CHARTERING TWO SELF DISCHARGING SHIPS FOR A CEMENT IMPORT PROJECT IN PANAMA

-

A CASE STUDY

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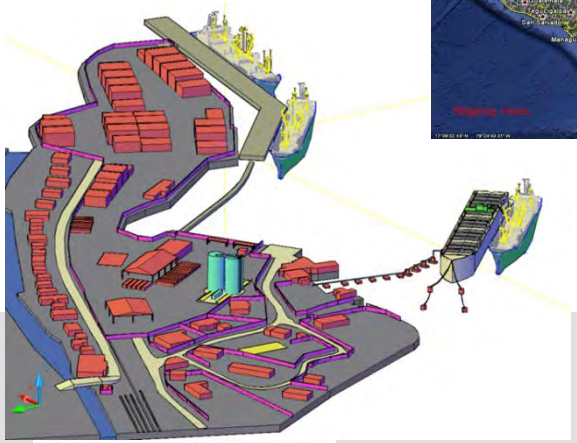
Cement Distribution Consultants

CEMENT DISTRIBUTION CONSULTANTS

25-02-2012

THE INTERCEM SHIPPING FORUM

CONTENTS OF PRESENTATION



- Project information
  - Location
  - Scope of supply
  - Temporary facilities
  - Roller compacted concrete
  - Timeframe
- Arranging the cement and fly ash supply
  - Requirements
  - Logistics
  - Availability
- Setting up the supply chain
  - Shipping routes
  - Starting with Big Bags
  - Planning the terminal facility
  - Building a floating terminal
  - Negotiating supply contracts
  - Finding self discharging cement carriers
  - Final preparations

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CONTENTS OF PRESENTATION

- Managing operations
  - Terminal operations
  - Shipping operations
  - Scheduling
  - Resolving problems
  - Optimising shipping
  - Managing money
- Finalising the project
  - Planning for completion
  - Demobilisation

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Project information

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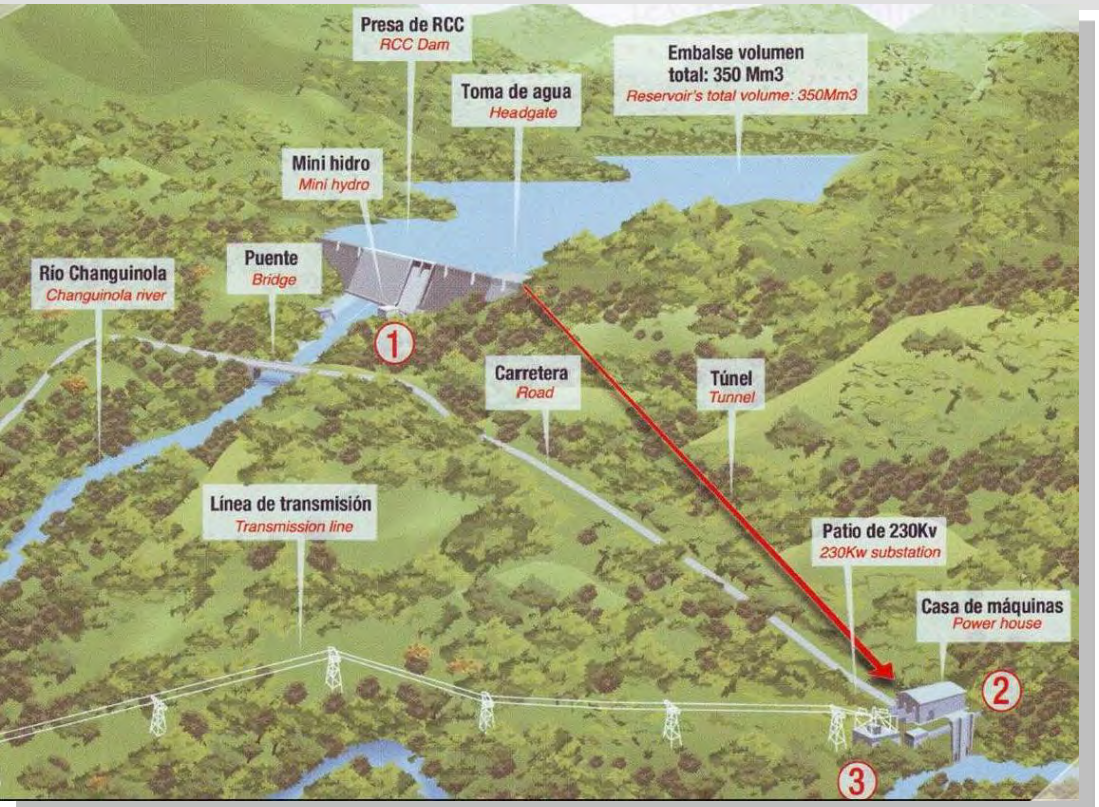
LOCATION

PROJECT INFORMATION



1. A large dam of mass concrete (1 million cubic meter)
   - Height 100 meters
   - Width at top 600 meters
2. Tunnel
   - Length 4 km
   - Diameter 10 meters
3. Powerhouse
   - 2 Turbines
   - Total 210 MW
4. "Mini" powerhouse at dam
   - 9 MW with Eco flow
5. 25 km of permanent road
   - 10 km of temporary road incl. bridges, drainage systems, hill improvements, etc.

Total project value USD 400 million

SCOPE OF SUPPLY

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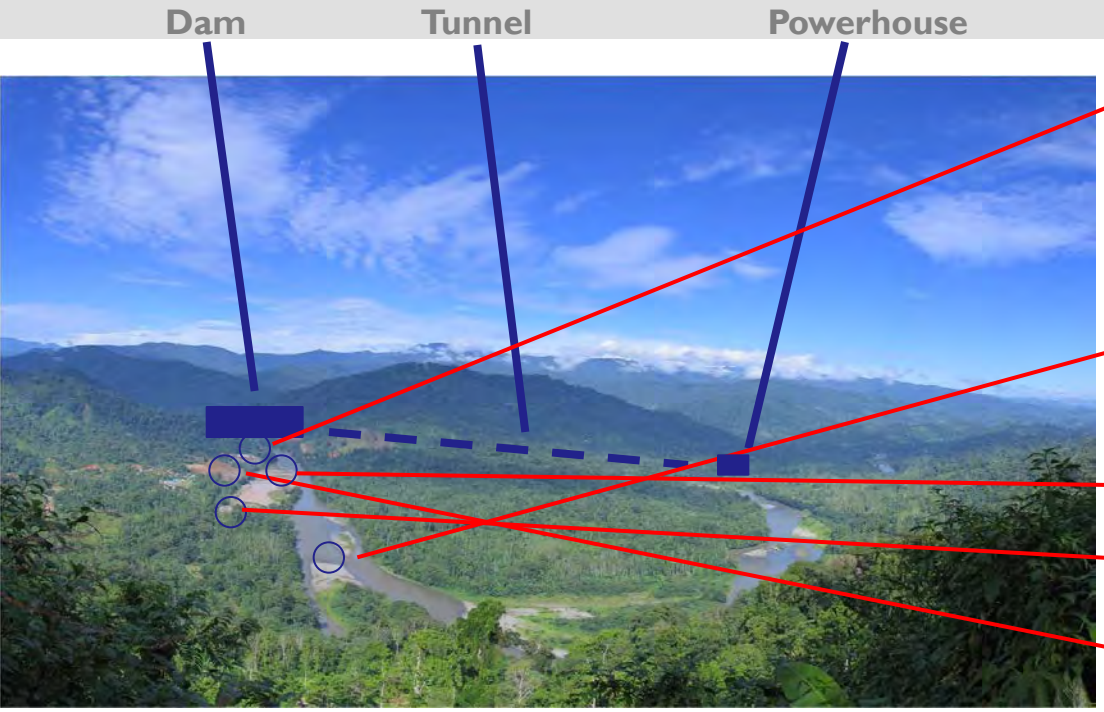
PROJECT INFORMATION



- Concrete plant (RCC)
  - Capacity 650 m^3/h
  - 2.000 tph delivery system
  - 80.000 tons of sand/aggregate storage
  - 3.000 tons of cement and fly-ash storage
- Aggregate mining area
  - 3 km long along river
  - 2,5 m tons required
- Crushing plant
  - 50.000 tons per week
  - 5 qualities
- Aggregate storage area
  - 1 million tons storage
- 8,000 kW power plant, diesel driven
- Large workshop
- Batching plant regular concrete
- Laboratories
- Safety organisation facilities
- Housing camps

TEMPORARY FACILITIES

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PROJECT INFORMATION

- Mass concrete without rebar
- 14 months of "24/7" placing operations
- Heat of hydration key issue
  - ⇨ High fly ash ratio
- Substantial amounts of retarder used to extend workability during interruptions
- Delivery by 2.000 tph delivery system
- Transported over dam with articulated dump trucks
- Spread out by bull dozers
- Compacted by vibrating rollers

ROLLER COMPACTED CONCRETE

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PROJECT INFORMATION

Project

April – October 2007	Preparations
October 2007 to mid 2009	Earth moving, road construction, surface preparation, plant construction
Mid 2009 to end 2010	Construction of tunnel, powerhouse
December 2009 – March 2011	Construction of dam
May 2011	Closing diversion tunnels
June 2011	Lake full
July – September 2011	Start-up
September 2011 – April 2012	Demobilisation

Cement and fly ash supply

October – November 2007	Feasibility study
January – March 2008	Concept terminal design and permit application
March – August 2008	Purchasing barge, terminal equipment, trucks, etc.
March – October 2008	Sourcing cement and fly ash
September 2008 – September 2009	Conversion floating terminal
July 2009 – October 2009	Construction shore silos and facilities
January 2009 – October 2009	Big Bag operations
November 2009 – February 2011	Bulk operations
March 2011 – July 2011	Demobilisation

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TIME FRAME

ARRANGING THE CEMENT AND FLY ASH SUPPLY

- Guaranteed supply
  - Firm supply contracts for 110.000 tons cement and 150.000 tons fly ash
  - Plan B options worked out
  - Complete control over supply chain

- Guaranteed quality
  - Type I cement for Dam
  - Type II cement for regular concrete and shotcrete
  - Class F fly ash
  - Consistent quality!!!!

ARRANGING THE CEMENT AND FLY ASH SUPPLY

Project logistics can only be resolved with a logistical and economical calculation model in which all possible scenarios can be evaluated.

- Changing project schedules
- Several possible suppliers of cement & fly ash with different shipping routes
- Different ship sizes
- Different terminal possibilities

Every time an issue is fixed the flexibility for the other variables become more narrow.

ARRANGING THE CEMENT AND FLY ASH SUPPLY

FACTORS

- Quantities
  - Overall quantity 240.000 – 260.000 tons
  - Ratio between cement and fly ash not yet known early in the project
  - Cement type I/type II issue

- Usage fluctuations
  - Project schedule still "subject to change" early in the project
  - Regular concrete use spread unevenly over project
  - RCC use during 16 months with fluctuations between 5.000 tpm and 30.000 tpm
  - Maximum daily peak 2.000 tons

- Infrastructure limitations
  - Poor roads
  - Small banana port without sufficient dock availability or storage area

- Supply sources and shipping routes not known early in project

LOGISTICS

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ARRANGING THE CEMENT AND FLY ASH SUPPLY

Fly ash supply

- No fly ash available in Central America
- Best possible supply from USA

Cement supply

- Issues with suppliers in Panama
  - Shortage situation
  - Both companies in plant expansion situation
  - Quality issues
- Cement supply situation in Caribbean not easy
- But…. Economical crisis in USA ➔ cement available for export

PROJECT INFORMATION

Fly ash

Separation Technologies (Titan America Group)
Production unit 20.000 tons per month
at Big Bend Power plant, Apollo Beach
10.000 tons product silo at plant
Additional 14.000 ton silo at Titan terminal in Tampa

Cement

Titan America
Pennsuco plant (North of Miami)
2,7 mtpa capacity
70.000 tons of finished product silos
Type I – II cement!!
Shiploading in Port Everglades directly by bulk trucks from plant

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AVAILABILITY

SETTING UP THE SUPPLY CHAIN

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SHIPPING ROUTES

SETTING UP THE SUPPLY CHAIN

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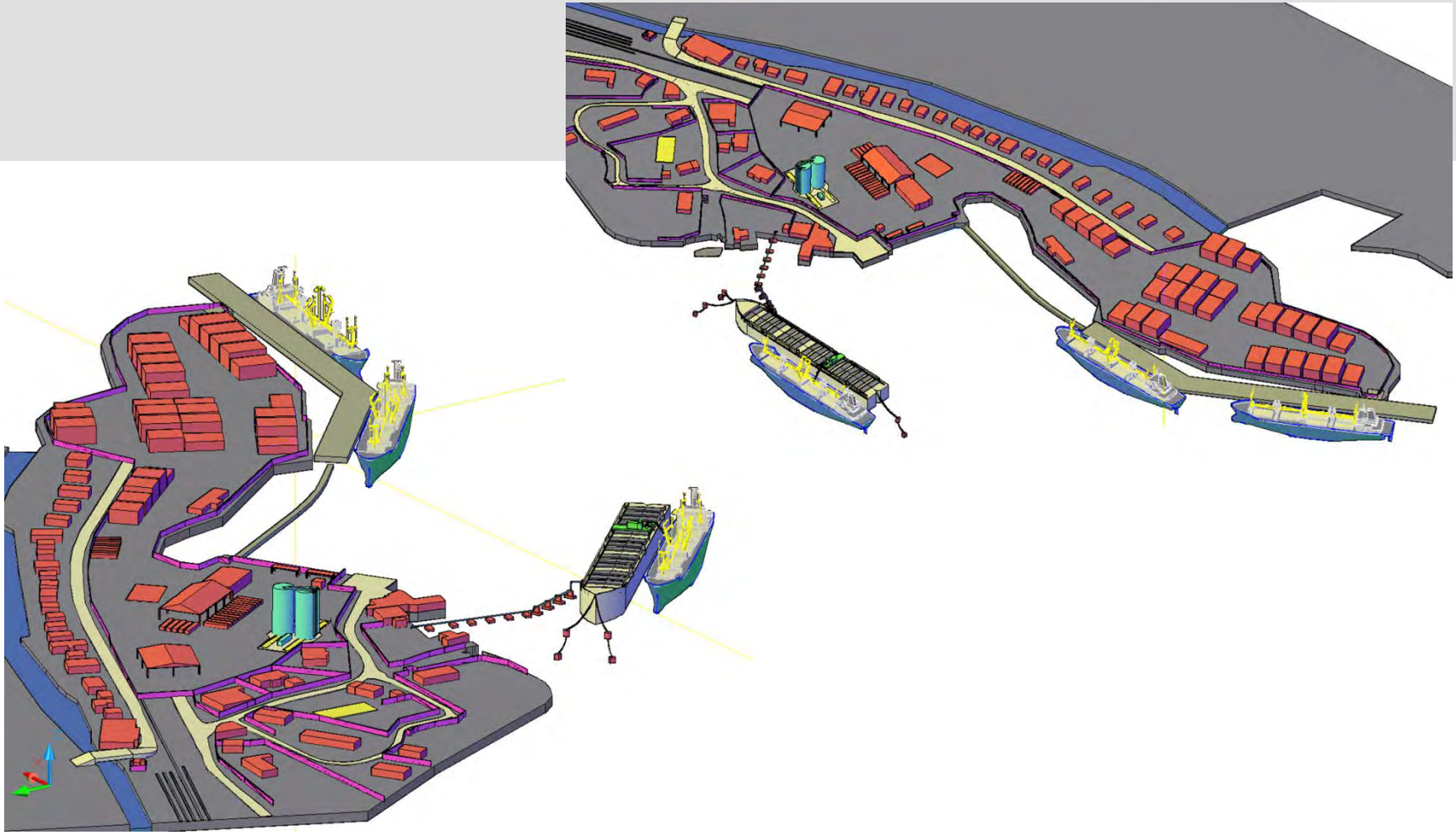
SHIPPING ROUTES

SETTING UP THE SUPPLY CHAIN



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PLANNING THE TERMINAL FACILITY

SETTING UP THE SUPPLY CHAIN

Floating terminal Lavioletta
Storage capacity 23.000 tons
5 Holds
Length 151,3 m
Width 22,9 m
Depth 11,0 m
Draft 8,6 m

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BUILDING A FLOATING TERMINAL

SETTING UP THE SUPPLY CHAIN

Conversion Work

- Repairs and modifications to hold structure
- Product conveying pipelines, fuel, water and waste water pipelines
- Refurbishment ballast system
- New gantry for ship unloader
- Installation of ship unloader
- Installation of generator set
- Installation of spud poles
- Electrical installation

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BUILDING A FLOATING TERMINAL

SETTING UP THE SUPPLY CHAIN

- Quality specifications
- Quantity definitions
  - Guaranteed minimum
  - Possible maximum
  - Penalties for non performance
- Price
  - Basic price
  - Escalation over time
  - Payment conditions
  - Financial guarantees
- Delivery conditions
  - F.O.B. Incoterms 2000
  - Definition receiving capability of ships
    - Loading connections
    - Dust collector capacity
    - Guaranteed loading rate
    - Penalties for non performance
- Supply obligation
  - Definition of supply source
  - Plan B
  - Keeping sufficient stock
    - Max. ship size
    - Minimum interval between ships
    - Max possible deviation from schedule
- Scheduling
  - Rolling schedule updated monthly and after big changes
  - Ordering procedures
  - Notification obligations
- Use of general port facility
  - Obligations of supplier to fix dock availability
  - Options when dock is not available and corresponding responsibilities
- Remedies, Force Majeure, Termination, other General conditions

SETTING UP THE SUPPLY CHAIN

- 2 Vessels required with about 7,500 Dwt capacity
- Availability (Tight at project planning, plentiful at actual charter date)
- Daily charter rate versus fuel consumption
- Positioning issues
- Loading and discharge characteristics
- Hold volumes (fly ash)
- Duration of charter period

SETTING UP THE SUPPLY CHAIN

UBC Cork **UBC Cartegena**

Shipowner: United Bulk Carriers (USA/Cyprus)
Broker: RG Jones Price

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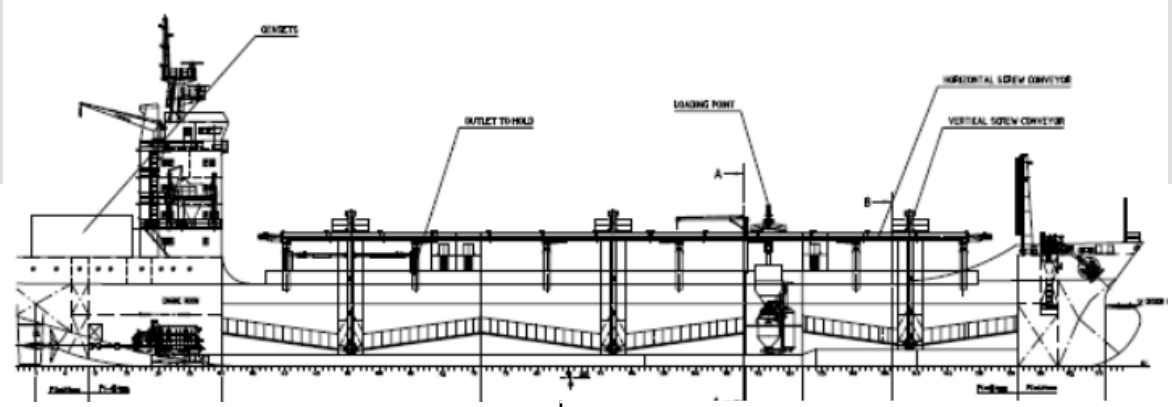
FINDING SELF DISCHARGING CEMENT CARRIERS

SETTING UP THE SUPPLY CHAIN



Particulars

Length oa: 117,00 m
Breadth: 19,70 m
Depth: 8,50 m
Draft: 6,40 m
Dwt: 8.600 resulting in
a cargo capacity of 7.800 ton
Cargo hold volume: 6.740 m^3
Fuel consumption
Sailing: 19 mt/day IFO 380 at 14,5 kn.
Generators: 1 mt/day MDO
Discharge: 9 mt/day IFO 380 at 600 tph

Two main engines each driving propeller and a generator
Discharge system: Nordströms
Mechanical extraction from hold and pneumatic discharge to shore
Capacity: 2 x 300 tph
Dustcollectors: 6 x 1.200 = 7.200 cbm/hr

SETTING UP THE SUPPLY CHAIN

CHARTER PARTY

BIMCO uniform time charter (Baltime 1939, Rev. 2001)

- Contract partners
- Ship specifications
- Fuel consumption
- Charter period and possible extensions
- Charter price / payment terms
- Place of delivery and redelivery
- Notification issues
- Trading limits
- Off hire situation
- General conditions

ADDITIONAL CONDITIONS

- Loading conditions / capabilities (must match with supply contract and actual situation in port)
- Discharge conditions / capabilities (must match with receiving terminal and actual situation in port)
- Equipment availability definitions
- Vessel to comply with US regulations!
- Various issues regarding trading in the Caribbean

SETTING UP THE SUPPLY CHAIN

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FINAL PREPARATIONS

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LOADING FLY ASH IN TAMPA

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LOADING CEMENT IN PORT EVERGLADES

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LEAVING TAMPA

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SEAVOYAGE TO ALMIRANTE

ARRIVAL ALMIRANTE

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ARRIVAL IN ALMIRANTE

MANAGING OPERATIONS

- Loading port arrangements Agent ⇨
  - Tugboat
  - Pilot
  - Dock
  - Documents
  - Customs
- Interaction between charter – Agent – Port – Supplier – Ship – Shippingco
- Fuel scheduling
  - Optimal quantities
  - Supplier situation
  - Price hedge possibilities
- Ship Charterer interaction
- Discharge port arrangements ⇨ Agent
- Interaction Terminal – Ship
- Crew arrangements discharge port
- Security in discharge port

MANAGING OPERATIONS

- Loading – discharge operations
- Trimming of floating terminal
- Truck loading (adapt shifts to project operations)
- Interaction terminal – ship
- Keeping cement and fly ash separated!!
- Supplies, repairs, etc.
- Safety & Security

MANAGING OPERATIONS

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TERMINAL OPERATIONS

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TERMINAL OPERATIONS

MANAGING OPERATIONS

As the shipping schedule was completely dependent on project progress and related developments a spreadsheet was set up with 14 interactive pages covering all logistical and economical activities (concrete placement, trucking terminal operations, shipping, personnel, payments, etc.). Everyday the forecasted values were replaced by actual figures and the forecasts were recalculated

MANAGING OPERATIONS

CALCULATION MODEL

Input	Output
- Concrete placement forecasts - Trucks loaded at terminal - Silo and floating terminal hold levels - Silo levels at concrete plants - Terminal operating values - Ships positions and tank levels - Ship loading information - Payments	- Teminal operations scheduling - Ship scheduling - Stock situation - Internal invoicing - Cost overview and projection - Cost per ton calculation - Cash flow projection - Day to day historical overview

MANAGING OPERATIONS

Thanks to excellent cooperation with United Bulk Carriers and broker R.G. Jones Price shipping problems have been few and were quickly resolved.

General recommendations:

- Resolve problems first and discuss the financial concequences after that
- Assist each other
- Agree with Captain / officers on the facts before making a claim
- Build up good relations with Captain and crew
- Keep a firm separation between ships crew and terminal crew

MANAGING OPERATIONS

Shipping cost overview

Charter costs: No savings possible except keeping the charter period as short as possible and make an effective use of the ships.

Fuel costs: Fuel costs were over 80% of the operating cost of the vessel. Fuel cost can be managed.

Port costs: Represent less than 20% of the operating cost and can only be improved marginally.

Savings possibilities

- Load ships to the very maximum
  - Keep bunker levels to a (safe) minimum
  - Overcome volume problems (especially for fly ash)
- Focus on Fuel (Big savings possible)
  - Reduce ship speed
  - Use one unloading system instead of two
- Keep track of "off hire" situations and actual port costs
- Prevent delays

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MANAGING OPERATIONS

Shipping goes with substantial money flows that require precise timing.

- Payments for cement and fly ash cargo
  - partial one day before loading
  - partial three days after loading
- Port costs
  - Paid in advance (2 days) based on estimate. Correction for actual costs later.
- Bunker costs
  - Paid in advance (36 hours). Correction for actual costs later.
- Chartering cost (monthly)

Ensure that cash flow projections are always up to date and that the financial department is fully aware of the absolute necessity to transfer money on time. Always check if transfers have been made.

MANAGING OPERATIONS

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AND THE DAM GROWS

MANAGING OPERATIONS

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AND THE DAM GROWS

MANAGING OPERATIONS

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AND THE DAM IS READY

MANAGING OPERATIONS

- Final shipments might require partial cargos and combined cement / fly ash cargos
- Redelivery dates require 45 days in advance notification and require regular updates after that
- Arrange redelivery surveys and bunkers / bunker compensation well in advance

FINALISING THE PROJECT

- Wrapping up supply contracts and charter parties
- Selling of floating terminal and shore silo facility
- Preparing floating terminal for sea tow and loading all shore silo equipment and floating pipeline on board

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PROJECT COMPLETED

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THANK YOU

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