



KONIAMBO NICKEL MINE PROJECT

The Location

New Caledonia (Nouvelle-Calédonie), a French overseas collectivity, is located about 1,200 kilometers east of Australia in the Southwest Pacific Ocean. With 10% of the world's nickel reserves, the nickel mining industry is a major

sector of the New Caledonian economy, contributing about 7 to 10% of the country's GDP. The job site was located in a remote area of the island near Koné, the county town of New Caledonia's North Province.

Project Data

Shipping period: 2008 to 2012

Volume: Approx. 550,000 FRT

Client: Hatch-Technip JV

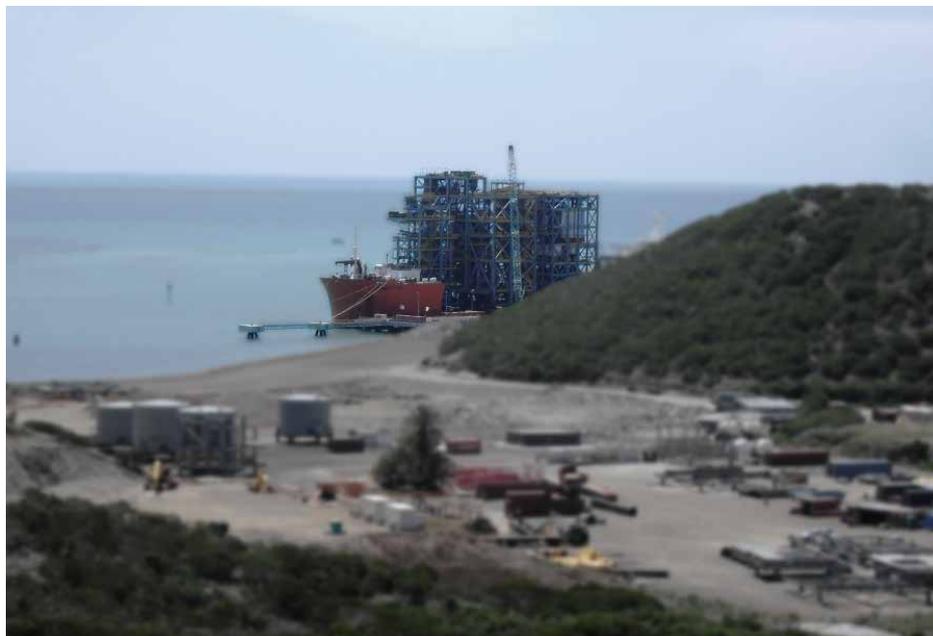
Owner: Xstrata/KNS

Module yard: COOEC Qingdao, China

Job site: Vavouto, New Caledonia

Project investment: Approx. USD 4.5 billion

<http://www.koniambonickel.nc/>



Dockwise's MV Trustee berthing at Vavouto carrying four of the 18 large onshore modules ex Qingdao to New Caledonia



Project Background/History

deugro first learned about the EPC award for this large-scale mining project in New Caledonia in early 2005. At this nascent stage, we could not yet foresee the impact this project would have on the Singapore Project Team in the years to come.

deugro Singapore's Project Management Team visited New Caledonia several times to gather local intelligence and build up a country-specific portfolio and database. Because deugro does not have its own office in New Caledonia, the main task was to identify a suitable local agent that could be trusted and had enough experience to

assist deugro with the execution of the on-shore portion for such a demanding project.

deugro's team visited the port several times and conducted route and site surveys, in addition to holding plenty of meetings with local sub-contractors, such as trailer and barge owners, as well as stevedores and port operators, over a period of two years.

The first cargo movements began in early 2008, and final cargo was delivered near the end of 2012.

deugro's Involvement/Scope of Work

deugro was responsible for shipping the material and equipment for the mine, the pyrometallurgical nickel foundry, the power plant and other complementary infrastructure, such as the deepwater port at Vavouto, the 11-kilometer land-based conveyor and a seawater desalination plant.

The scope included collection from overseas material suppliers up to delivery at the job site in New Caledonia (approximately 490,000 FRT). deugro also transported around 60,000 FRT of cargo from worldwide origins into the China Offshore Oil Engineering Corporation (COOEC) Module Fabrication Yard located in Qingdao,

China. This also included import clearance under the processing trade regime (PT Book), a complex temporary importation system, and all associated paperwork and statistics.

deugro managed various marshalling yards in different locations (such as Antwerp, Porto Marghera, Shanghai, Port Klang, etc.) throughout the project to consolidate cargo from multiple vendors and achieve cost savings for the client by having full vessel charters. The total volume shipped was about 550,000 FRT, including transportation of around 3,500 TEU, with the heaviest unit weighing in at around 450 MT.



Loading of BSR (450 tons) in Port Klang, Malaysia

MAIN CHALLENGES

Remote Job Site/Poor Infrastructure

New Caledonia lies in the South Pacific – far away from anything else and detached from the most frequented shipping lanes.

The construction site was located in the North Province of New Caledonia with very limited existing infrastructure. The only available deep-sea port serviced by a handful of container shipping lines is Noumea (South Province), located approximately 125 nautical miles (230 kilometers) away by sea and approximately 300 kilometers away via a single road from the actual job site location in Vavouto.

Because the road infrastructure along the way was poor, with lots of small bridges and narrow turns, the vast majority of the cargo (especially oversized and heavy equipment) was transported by barge. In addition, the stringent HSE requirements imposed by the client made it clear that road transport along the treacherous route was to be avoided as much as possible.

In the early stages of the project (first six months), only a small construction jetty near the construction site with a shallow draft of five meters was available to receive the equipment. As a result, the first 13 breakbulk charter vessels, carrying a volume of approximately 45,000 FRT, were discharged by the vessel's own gear offshore of Vavouto (on anchorage), directly onto barges heading for the construction jetty, to be off-loaded to trailers by shore cranes and then transported to the laydown area at the site.



Discharging 3,500 FRT of pipes onto barges at Vavouto Anchorage

It was not until mid-2008 that the main Material Offloading Facility, able to handle seagoing vessels with a draft of 12 meters to berth and discharge cargo directly onto the quay, was completed.

Magnitude and Decentralization of the Project

Another challenge to cope with was the sheer magnitude of the work, which meant a large team of deugro personnel was dedicated to the project over a long period of time at different locations around the globe.

The client's main EPC Management Office was located in Kuala Lumpur, Malaysia, although some key counterparts were located at the Module Yard in Qingdao and others were on site in New Caledonia.

deugro's Project Control Tower was strategically located in Singapore. As the regional headquarters for the Asia Pacific region, deugro Singapore had enough experienced personnel available and could easily adapt to the peak and off-peak situation by increasing or decreasing the actual project team. At any given time

during the entire operation, a dedicated Project Manager, Operations Manager and core Project Coordination Team were involved in managing and executing the project. The Project Team's daily operations were backed up by deugro's strong internal Support Function (DSF), consisting of our Transport Engineering Division, QHSES and IT Infrastructure/Systems and Accounting/Administration.

deugro also employed two full-time project specialists at the job site in Vavouto for almost the entire duration of the project. Two additional deugro employees worked out of the Module Yard in Qingdao and one deugro representative worked in-house with the client in its EPC nerve center in Kuala Lumpur. During peak periods, another deugro employee was stationed at one of the main material suppliers in its yard in China.

SHIPMENT HIGHLIGHTS

Full Charter of *MV Jumbo Javelin*

This complex operation involved the full charter of the heavy lift vessel *MV Jumbo Javelin*, equipped with two 900-ton SWL cranes. A total of approximately 32,000 CBM of project cargo was loaded on this vessel.

The voyage started at load port number one in Batam, where three coal baghouses and mill filters (maximum weight 180 tons) were loaded on board. The vessel continued its voyage up north to load additional cargo in Shanghai, followed by Qingdao and Dalian. This included loading two modules, measuring 25 x 14.5 x 17.5 meters and weighing in at 414 tons each, as well as two silo cylinders, each weighing 343 tons and measuring 27 x 13 x 13.5 meters and two silo cones, each weighing 228 tons and measuring 12.2 x 12.2 x 16 meters.

Despite the technical and engineering challenges to accommodate all of this odd-size and heavy cargo on board a single vessel, the main difficulty was the timing – the shipment took place right in the middle of the Chinese New Year festival!

During Chinese New Year, commercial ports close down and do not engage in any cargo loading operations. To overcome this problem, all cargo was loaded out onto barges and brought alongside the heavy lift vessel at the anchorage of the respective port of loading.

Intensive and thorough planning between the fabrication yards and barge owners, as well as naval architects, deugro's Transport Engineering Division and the client's appointed Marine Warranty Surveyor was required to make this operation a big success.

Deviation and Inducement of Container Vessel to the Private Berth at Vavouto

During the first half of the project, the vast majority of the approximate total of 3,500 TEU was discharged at the Port of Noumea (South Province) and transshipped via barge to Vavouto. At that time, the lot sizes were rather small and easy to handle with this method.

However, with volume forecasts increasing near mid-2010 – around the peak of the project – in addition to limited availability of local barges and the costs associated with this transportation method, deugro began to investigate an out-of-the-box solution.



Loading coal mill baghouse with 180 tons and 14-meter height at Batam Anchorage ex barge to *MV Jumbo Javelin*



Vessel crew rigging the crane onboard *MV Jumbo Javelin*

After a thorough analysis and detailed cost comparisons, the solution was chosen: consolidate big container volumes in an offshore marshalling facility (Hong Kong Port) and induce a container liner vessel into the private port of Vavouto.

Easier said than done! deugro held many meetings and detailed discussions with the container carrier to convince it to consider this unusual task and include another port call on its time-sensitive voyage.

In the end, deugro organized the deviation of 4 vessels from their liner service route for direct inducement of 4 vessels into the Vavouto private berth. Each vessel discharged approximately 200 fully laden TEU, while also taking on board up to 150 empty containers, which needed to be demobilized from the site after the equipment was unstuffed.



Loading large panels at ZPMC yard in Shanghai

Steel Structures out of China

Around mid-2010, the client came up with a new idea to minimize the labor-intensive work at site by furthering the concept of modularization. The choice was made to pre-assemble large amounts of steel structures, panels and staircases at the ZPMC yard located in Shanghai, China. In no time, deugro developed a commercially attractive and effective shipping and logistics plan. Over a period of approximately eight months, a total of about 160,000 FRT of cargo was shipped on 16 full charter vessels. The challenge was that the components ranged in size from tiny

pieces weighing merely 50 kilograms to large panels up to 30 meters long, 23 meters wide and weighing up to 250 tons per unit. The best way to describe the task would be as a giant puzzle. For each individual unit, a separate lifting arrangement had to be worked out in close conjunction with the Chinese fabricator, vessel owner and our engineering experts. During the entire shipping period, a deugro employee was mobilized to the ZPMC yard to coordinate amongst the various parties involved and ensure a smooth and safe operation.



The "giant puzzle" – plenty of smaller steel structure items safely stowed in vessel's lower hold

A Side Story



One of the countless vessels chartered during the execution of the project was BigLift's heavy lift vessel *MV Happy Dragon* (two 400-ton SWL cranes). deugro full chartered this modern vessel on her maiden voyage from China to New Caledonia in May 2011. The deugro Site Manager handed over a beautiful Chinese porcelain plate to the master of *Happy Dragon* upon safe arrival at Vavouto, which is now displayed on the vessel bridge.





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