

JAN DE NUL GROUP – PANAMA CANAL EXPERIENCE & GOALS

Dominic De Prins – September 14th 2016

Contents

- Introduction, Company Profile – Key Facts
- Experience in Panama, hub for Central and South America
- Experience in Central and South America
- Questions

Company Profile – Key Facts

- 4 Main Activities
 - Dredging and Marine Works
 - Offshore Services
 - Civil Engineering Works
 - Environmental Works and Brownfield Development
- Ultramodern and diverse fleet
- 7,000 employees
- Yearly turnover of 2.2 billion €



Equipment



28

TRAILING SUCTION HOPPER DREDGERS



9

SUBSEA ROCK INSTALLATION VESSELS



15

CUTTER SUCTION DREDGERS



7

CABLE AND UMBILICAL INSTALLATION VESSELS



20

SPLIT HOPPER BARGES



1

WIND TURBINE INSTALLATION VESSEL



6

BACKHOE DREDGERS



2

HEAVY LIFT VESSELS

Equipment



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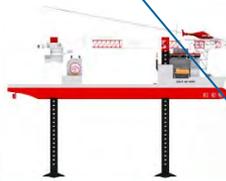
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CABLE AND UMBILICAL INSTALLATION VESSELS



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HEAVY LIFT VESSELS

- Cristobal Colon – 46.000m³
- Leiv Eiriksson – 46.000m³
- Vasco da Gama – 33.000m³
- **Charles Darwin – 30.500m³**
- Gerardus Mercator – 18.000m³
- Juan Sebastián de Elcano – 16.500m³
- **Pedro Álvares Cabral – 14.000m³**
- Bartolomeu Días – 14.000m³
- **James Cook – 11.750m³**
- **Filippo Brunelleschi – 11.300m³**
- Francis Beaufort – 11.300m³
- Alexander von Humboldt – 9.000m³
- **Al Idrisi – 7.500m³**
- Vitus Bering – 7.500m³
- Sanderus – 5.300m³
- Capitan Nuñez – 6.000m³
- **Francesco di Giorgio – 4.400m³**
- Taccola – 4.400m³
- Manzanillo II – 4.000m³
- **De Bougainville – 3.700m³**
- De Lapérouse – 3.700m³
- James Ensor – 3.600m³
- Amerigo Vespucci – 3.500m³
- Alvar Nuñez Cabeza de Vaca – 3.400m³
- Sebastiano Caboto – 3.400m³
- Pinta – 3.400m³
- Niña – 3.400m³
- Galilei 2000 – 2.320m³

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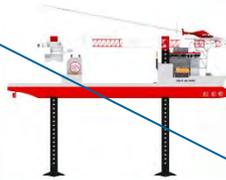
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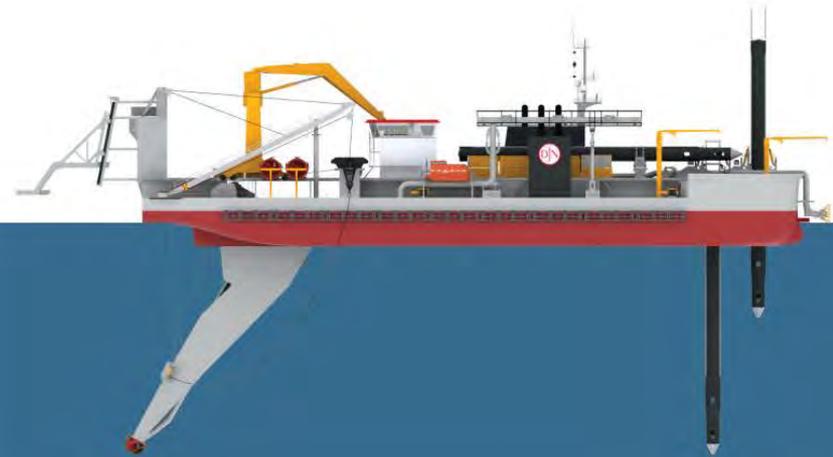
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HEAVY LIFT VESSELS

- **JDN8069 – 40.975 kW**
- **J.F.J. De Nul – 27.240 kW**
- IBN Battuta – 23.520 kW
- Zheng He – 23.520 kW
- Fernão de Magalhães – 23.520 kW
- **Niccolò Machiavelli – 23.520 kW**
- Leonardo da Vinci – 20.260 kW
- **Marco Polo – 16.115 kW**
- Kaerius – 8.330 kW
- **Hondius – 8.330 kW**
- Vesalius – 9.260 kW
- Ortelius – 5.140 kW
- Dirk Martens – 2.370 kW
- Petrus Plancius – 1.300 kW
- Hendrik Geeraert – 350 kW

JDN8069

Length o.a.	151.3 m
Breadth	36.0 m
Draught	5.75 m
Dredging depth	45.0 m
Suction pipe diameter	1,100 mm
Discharge pipe diameter	1,100 mm / 1,000 mm
Barge loading pipe diameter	1,000 mm
Submerged pump power	8,500 kW
Inboard pump power	2 x 8,500 kW
Cutter power	8,500 kW
Propulsion power	2 x 3,000 kW
Total installed diesel power	40,975 kW
Speed	12.0 kn
Accommodation	67
Built in	Under construction - February 2017

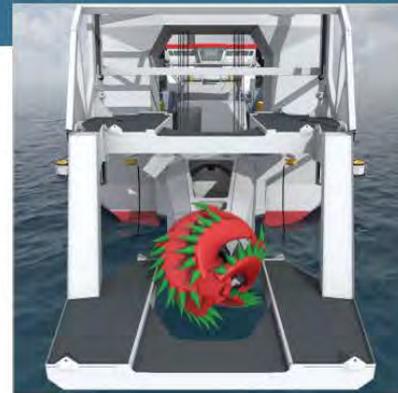


Dynamically controlled flexible spudcarrier: active control of longitudinal movement and force, of the roll angle and moment, of the pitch angle and moment.

Flexible suspension of the cutterladder, absorbing the shockloads and vibrations in the cutterladder during rock dredging.

V2015-1

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HEAVY LIFT VESSELS

- **Postnik Yakovlev – 40m³**
- **Mimar Sinan – 40m³**
- **Vitruvius – 40m³**
- **Il Principe – 19.5m³**
- **Gian Lorenzo Bernini – 25m³**
- **Jerommeke - 11m³**

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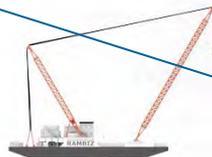
1

WIND TURBINE INSTALLATION VESSEL



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BACKHOE DREDGERS



2

HEAVY LIFT VESSELS

- L'Aigle – 3.700m³
- **La Boudeuse – 3.700m³**
- L'Etoile – 3.700m³
- **Le Guerrier – 3.700m³**
- Le Sphinx – 3.700m³
- **Astrolabe – 3.700m³**
- **Boussole – 3.700m³**
- Arent – 3.700m³
- Leeuw – 3.700m³
- Marquis de Prié – 3.700m³
- Tiger – 3.700 m³
- **Verrazzano – 2.000m³**
- **Magellano – 2.000m³**
- **Concepción – 1.800m³**
- **Santiago – 1.800m³**
- Trinidad – 1.800m³
- Victoria - 1.800m³
- Geelvinck – 1.800m³
- Nijptangh – 1.800m³
- Weseltje – 1.800m³

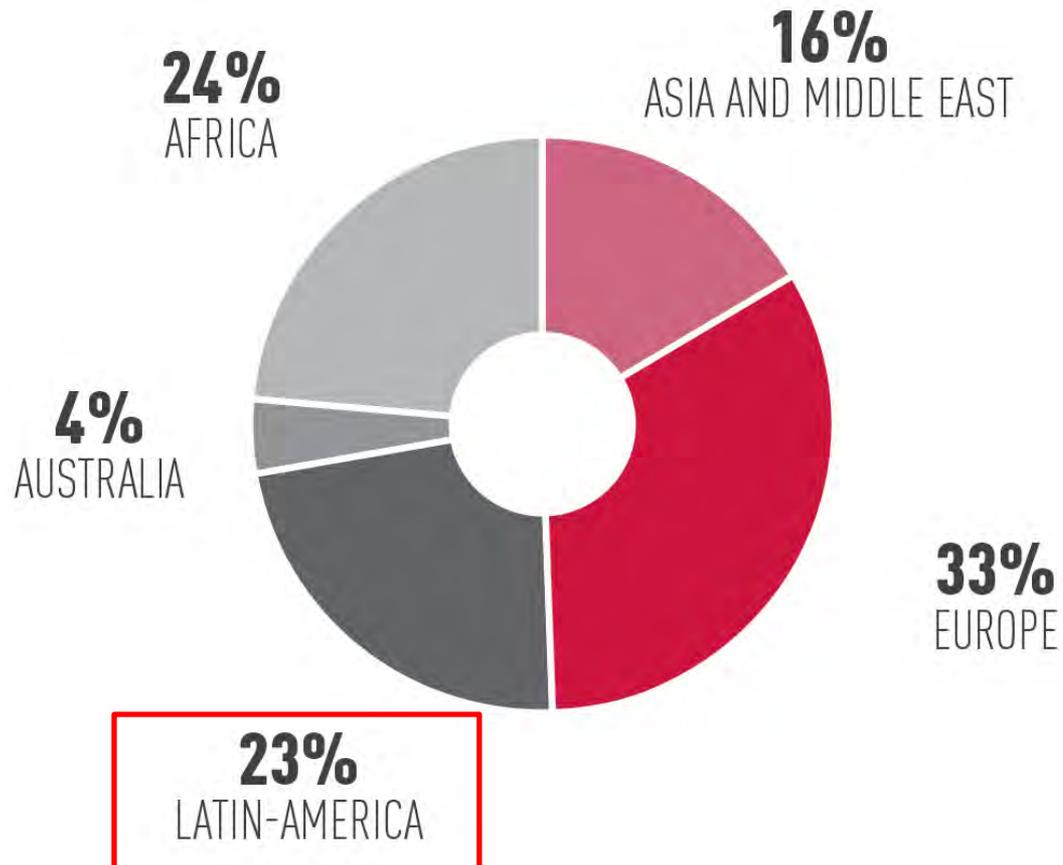
Equipment



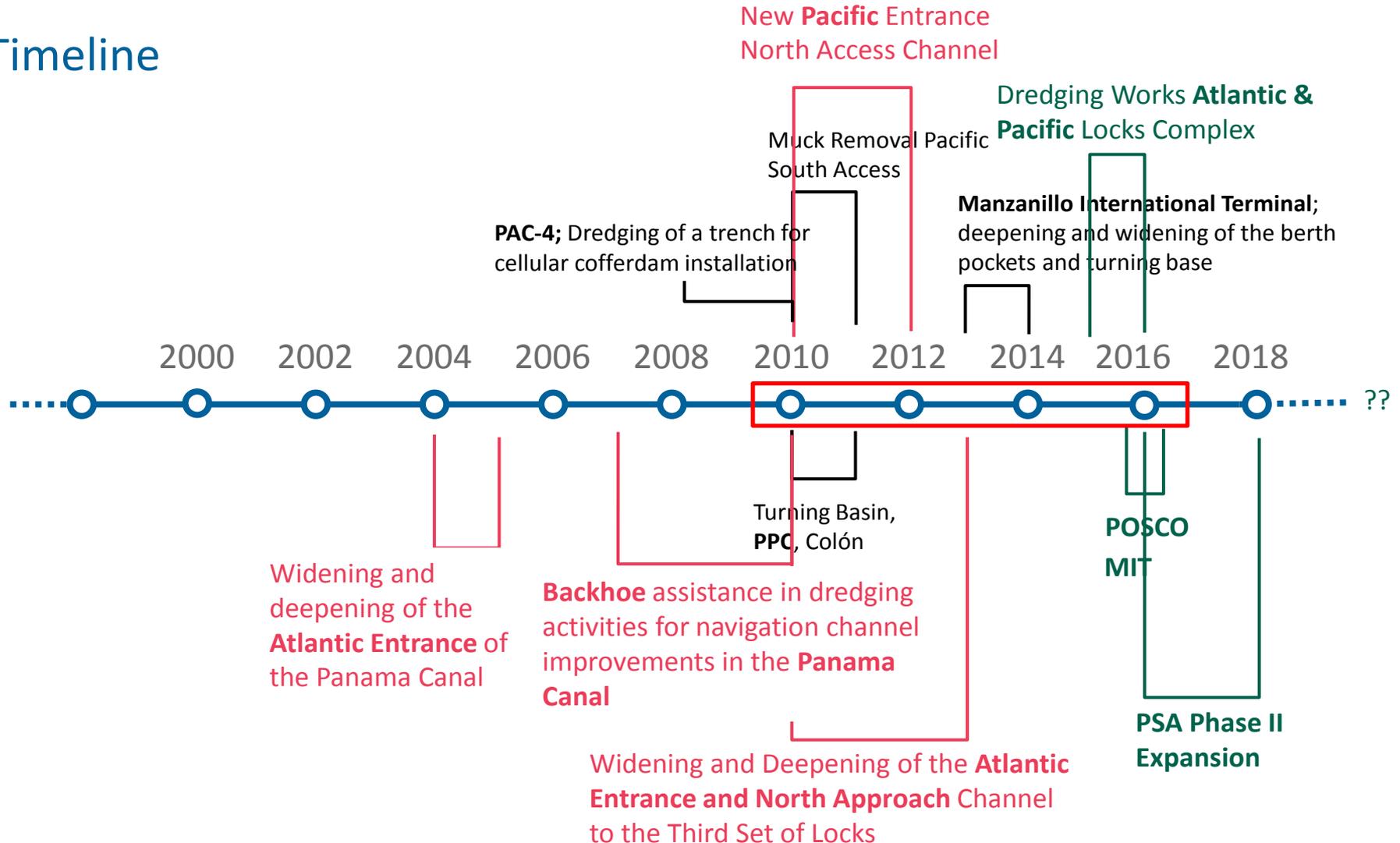
PANAMA: The Gateway to Las Americas



Regional Distribution of Revenue 2015

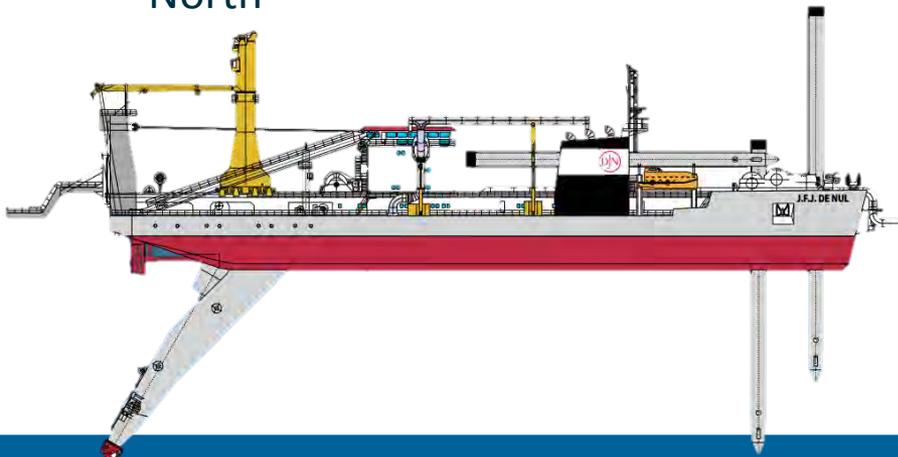


Timeline

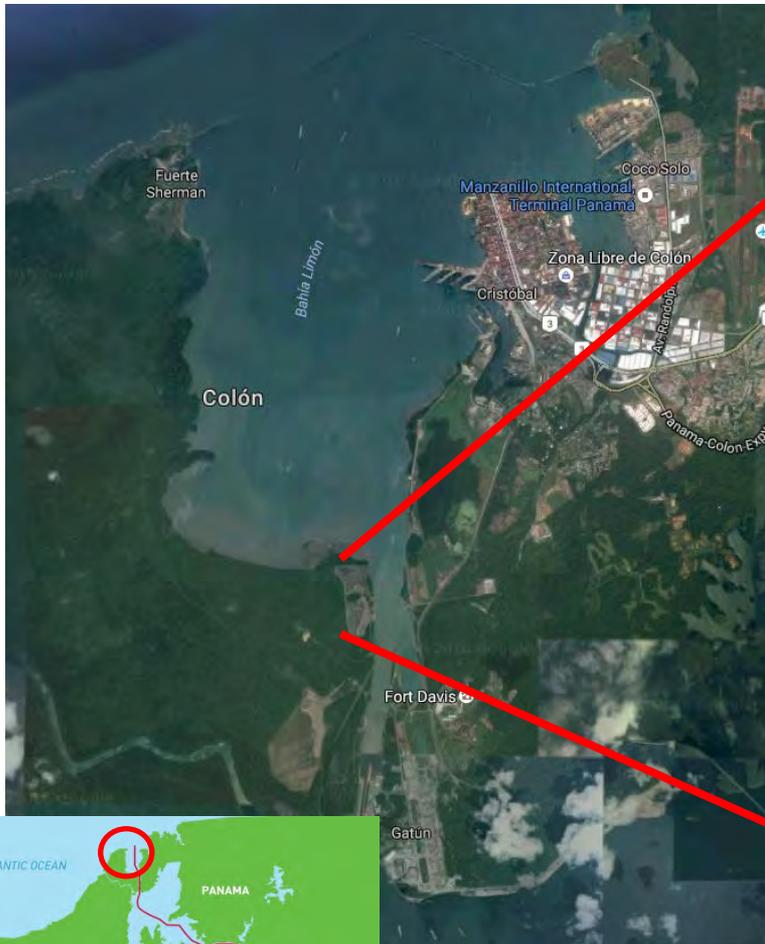


Widening and deepening of the Atlantic Entrance (2004-2005)

- First arrival of JDN in Panama (2004)
- CSD JFJ DE NUL – 27.24 MW
- TSHD Francesco Di Giorgio
- Soil, fine sand, clay, mudstone, claystone, coral
- **2,357,524 m³** capital dredging
- 14.2m MLWS
- Disposal off-shore and Black Tank North



Widening and deepening of the Atlantic Entrance



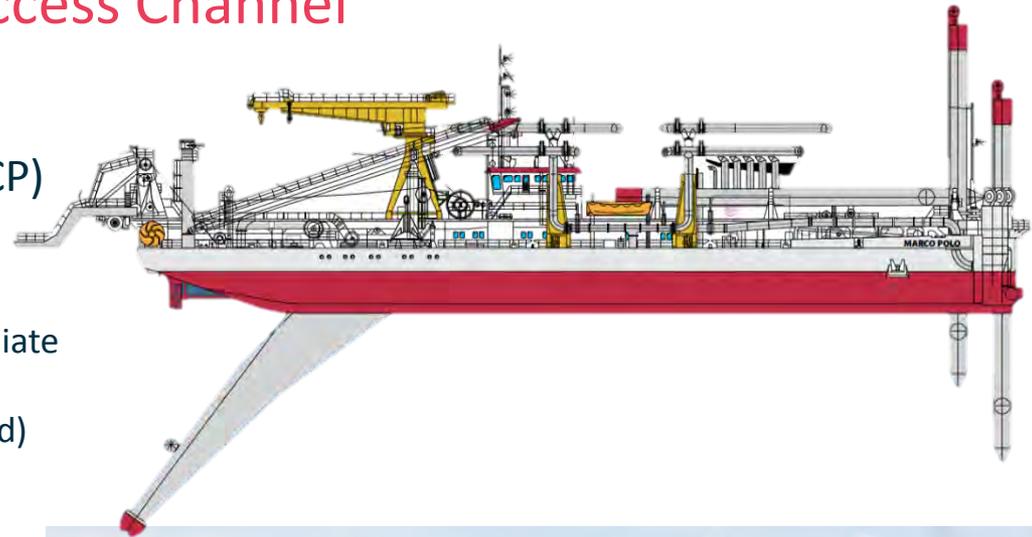
New Pacific Entrance North Access Channel (2010-2012)

- CSD Marco Polo – 16.1 MW
- Land-based and subaquatic D&B (ACP)
- Soil:
 - Cucaracha (between weak and intermediate rock)
 - Pedro Miguel (hard rock, partially blasted)
 - Basalt (blasted)
- **1,300,000 m³** capital dredging and reclamation
- **2,700,000 m³** dry excavation
- 17.37m MLWS
- Disposal on-shore reclamation area with outflow sediment control



New Pacific Entrance North Access Channel

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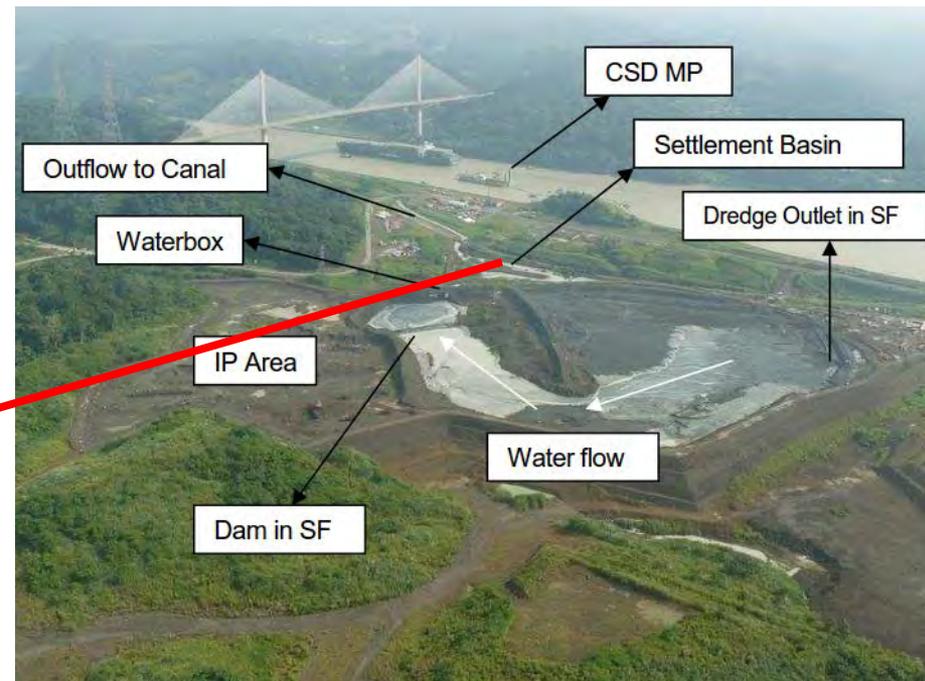
New Pacific Entrance North Access Channel

- Over-all delay for shore pipe wear: 10%
- Causes:
 - Dredged material (blasted basalt)
 - Routing of the landline
- Lots of fines – sediment control



New Pacific Entrance North Access Channel

- Over-all delay for shore pipe wear: 10%
- Causes:
 - Dredged material (blasted basalt)
 - Routing of the landline
- Lots of fines – sediment control



Widening and Deepening of the **Atlantic Entrance and North Approach Channel** to the Third Set of Locks

- Pre-cutting and capital dredging: 23,400,000m³ of muck and gaton rock at the existing navigational channel and the new north approach
- Construction of inland disposal sites
- Buoy relocation for dredging ops
- Demolition of Mindi Dock
- Excavation and disposal of contaminated soil
- Trees, bushes, hydroseeding
- Dredging depth: 17.5m



Widening and Deepening of the Atlantic Entrance and North Approach Channel to the Third Set of Locks

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- Construction of inland disposal sites
- Buoy relocation for dredging ops
- Demolition of Mindi Dock
- Excavation and disposal of contaminated soil
- Trees, bushes, hydroseeding
- Dredging depth: 17.5m
- Atlantic Entrance Extension: from 220m to 520m width



Widening and Deepening of the Atlantic Entrance and North Approach Channel to the Third Set of Locks

- Fleet of Main dredging equipment:



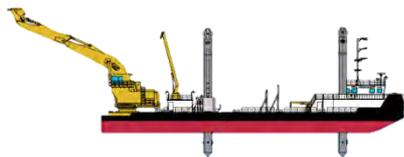
CSD Marco Polo
16.1 MW



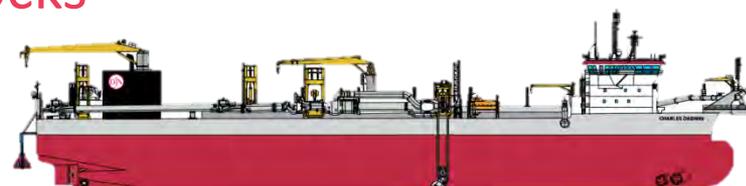
CSD Hondius
8.33 MW



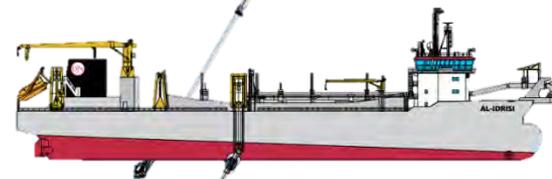
BHD Vitruvius
40 m³



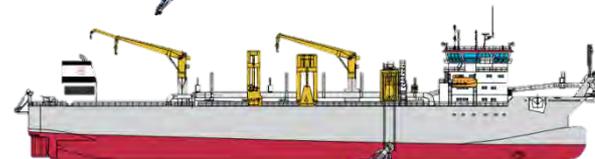
BHD II Principe
19.5 m³



TSHD Charles Darwin
30,500 m³



TSHD Al Idrisi
7,500 m³



TSHD Filippo Brunelleschi
11,300 m³

Widening and Deepening of the **Atlantic Entrance and North Approach Channel** to the Third Set of Locks

- Capital Dredging and Reclamation via floating line and submerged pipeline



Widening and Deepening of the **Atlantic Entrance and North Approach Channel** to the Third Set of Locks

- Capital Dredging and Reclamation via floating line and submerged pipeline
 - Traffic windows
 - Steep slopes



Widening and Deepening of the **Atlantic Entrance and North Approach Channel** to the Third Set of Locks

- Demolition of Mindi Dock

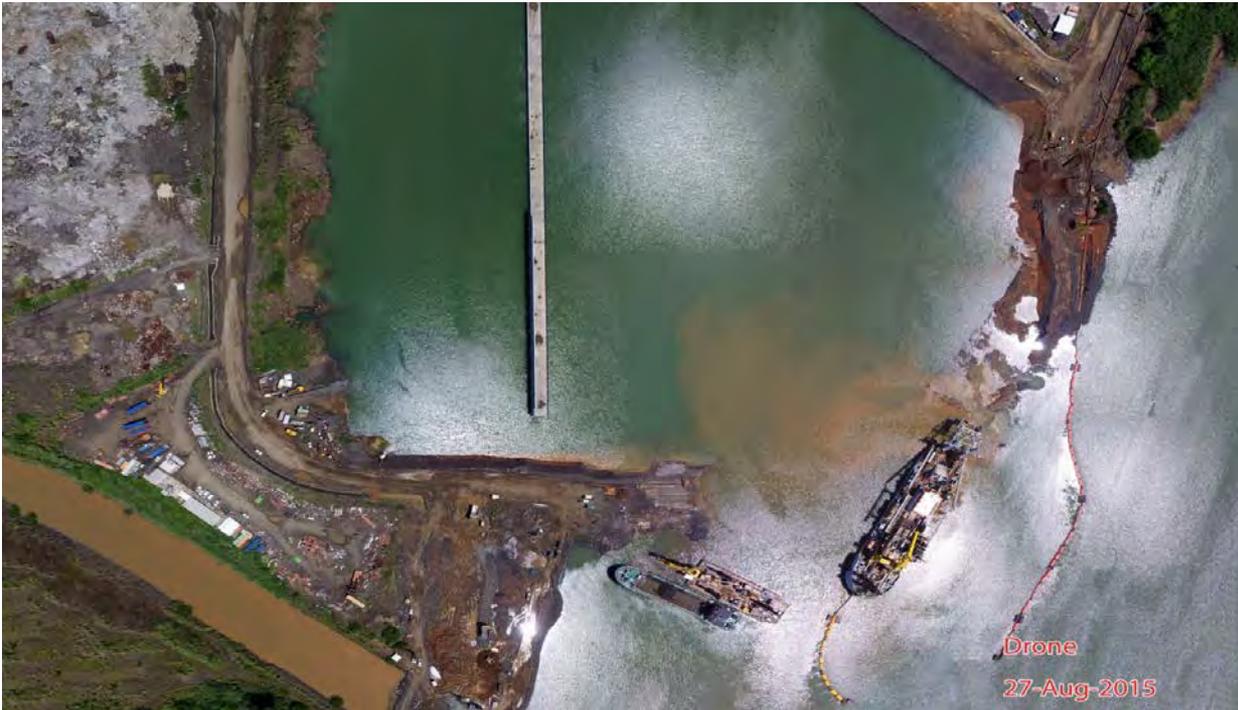


Dredging Works **Atlantic & Pacific Locks Complex**

- **Pacific Ocean Plug & Access**
 - 1,600,000 m³ dredging & on- + off-shore disposal
 - 30,000 m² subaquatic drilling and blasting
- **Pacific Lake Plug**
 - 275,000 m³ dredging of Cofferdam Material (rockfill) to on-shore disposal
- **Atlantic Ocean Plug & Access**
 - 1,900,000 m³ dredging and disposal



Dredging Works Atlantic & Pacific Locks Complex



PSA Panama Phase II Expansion



PSA Panama Phase II Expansion

- Panama City, Panama, Central America
- West bank of the Panama Canal, Pacific side
- Between Bridge of the Americas & Third Set of Locks Pacific
- Former Rodman Terminal



PSA Panama Phase II Expansion



PSA Panama Phase II Expansion



PSA Panama Phase II Expansion

- Temporary Loading Facility for dry earthworks offshore removal
- Based on DN145 rock dumping barge (2667 ton)



PSA Panama Phase II Expansion

- Marine Equipment
 - BHD Vitruvius (Backactor) + 2x Split Hopper Barge 3,700m³



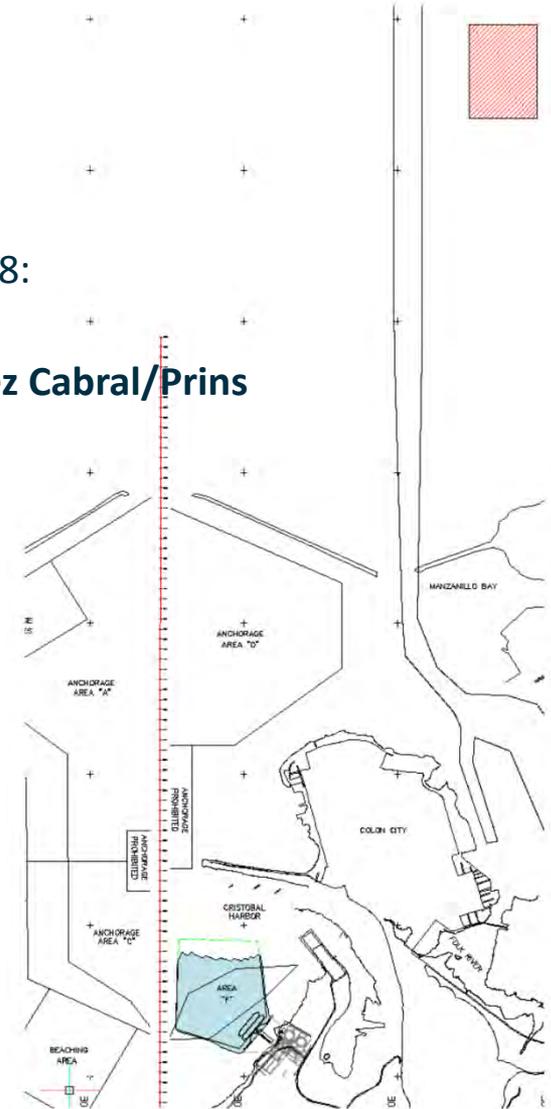
PSA Panama Phase II Expansion

- Marine Equipment
 - CSD Niccolo Machiavelli
 - + split hopper barge or
 - 2x TSHD as barge (> 10,000m³)



Other on-going & future projects

- COSTA NORTE LNG TERMINAL PROJECT
 - Wreck Removal with BHD **Vitruvius** + Santiago + DN117 + DN118:
2 shipwrecks + 1 floating dock
 - Dredging of shallow area with **Marco Polo** loading **Pedro Alvarez Cabral/Prins Der Nederlanden**
 - Additional ship wreck encountered during dredging
 - Hard area dredging (North-West) with Vitruvius/Santiago
 - High spot clearing with sweep beam Concepción



Other on-going & future projects

- COSTA NORTE LNG TERMINAL PROJECT



Other on-going & future projects

- Manzanillo International Terminal:
“Deepening of Colon’s access channel and turning basin”
 - Phase 1: 600,000 m³
 - Phase 2: 1,336,000 m³
 - Total= 1,936,000 m³
- Capital dredging of:
 - Outer Channel – 17.2m
 - Inner Channel – 16.4m
 - Turning Basin – 16.4m (previously dredged by Others)
- Dump Area: Offshore;
- Vessel planning:
 THSD Pedro Alvares Cabral;
 CSD Niccolò Machiavelli;

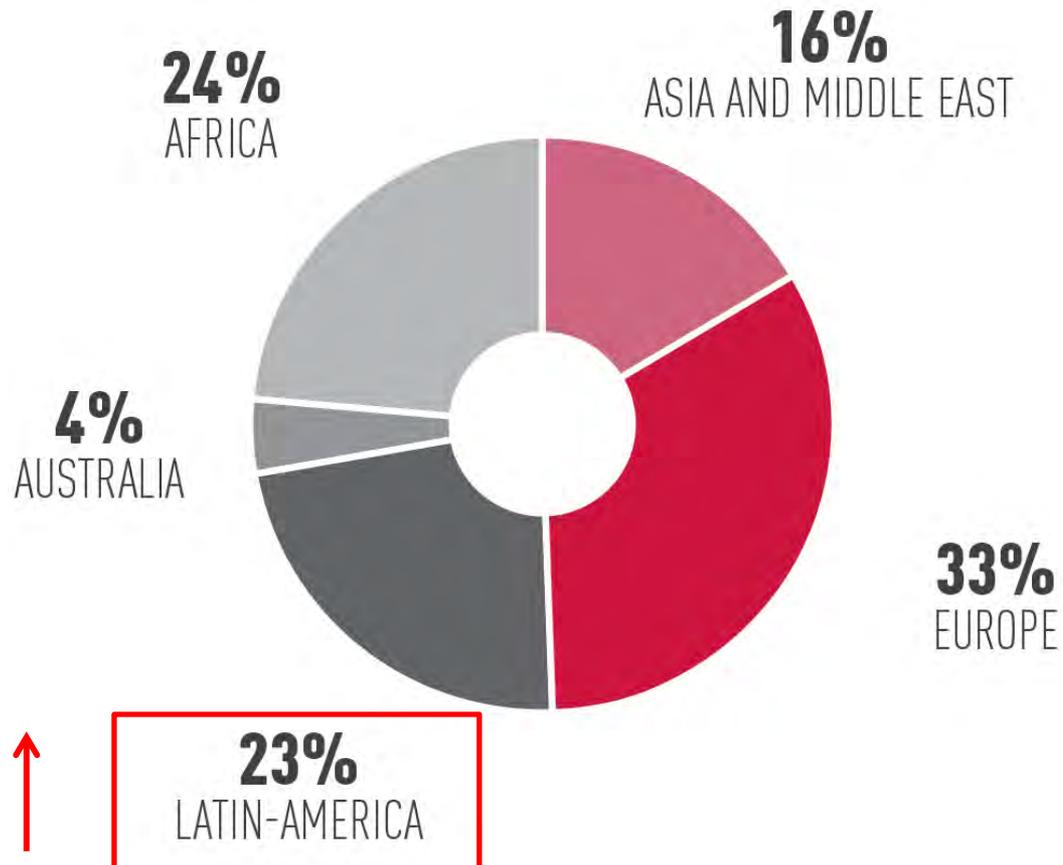


Projects in Las Americas in 2015-2016

Bermuda



Regional Distribution of Revenue 2015

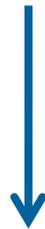


Objectives

- Use our experience to maintain and increase strong position in Central and South America
- Continue engagement in Panama, the gateway to Las Americas

Company Objectives

- Quality of its service
- Safety Culture
- Environmental Values
- Motivation of employees



Total Client Satisfaction
Anywhere in the world

“Jan De Nul Group aims for total client satisfaction when carrying out its projects”

GRACIAS