Canal Expansion Program Progress

Expansion Program Components
$5.25 Billion investment over an 8 year period

- Atlantic Ocean
  - Atlantic Post Panamax Locks
  - Increase the Maximum Operating Level of Gatun Lake
  - Deepening & widening of the Atlantic entrance

- Pacific Ocean
  - Pacific Post Panamax Locks
  - Post Panamax Locks Pacific Access Channel
  - Deepening & widening of the Pacific entrance

Components:
- Deepening & widening of the Atlantic entrance
- Increase the Maximum Operating Level of Gatun Lake
- Deepening & widening of the Pacific entrance
Projects Under Execution

Pacific Access Channel - Phase 1

- Contract Scope: 7.3 Mm³, cleaning of 146 hectares of MEC and relocation of a 3.6km stretch of Borinquen road
- Awarded: July 17, 2007
- Amount: $40,431,196.00

7.3 M m³ excavated

- Contractor passed final inspection
- Administrative closure in process
- Completed project
Projects Under Execution
Pacific Access Channel - Phase 2

7.4 M m³ excavated

Contract Scope: 7.5 Mm³ of excavation, relocation of a 1.3 Km. stretch of Borinquen road, diversion of a 3.5 Km. stretch of Cocoli river.


Pending:
- Completion of reforestation and repair works (warranty)
- Repair works at the Diversion Channel from station 0K+320 to 0K+400

Programmed

Actual

7.4 M m³ excavated

Projects Under Execution
Pacific Access Channel - Phase 3

3.72 M m³ excavated

Awarded: 16-Dec-2008
Company: Constructora MECO, S.A.
Excavation: 8.0M m³
Clearing of remaining 190 has of UXO

Pending:
- Completion of reforestation and repair works (warranty)
- Repair works at the Diversion Channel from station 0K+320 to 0K+400

Programmed

Actual

3.72 M m³ excavated

190 hectares cleaned
Projects Under Execution
Pacific Access Channel - Phase 3

Northern Phase: 2.09 M m³
Completed on December 31, 2009

Southern Phase: 1.6 M m³
January 2010
Pacific Access Channel - Phase 3
Estimated Progress as of January 2009 vs. Programmed Progress

- Monthly Volume (m$^3$)
- Accumulated Volume (Mm$^3$)

### Projects Under Execution
Pacific entrance deepening and widening (8.7 M m$^3$)

Awarded: April 1, 2008
Company: Dredging International
Amount: $177,500,676.78
Dredging volume: 8.7 M m$^3$

- 4.88 M m$^3$ dredged
(Sedimentation not include)
Projects Under Execution
Pacific entrance deepening and widening (8.7 M m³)

Reforestation Projects Under Execution
PAC-1: Camino de Cruces National Park (Panama) 100%
PAC-2: Campana National Park (Western Panama) 100%
PAC-3: ANAM Center for Forestry Research (Chiriqui) 94%
PAC-3: Gral. Omar Torrijos National Park (Piedras Gordas - Cocle) 94%
PAC-2: Gral. Omar Torrijos National Park (Bajo Grande/ Ojo de Agua- Cocle) 92%
Dredging of the Lake / Volcán Barú National Park (Chiriqui) 90%
PAC-3: Chagres National Park (Panama-Quebrada Oscura) 80%
PAC-2: Gral. Omar Torrijos National Park (La Rica/ Caño Sucio- Cocle) 80%

Volcán Barú 30 Ha
Campana 30 Ha
Chagres 40 Ha
Camino de Cruces 115 ha
Gral. Omar Torrijos 180 Ha
Center for Forestry Research 50 Ha
Projects Under Execution

Dredged Areas in Gatun Lake and Gaillard Cut

6.8 M m³ dredged

Dredging of Gatun Lake and Gaillard Cut - OPD

Dredging volumes

Progress as of January 2010 vs. Programmed Progress

actually accumulated

programmed accumulated
Tabernilla Reach

- Depth equal or over 16.76m MLL
- Depth less than 16.76m MLL

Condition as of April 15, 2008

Reach was completed in September 2009

OPD’s work plan for 2010

Gatun Lake

- Complete San Pablo Reach. 940,000 m³ out of 4,477,420 m³
- Dredge in Mamei Reach 112,000 m³ out of 2,768,155 m³

Condition as of April 15, 2008

Condition as of January 05, 2010
Design Progress

- Gates - Submitted preliminary design incorporated comments made during the evaluation.
- Valves - Submitted preliminary design which is now under review
- Seismic Criteria - design memorandum is being prepared pursuant to issues discussed during the seismic workshop
- Excavation - intermediate design of fine excavations in some areas will be submitted in March and May
- Electrical Systems - preliminary design will be submitted for review in February
- Mechanical Systems - preliminary design will be submitted for review in February

Hydraulic design progress

- Mathematical Model - Submitted preliminary results from 3D models for the following components:
  - Discharge, intake, central connection, basins intake, trifurcation, flow divider, connection to secondary culvert, ports
- Physical Model - Under construction. Built in a way that allows making adjustments to the model on account of changes due to the results from the mathematical model.
Mathematical Model
Analyzed Components

3D Mathematical Models
Mathematical Model

Results Example

Upcoming events related in the hydraulic design

• Mathematical Model – Submittal of final report will be April 2, 2010

• Physical Model –
  - Final review of testing schedule, March 23, 2010
  - Notifications ACP of the testing program startup, March 25, 2010
  - Testing startup, April 24, 2010
Recent Activities

1. Receipt and review of $B/ . 300 M Letter of Credit.
2. ACP issued $B/ . 300 M advance payment for mobilization on January 15, 2010.
3. ACP has reviewed and accepted the baseline schedule.
5. Gates Workshop (Dec. 11) Model is being developed but seismic criteria must be accepted to be incorporated to the gate design. Documentation on preliminary valves design was submitted on January 13.
6. Seismic Workshop (Dec. 16-17). GUPC continues developing the seismic criteria for all structures and gates.
7. The preliminary design for a portion of dry excavations should be submitted in February.
8. Contract documentation related to Communication, Safety and Protection of Facilities has been submitted. ACP is reviewing it.

9. Thirty-four heavy equipment have been deployed on the Pacific side. They are working on grubbing and cleaning activities and preparing yards for plants. A similar amount of equipment have been deployed on the Atlantic side to start dry excavations and preparing the road to the Montelirio disposal site.

10. Plants and equipments: GUPC is closing agreements for rock crushing equipment, concrete plants, chilling plants, and auxiliary electrical power plants.
Scheduled Workshops

- Fenders - February 10 and 11
- Concrete - February 18 and 19
- Buildings and infrastructure - February 4 and 5
- Electricity and Controls - 1st week in March

777F Trucks in Gatun
Clearing - Atlantic Locks

Grubbing - Atlantic Locks
Grubbing – Pacific Locks

Grubbing – Pacific Locks

Grubbing – Pacific Locks
### Atlantic entrance deepening and dredging

**Volume:** 15.6 M m³

- **Bid announcement:** February 27, 2009
- **Field trip:** April 29, 2009
- **Preview:** April 30, 2009
- **Site research:** Started: May 21, 2009
  
  - **(Dredging International)**
  - **Ended:** July 4, 2009
- **Receipt of proposals:** September 10, 2009
- **Awarded to:** Jan de Nul NV
- **Award date:** September 25, 2009
- **Startup date:** January 2010
- **Post-award meeting:** October 6 and 23, 2009
- **Award amount:** B/. 89,617,317
- **Contract end date:** April 2013
- **End date proposed by Contractor:** September 2011

- **2.305 M m³ optional work:** B/. 16,411,600
- **Total extension:** 13.8 Km
- **Contract total:** $ 106,028,917
- **Total volume:** 17,905 M m³

- **Widening:** from 198 m to 225 m (navigational channel)
- **Creation of Turning Area for PostPanamax Vessels**
- **Channel width to 218 m (Northern Access Channel)**
Ongoing activities

Fauna observation, rescue and relocation

Wildlife management, rescue and relocation plan submitted by subcontractor CODESA was approved by ANAM on January 6, 2010.

Ongoing activities

Joint visits by ANAM, CODESA and IARM staff related to ecological compensation and wildlife rescue plan
Rented and Contractor's Heavy-duty Equipment Mobilization

- Bulldozers
- Articulated Trucks
- Backhoes
- Shovels

Assembling Hitachi 1900 Excavator

Technical visits to floating equipment: Aida Motor Boat, Reliance Tugboat and IMI-102 Barge

Clearing and grubbing

Cleaning and grubbing works in Davis, and Mindi and South Tanque Negro Inland Disposal Sites
Meetings with Jan De Nul and ACP teams

- Post-award and Pre-construction meeting.
- Weekly meetings.
- Specialized meetings: Measurement, safety, environmental, navigation and programme.
- Review of Contractor documents (Insurance policies, plans, programme and methodology) by ACP specialists.
Upcoming activities

- Land survey of dry excavation areas.
- Initial bathymetric soundings.
- Floating equipment (motor boats, tugboat and barge mobilization and inspection.
- Startup of dry excavation in areas close to the Access Channel.
- Mobilization of heavy-duty equipment.
- Construction of dike at South Tanque Negro Disposal Site.
- Construction of access and hauling roads.

Pacific Access Channel - Phase 4
26 M m³ dry excavation

- Bid announcement: July 31, 2009
- Receipt of Proposals: 22-Dec-09
- Award: 6-Jan-10
- Order to Proceed: 22-Jan-10
- Commissioning expected date: 27-Apr-10
- (Estimated) works completion date: 2-Aug-13 (1288 days)
Borinquen Dam

Pacific Access Channel

Sheet Pile Acquisition: 74%

Shipments
1°: 3,663 Tons October 09
2°: 4,029 Tons November 09
3°: 3,740 Tons December 09
4°: 3,928 Tons February 10
Total: 15,367 Tons
Pacific Access Channel – Phase 4

• Relocation of Pedro Miguel Fire Station.
  Awarded to Joama Contractor.
  Order to proceed dated: 4/January/2010
  Startup date: 4/January/2010
  End date: 30/Dec/2010.
  Total days: 360

• Relocation of Building 12 in Pedro Miguel.
  Bid document issued: 29/January/2010
  Receipt of proposals: 02/Mar/2010

• Relocation of utilities within Pedro Miguel locks areas.
  Designs should be ready by the end of January 2010.

• Reforestation of approximately 115 hectares.
  ANAM evaluation pending for compensation payment.

Project under bidding process
Gatun Lake’s Northern Area Dredging Contract
4.9 Million m³

Preliminary programme
- Bid announcement: November 30, 2009
- Field trip: January 13, 2010
- Pre bid Conference: January 14, 2010
- Geotechnical studies: January 14 through March 9, 2010
- Proposals submittal: March 16, 2010
- Commissioning: September 1, 2010 (18 months)

Northern reaches dredging contract

Volume to dredge = 4.90 M m³
Project length = 19.58 km
Deepening = -16.76 m. MLL
Tolerance = 0.60 m.
Maximum dredging depth = -17.36 m. MLL.
Minimum width 304 meters
Future Project to be advertised

**Description and Scope:**
- Depthening from 27.5m to 9.14m PLD
- Design depth = 9.14m PLD
- Dredging tolerance = 0.60m
- Channel width = 218m
- Length = 1.6km
- Approx. dredged volume = 4Mm3
**NEW ACCESS CHANNEL TO NORTH PACIFIC ENTRANCE**

Preliminary Bid Programme

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
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<tbody>
<tr>
<td>Bid announcement</td>
<td>February 12, 2010.</td>
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<tr>
<td>Site visit</td>
<td>ABRIL 2010.</td>
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<td>Receipt of proposals closing date</td>
<td>JUNE 1, 1 2010.</td>
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<td>Award</td>
<td>JULY 3, 2010.</td>
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<td>Mobilization period</td>
<td>JULY 4 – SEPTEMBER 30, 2010</td>
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<td>Note to Proceed</td>
<td>OCTOBER 1, 2010.</td>
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<td>End</td>
<td>SEPTEMBER 30, 2012.</td>
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Notas: Los eventos y fechas son estimados y se confirmarán posteriormente.

Administration
Executive Programme for Major Projects Including Baseline and Contingency
as of January 20, 2009*
PRELIMINARY

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<tr>
<th>Activity</th>
<th>% Baseline</th>
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<th>2007</th>
<th>2008</th>
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* Baseline from December 31, 2006 - including contingency

Canal Expansion Program Progress