt/m³ was used in the tonnage calculation, which was also the same density used by JDVCRC;

- After MGB field validation and manipulation of the JDVCRC drillholes used in the resource estimation, the undersigned estimated a grand total raw offshore magnetite sand resource of **512,971,918.94 DMT** with weighted average grade of **26.51MF%**. The cut-off grade of 5%MF came out to be the most economical cut-off considering the trade-offs in the reduction in mining and processing cost over the decrease in concentrates expected to be produced;;
- The overall resource estimate of MGB is lesser by 93,486,053.58 DMT than that of JDVCRC's declared total resource estimate of 606,457,972.52 DMT due to the different softwares used in the construction of the polygons and determination of the area. The difference between the estimates can also be accounted to different cut-off grades and % recovery used. While the JDVC did not set any cut-off grades and % recovery, MGB used a 5%MF cut-off grade and 90% recovery. Overall, the Indicated mineral resource estimates of MGB is lower by 93,486,053.58 MT with grade difference of 1.04 % MF;
- Based on the Amended Feasibility Study (FS) of JDVCRC, the **initial projected** 10-year production schedule is set at an annual extraction rate of 6.91 million DMT. In consideration of the estimated grand total offshore raw magnetite sand resource of **512,971,918.94 DMT** classified as Indicated category at cut-off grade of 5% MF with weighted average grade of 26.51%MF, the projected mine life is **more than 25 years** and stands sufficient to support JDVCRC's Offshore Magnetite Sand Project, with good potential for additional measured and/or indicated resource that will be blocked by in-fill drilling program with inferred resource of 177.80 million DMT at 49.68%MF;
- In view of the foregoing discussions, it is hereby concluded that the Declaration of Mineral Resource Estimate of JDVC Resources Corporation's Offshore Magnetite Project under MPSA No. 338-2010-II-OMR, Cagayan Province is acceptable and compliant to the Philippine Mineral Reporting Code (PMRC) of 2007 and guidelines of the Department of Environment and Natural Resources (DENR) Administrative Order (DAO) No. 2010-09.

For the Director's information.


ANTONIO N. APOSTOL JR.