

PANAMA CANAL AUTHORITY	VARIATION	PAGE 1 OF 1
1. REQUEST FOR PROPOSAL No.: RFP-76161	2. CONTRACT No.: CMC-221427	3. DATE: August 24, 2010
		4. VARIATION No.: 008

5. ISSUED BY:

PANAMA CANAL AUTHORITY
Employer's Representative
Locks Project Management Division
Building 740, Corozal
Panama, Republic of Panama

6. NAME AND ADDRESS OF CONTRACTOR (INCLUDE PHYSICAL & POSTAL ADDRESS) Grupo Unidos por el Canal, S.A. Building 732, Corozal West Panama, Republic of Panama	7. CONTRACTOR'S TELEPHONE NUMBER: 507-316-9900
	8. CONTRACTOR'S FACSIMILE NUMBER: 507-317-6736

9. VARIATION:


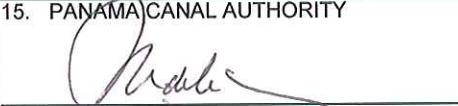
- ☒ The contract referred to in item No. 2 is hereby varied as set forth in item 10, entitled "DESCRIPTION OF VARIATION".
☒ YES. ☐ NO. The contractor shall send a copy, duly signed, of this Variation to the Employer's Representative/Contracting Officer.

	9 A. THIS VARIATION IS EXECUTED ON THE BASIS OF: <i>(Specify the legal authority)</i> . THE VARIATION DESCRIBED IN ITEM 10 IS HEREBY INCORPORATED AND MADE A PART OF THE CONTRACT.
	9 B. THE CONTRACT REFERRED TO IN ITEM NO. 2, IS VARIED TO INCORPORATE ADMINISTRATIVE CHANGES (such as the paying office, account numbers, etc.).
X	9 C. THIS BILATERAL AGREEMENT IS SIGNED AND INCORPORATED INTO THE CONTRACT REFERRED TO IN ITEM NO. 2 OF THIS FORM, ON THE BASIS OF: <i>(Specify the legal authority)</i> Volume III, Conditions of Contract , Clause 13 [Variations and Adjustments]
	9 E. ACCOUNT NUMBER <i>(If required)</i> :

10. DESCRIPTION OF THE VARIATION *(List in accordance with the order of the Contract. If additional space is required, use blank sheets)*.

See attached

Except for the variation(s) herein specified, all other terms and conditions of the Contract remain unchanged.

11. NAME AND TITLE OF THE PERSON AUTHORIZED TO SIGN <i>(Type or print)</i> Antonio Maria Zaffaroni Contractor's Representative	12. NAME AND TITLE OF THE EMPLOYER'S REPRESENTATIVE/CONTRACTING OFFICER <i>(Type or print)</i> Jorge de la Guardia, Employer's Representative
13. CONTRACTOR  (Authorized signature)	14. DATE:
	15. PANAMA CANAL AUTHORITY  (Employer's Representative/Contracting Officer's signature)
	16. DATE: 24/08/2010

RECEIVED
SEPT. 3, 2010

**THIRD SET OF LOCKS PROJECT – ACP CONTRACT No. CMC - 221427
VARIATION ORDER No. 008**

BACKGROUND

On March 10, 2010 the Contractor submitted Request for Variation No. 4 (RFV No. 4) proposing a longitudinal shift of the Atlantic and Pacific Locks along their current centerline axis which would neither alter the geometry of the Lock's chambers, nor have any additional time or cost implications on the Locks Contract, or affect other ACP contracts currently underway.

A list of the correspondence exchanged between the Employer and the Contractor in connection with Variation Order No. 8 (VO-008), generated by the Contractor's RFV No. 4 follows:

RFV No. 004 of March 10, 2010	IAE-UPC-0154 of April 15, 2010
GUPC-IAE-0246 of May 17, 2010	IAE-UPC-0271 of July 7, 2010
GUPC-IAE-0343 of July 17, 2010	IAE-UPC-0293 of July 20, 2010

The substance of the understandings established through the above exchange of correspondence, which together constitute the basis for VO-8, is summarized in the paragraphs that follow.

I SCOPE

I.1.A On April 5, 2010, the Employer responded to RFV No.4 indicating that the Contractor's request had to be evaluated considering the Employer's Requirements which, under Paragraph 1.02.F [Location, Alignment and Reference Points] of Section 01 10 00 [General Project Requirements], state the following:

"Location and alignment of the lock complexes shall be in accordance with Drawing 5801-4, Volume II, Part 4 (Requirement Drawings). Reference points for setting out the Works, as indicated in Sub-Clause 4.7 (Setting Out) of the Conditions of Contract are provided on Drawings 5802-2 and 5803-2, Volume VI, Part 1 (Reference Drawings)."

Pursuant to the above requirements the Contractor was requested to submit a drawing similar to Drawing 5801-4 indicating the proposed new lock head coordinates as well as the modified lock layout.

I.1.B On May 17, 2010, the Contractor responded that during the design development of the **Atlantic Locks**, the Contractor's design team used Drawing 5801-2 to establish the alignment for the locks complex instead of Drawing 5801-4. The result is that the

alignment is slightly rotated to the West when compared to the alignment that would have resulted if Drawing 5801-4 had been used.

The alignment in accordance with Drawing 5801-2 results in an offset of 0.3327 meters to the west of the 5801-4 alignment for the proposed centerline of Lock Head 1 (WP-4), as indicated on Detail 2 on Drawing, SK-A-C-0054.

During the design development of the **Pacific Locks**, it was determined that the locks complex could be shifted downstream (toward the Ocean) along its longitudinal axis thereby providing better geologic conditions for the foundations of the complex, and specifically for the foundation of Lock Head 3.

The shifting of the Pacific Locks downstream will move the locks further away from the un-named fault which is quite close to the end of the wing walls shown in the Contractor's Technical Proposal, thus reducing the risk of potential problems with geological conditions associated with the fault.

The Contractor included with letter GUPC-IAE-0246 Drawings, SK-A-C-0004, SK-A-C-0005, and SK-A-C-0006, for the Atlantic, and SK-P-C-0004, SK-P-C-0005, and SK-P-C-0006, for the Pacific Locks. The drawings indicate the proposed new lock head coordinates as well as the modified layout of the Locks Complexes.

I.2.A On April 5, 2010, the Employer pointed out that since the specific location of the La Boca/Basalt contact was not accurately known, the Contractor would be expected to provide adequate and sufficient information to confirm the spatial location of the geologic contact below the lock head footprint prior to ascertaining that the proposed shift of the **Pacific Locks** will definitively place LH #3 on a single geological formation.

I.2.B On May 17, 2010, the Contractor responded that based on CICP's analysis of all relevant existing information, it was concluded that the proposed relocation of the Pacific Locks will minimize the risk that the Lock Head 3 foundation will straddle the Basalt-La Boca geologic contact which would result in a complex foundation condition.

The Contractor also indicated that field exploration will be performed to further characterize the Basalt-La Boca contact relative to Lock Head 3, and referred the Employer to a Technical Report entitled, *Relocation of the Pacific Locks Complex, Geologic Analysis of Lock Head 3*.

I.3.A On April 5, 2010, the Employer asked the Contractor to clarify its statement that the shift of the Atlantic Locks northwards will increase the area available for the Gatun cofferdam because the only Atlantic cofferdam shown in the design package so far submitted was located at the north end of the Atlantic Locks.

I.3.B On May 17, 2010 the Contractor responded that its reference to the Gatun cofferdam was intended to mean the natural plug between the Gatun Lake and the 1939

excavation. Shifting the Atlantic Locks downstream (towards the Ocean) will allow the excavation of the approach wing walls without encroaching on the natural plug.

I.4.A On April 5, 2010, the Employer pointed out that RFV No. 4 did not address potential impacts to other portions of the Works caused by the shifting of the Pacific Locks, and specifically, how the dimensions of Dam 2E would be affected. Accordingly, the Contractor was requested to provide documentation to assure the Employer that this had been taken into consideration in the development of RFV No. 4.

I.4.B On May 17, 2010, the Contractor acknowledged that the southward shift of the Pacific Locks has been taken into consideration and that the shift will result in an increase in length in the Borinquen Dams as follows:

- Dam 2E – increase in length approximately 45 meters downstream toward the ocean
- Dam 2W – increase in length of approximately 30 meters downstream also towards the ocean

The difference in length between the two dams was because Dam 2E terminates at the Wing Wall structure which is both relocated and shortened, while Dam 2W terminates at Lock Head 1 which is only relocated.

The Contractor indicated that the foundation conditions to be encountered below the dam extensions were anticipated to be the same as the other portions of the dams, and, therefore, the design of the extensions would not be affected by the proposed relocation.

II BENEFITS

In RFV No.4 the Contractor identified the following benefits:

- Pacific Locks - a shift of 29.95 meters Southward will increase the distance of the Locks from the UNNAMED FAULT, and will place LH # 3 on a single geological formation (La Boca) rather than straddling two formations with the associated foundation issues.
- Atlantic Locks - a shift of 14.82 meters Northward will increase the area for the Gatun cofferdam.

On April 5, 2010, the Employer pointed out that the Contractor's RFV No. 4 had to be considered under the provisions of Sub-Clause 13.2 [Value Engineering], and that therefore, the benefits which GUPCSA's Designer had identified would need to be carefully analyzed.

On May 17, 2010, the Contractor indicated that there was no financial benefit to be accrued to either the Employer or Contractor through the shifting of the Atlantic Locks downstream towards the Atlantic Ocean. However it was considered that, during construction, the shifting would provide increased security to the integrity of the Gatun plug with no increase in cost and no change in scheduled completion.

On May 17, 2010, the Contractor also indicated that there was no financial benefit to be accrued to either the Employer or Contractor through the shifting of the Pacific Locks downstream. However it was considered that the shifting will provide a better engineered design with no increase in cost, and would increase the confidence level that Lock Head 3 was founded essentially on a single geologic formation, thus removing the complexities associated with modeling seismic forces through a geological contact between different rock types.

III COST AND TIME IMPLICATIONS

RFV No.4/ VO-8 do not introduce any additional cost or time implications to the Locks Contract.

On April 5, 2010, the Employer indicated that RFV No. 4 should not alter any submittal dates, review periods, or durations already established in the Accepted Baseline Programme, and that the Variation should provide specific intermediate milestones that do not conflict with the Accepted Baseline Programme.

On May 17, 2010, the Contractor confirmed that RFV No. 4 will not alter any submittal dates, review periods or durations already established in the Accepted Baseline Programme, and that it will have no bearing on the current process of re-sequencing the design submittal packages to be consistent with the planned sequence of excavations progressing from the upper to the lower chambers at both lock complexes.

IV ADDITIONAL CONDITIONS

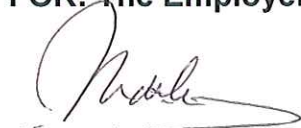
In addition to the relevant provisions of the Contract, the following conditions are accepted by the Contractor:

1. The Employer's acceptance of RFV No. 4 does not constitute in any way acceptance and/or assumption of responsibility for the Contractor's Technical Report entitled *Relocation of the Pacific Locks Complex, Geologic Analysis of Lock Head 3*, or for any decision that the Contractor may make on the basis of such report or on the basis of the results of further geotechnical explorations.
2. The current spatial coverage pertaining to natural physical conditions, including sub-surface and hydro-geologic conditions and topographic conditions afforded by Paragraphs 4.10.1, 4.10.3 (a), (b) and (c) of Sub-Clause 4.10 [Site Data] and Paragraphs 4.12.2 (a), (c) and (e) of Sub-Clause 4.12 [Unforeseeable Physical

Conditions] of the Conditions of Contract shall not be extended to cover any areas additional to the current Lock Structures foot print areas. The additional areas generated by the shifting shall be considered to be "any other areas of the Site" covered under Paragraphs 4.10.2 of Sub-Clause 4.10 and Paragraph 4.12.6 of Sub-Clause 4.12 of the Conditions of Contract.

In Witness whereof the Parties have caused Variation Order No. 008 to be executed by their duly authorized Representatives on the dates written immediately below the Representatives' signatures.

FOR: The Employer



Jorge de la Guardia
Employer's Representative

Date: 24/VIII/2010

FOR: The Contractor



Antonio M. Zaffaroni
Contractor's Representative

Date: 25/VIII/2010