AECOM

USAID
North Power Plant Project
Caracol, Haiti

CONTRACT NO: EDH-I-00-08-00024-00

ORDER NO: EDH-I-06-08-00024-00

Site Progress Report – December 2011

Prepared By

AECOM

Construction Status Synopsis [1]

Six (6) platforms and one trench were prepared for the:

- Water Treatment Unit (see W1 on PPS Foundation drawing page 6)
- Fuel loading Unit (see P1 on PPS Foundation drawing page 6)
- HFO Purifier Unit (see P2 on PPS Foundation drawing page 6)
- Exhaust Gas Boiler Unit (see B1 on PPS Foundation drawing page 6)
- Water/oil Separator Unit (see O1 on PPS Foundation drawing page 6)
- Black Start Unit (see B2 on PPS Foundation drawing page 6)
- Cable pit for the engines' power cables (see page 7)

Construction Status Synopsis[2]

Concrete Installation and Test

- The concrete was outsourced and brought in from Fort Liberte.
- A 30 cm thick concrete slab was poured at every platform
- In order to maintain uniformity a vibrating tool was used and workers using hard plastic head hammers worked their way around the platform.
- Two tests were performed for each and every truck load.
    - Settling test (immediate/pictures 7 & 8)
    - Destruction test (to be done later/pictures 5 & 6)
- A couple of hours after leveling the platform, water was poured onto it and added constantly due to evaporation.
- A concrete wall is being installed around the site by Estrella

Environmental

- ESD was advised to post the HIV warning on the site.
- ESD was advised to submit the required environmental report s.
- The Back-Hoe Loader/Excavator being used to dig out the foundations for the future Main Office and Warehouse fell into the foundations. The Dominican operator was unharmed(see pictures 19 & 20)

New platforms

(Sludge discharge Pump(D1) and Used Lube oil discharge Pump(D2)
& forms used to make the platforms)

Steel Rebar

(5cm/floor & 10 cm/side)

Concrete testing [1]

(to do the destruction testing)

Concrete Testing [2]
(settling test)

Pouring and Leveling

Finished Platforms [1]

(Water Treatment & Oil-Water Separator platforms)

Finished Platforms [2]

(Fuel Loading and HFO purifier platforms
note water on top of platforms)

Finished Platforms [3]

(Exhaust Gas Boiler and Black-Start platforms)

Engine Cable Trench

Hazard/EHS

(on-site crane was unable to get the excavator out)

EHS

(finished water well)

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Site Progress Report – January 2012

Prepared By

AECOM

Construction Status Synopsis

1. All eight (8) platforms, engines and engine support are ready.
2. The main office building is ready and awaiting its steel frame.
3. The warehouse building is scheduled to be complete by mid-February.
4. Rebar work for six(6) of the eight(8) tank platforms was finished and awaiting concrete.
5. The transformer building's fire walls is being erected and are schedule to be finished by mid-February.

Work By Estrella

Industrial Park being prepared by ESTRELLA

- Project Manager: Raul Martinez Tremols; tel: 509 366 97582.
- The perimeter concrete fence, 8 feet tall, is 80% finished.
- A Housing Facility/Dormitory/Hotel is being built for the Korean Expats. It should be ready by the end of March.(see photos)
- The complex for the first Korean company, SEA, is on target to be finished by the end of April.(see photos)
- The construction of the nearest bridge is advancing.(see photos)
- Estrella has increased security on their part of the Park.

Key Site Issues

- SECURITY
- SAFE TRANSPORT OF THE ENGINES
- GENDER HIRING

Security Issues

- ESTRELLA removed their outer perimeter security guards.
- There seems to have been local stealing of barbed wires around the site
- People from outlying towns pressured both ESD and ESTRELLA, every Monday, to be hired and often voiced threats if they were not chosen.
- It appears that it is difficult for Police in Caracol, Trou du Nord, and Fort Liberte to respond quickly to a disturbance at the NPP. AECOM advised USAID of this potential issue

Security Solutions

- ESTRELLA started to build an outer perimeter fence around the Site early February.
- Guards should be located at the entrances
- AECOM discussed with the local authority, CAZEK, the possibility to perform all hiring in his office and only send those hired to the Site.

Safe Transport of Engines

1. AECOM expressed concern of the potential weaknesses of the bridges that could possibly be an issue for the transport of the Engines-Containers to the site.
2. All 3 bridges were visited and photographed.
3. MTPTCE and CEPREN were questioned as to the Loading capacity of the three bridges.
    - They advised that the bridges were able to withstand a 12 tons per axle load.
    - It was further advised that the Engines crossed early evening and did stop or brake while on the bridges.
4. ESD did not do any specific testing of the bridges.
5. ESD hired a local certified transporter who is taking responsibility for transporting the engines to the site
6. In addition to the per axle load, another item to consider is that the load and the truck, more than 50t, will be completely on the bridge at one point.

Gender Hiring

USAID and the US State Department has requested that women be given more opportunities to be hired in all areas of the construction.

1. AECOM monitors this issue.
2. ESD has increased the actual percentage of women hired.
3. Hires include a staff level nurse with other women involved in site maintenance (cleaning), safety (ensuring that all workers wear hard hats, goggles and steel tipped boots) and health.
4. ESD needs to expand the opportunities for women into the technical and constructor positions. AECOM will monitor progress in this area.

Environmental

- ESTRELLA/UTE plans to widen and also deepen the ditch that divides the SITE. They advised that it was to prevent possible future flooding. They are taking responsibility for compliance with site requirements.
- ESD: The site now has three (3) portable latrines (SE corner). One reserved for the WOMEN.
- ESD posted HIV warnings in all 3 latrines and the main office.

MAIN OFFICE AND WAREHOUSE

Main office platform ready

Warehouse platform mostly ready

TANK PLATFORMS

Rebar work being done

Forms placed awaiting concrete

WORK PROGRESS

Transformer Building Walls being erected.

Engine Platforms ready

DITCH PREPARATION & ACCESS[1]

Drain pipes being lowered at the

Ditch to give definite access to the Site

DITCH PREPARATION & ACCESS[2]

Drain Pipes at the ready

Drain Pipes being installed

EHS[1]

HIV postings at the Main office

HIV postings at the Main office

EHS[2}

Latrines and hand wash Area

HIV postings in Latrines

EHS[3]

Site Speed Limit

Worker get together

DORMITORY/HOUSING

Concrete slab for Korean workers shelter

Polyurethane forms to build the Shelter

VISIT of Jean Rene MARCOUX

Zenie CAYO with J.R. MARCOUX

Alex HAN, Zenie CAYO, J.R. MARCOUX and Owen PARK

ESTRELLA

First Industrial Building being erected for the Korean company ”SEA”

ESTRELLA

Dormitory/Hotel being built for Korean investors(up by 3/31/12)

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North Power Plant Project
Caracol, Haiti

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Site Progress Report – February 2012

Prepared By

AECOM

Overview of Work Accomplished

1. Construct ion of Power Plant Site proceeding
2. Tank platforms completed
3. Site Security enhanced
4. Estrella Project Manager:
   Raul Martinez Tremols; tel: 509 366 97582
5. The perimeter concrete fence, 8 feet tall, is 80% finished.
6. Estrella is building a Housing Facility/Dormitory/Hotel for the Korean Expats. Completion estimated by end of March.
7. The complex for the first Korean company, SEA, is on schedule to be finished by the end of April.
8. The construction of the nearest bridge is moving forward (photos-23 & 24).
9. Estrella has built a new road to the Site to ease the arrival of the containers (photos-13 &14)
10. Estrella has widened and leveled the turn-off from the Fort-Liberte road to the dirt road of Jacquesy (photos-11 &12)

KEY ITEMS

- POWER PLANT SILTE CONSTRUCTION
- TANK PLATFORMS CONSTRUCTION
- SAFE TRANSPORT OF THE ENGINES
- SITE SECURITY

Power Plant Site

Status of the Power Plant Site Construction

1. ALL eight (8) platforms, engines and engine supports are ready. Walkway stands were poured (photos-7 & 8).
2. Piping for the engine power cables was laid between the Engine Trench and the Electrical Control Building (photos-10).
3. The Main office building is ready, its floor was poured 2/29. Awaiting Steel Frame from the boat (photos-1 & 2).
4. The Warehouse building is ready, its floor was poured 2/29. Awaiting Steel Frame from the boat (photos-1 & 2).
5. The transformer building's fire walls are ready (photos-9).
6. Foundations for Fire Fighting Building and Electrical Building progressed (photos 6,10).

TANK PLATFORMS

All tank platforms have been prepared:

1. All eight (8) tank platforms were finished: tank seats and tank bolt rings (photos-3,4,5).
2. The seat of the tank was poured first, with PVC pipes set in place to receive the tank's anchor bolts.
3. Then the ring was poured and the PVC pipes were chiseled out of the concrete.
4. The Retaining Dyke foundation, all around the Fuel Tanks is being dug.
5. The tanks' anchor bolts should be arriving with the container boat, Vectis Eagle.

SAFE TRANSPORT OF ENGINES

ALL IS FINALLY IN READINESS TO RECEIVE THE ENGINES AND OTHER CONTAINERS FROM THE BOAT.

1. The capability issue of the 3 bridges has been resolved
2. The Agent/Transporter, ADECO, is onboard and ready to facilitate the safe transport of the containers.
3. Estrella has constructed a new road, in a direct link, from the dirt road to Jacquesy-town to the Park (photos 13,14).
4. Estrella has reinforced the overpass, over the ditch, to ensure the safe passage of the containers.
5. Estrella has widened and leveled the turn-off from the main road to Fort-Liberte onto the dirt road to Jacquesy-town (photos 11,12).

SITE SECURITY

1. ESD increased their security staff this month to a total of six(6) Agents.
2. ESTRELLA built the concrete block fence around the Park, to increase the level of security at the Site.
3. ESD built a Dormitory for themselves as well as the Koreans coming to assemble/build, the tanks, the buildings and install the engines.
   - The dormitory has 16 double rooms, men & women baths, men & women showers, a kitchen and a cafeteria. Two office are also in the building: one for ESD and AECOM and the other for the Koreans(ANNIL,DECCO..etc..)

MAIN OFFICE AND WAREHOUSE

Main office platform ready

Photo-1

Warehouse platform ready

Photo-2

TANK PLATFORMS

HFO Tank platform done

Photo-3

Final readiness state of the Tank Platforms

Photo-4

TANK PLATFORMS
&
FIRE FIGHTING BUILDING

HFO Tank Platform ready

Photo-5

Fire Fighting Building foundation with anchor bolts inserted

Photo-6

WORK PROGRESS

Engine Platforms ready. Note walkway stands poured[concrete]

Photo-7

Photo-8

WORK PROGRESS

Transformer Building Fire Walls erected.

Photo-9

Electrical Control Building foundation & trenches

Photo-10

ROAD PREPARATION & ACCESS[1]

Preparing & widening the turn-off from the main road of Fort-Liberte to the Dirt Road to Jacquesy-town[ease of access to the Site]

Photo-11

Photo-12

ROAD PREPARATION & ACCESS[2]

New Road linking the Dirt Road to Jacquesy-town and the Site being prepared by ESTRELLA[ease of access to the Site]

Photo-13

Photo-14

OFFICE[1]

HIV posting at the Main office

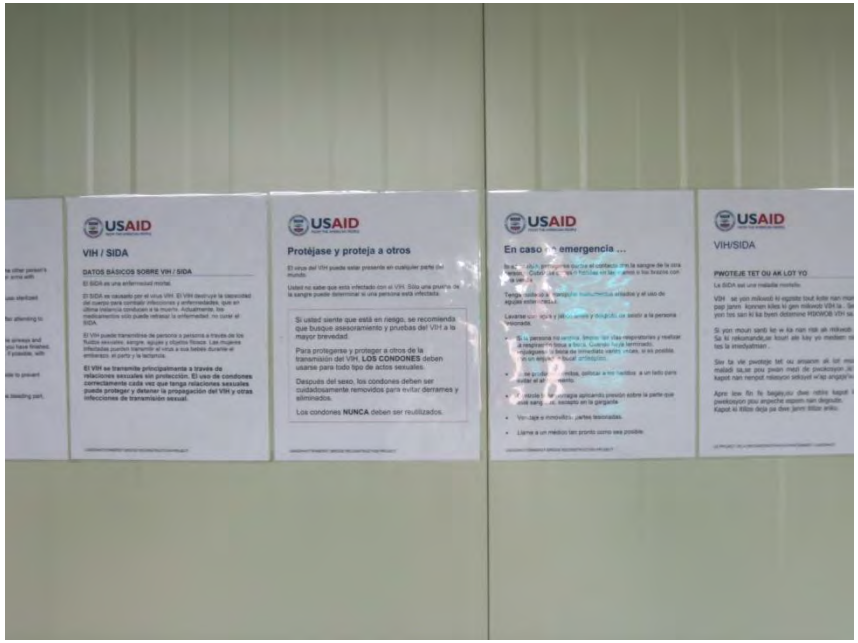

Photo-15

JOY LEE AT HIS DESK

Photo-16

OFFICE[2]

ESD WORK DESKS

Photo-17

HARD HATS STAND

Photo-18

OFFICE[3]

END DATE FOR ALL CIVIL WORK

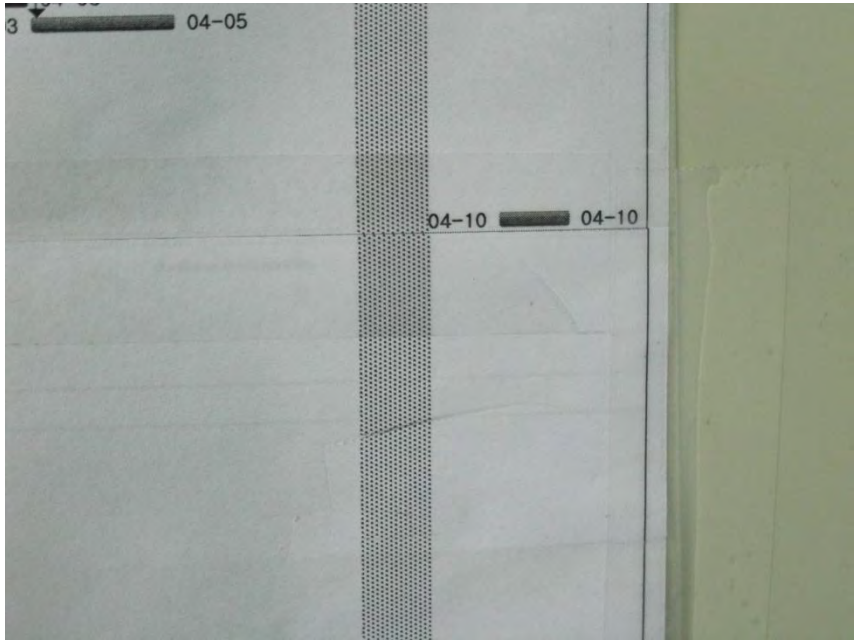

Photo-19

WORK PLAN TILL APRIL-10

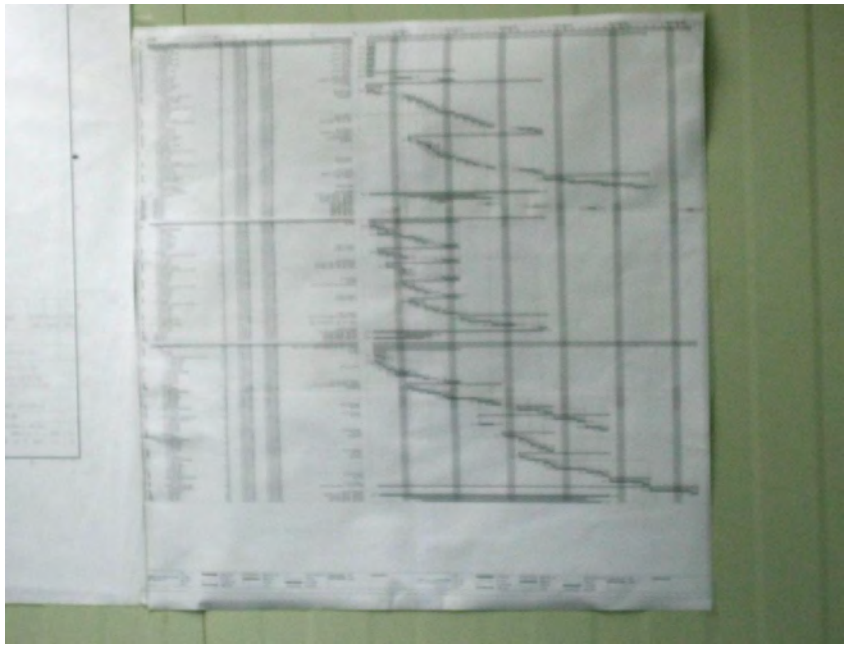

Photo-20

FENCE & DORMITORY/HOUSING

Steel Fence being erected around the Site

Photo-21

Housing/Offices built with Polyurethane forms

Photo-22

BRIDGE CONSTRUCTION

SITE SIDE OF THE BRIDGE

Photo-23

PARK SIDE OF THE BRIDGE

Photo-24

Monthly Report

NPP @ Caracol

March 2012

Donald Pierre Louis /// 4/23/12

Overview of NPP developments

- Industrial Park being prepared by the Dominican construction group: ESTRELLA
  1. Project Manager: Raul Martinez Tremols; tel: 509 366 97582.
  2. The perimeter concrete fence, 8 feet tall, is 100% finished.
  3. Estrella has built a Housing Facility/Dormitory/Hotel for the Korean Expats. It should have been ready by the end of March. The new deadline is end of April.
  4. The complex for the first Korean company, SEA, is not on target to be finished by the end of April. The new schedule is Mid-June 2012.
  5. The construction of the nearest bridge has stopped completely.
  6. Estrella has hired a new security Force to control the entrances to the Pack/Site and patrol the perimeter.

KEY ITEMS

- **<u>The THREE[3] ITEMS,</u>**

  that took most of our time this month were:

  - RECEPTION AND TRANSPORT OF THE CONTAINERS FROM KOREA.
  - PLACEMENT AND ERECTION OF THE EQUIPMENTS.
  - WELDING AND INTALLATION OF THE TANKS.

SHIP--VECTIS EAGLE

- The boat, “Vectis Eagle”, arrived Monday afternoon, 3/5/12 and proceeded to get stuck on a SANDBAR 200 yards from the shore.
- On Tuesday, all maneuvers failed to dislodge the ship.
- The ship owners sent another ship captain and two divers to check the problem and propose a quick solution on Wednesday. Again all efforts to free the ship failed.
- Two tugboats were brought from Port-au-Prince to assist in the freeing of the ship late Thursday.
- The ship was freed on Friday and brought to the wharf Friday around 5pm.
- All equipments/containers were offloaded and transported to the Site safely, Friday evening through Sunday morning.

SITE WORK OVERVIEW

- THE WORK AT THE SITE IS DIVIDED INTO THREE MAJOR PARTS:

1. ESD: Carrying-out all civil works and supplying man power to the two other Korean groups.
2. HANIL: Carrying-out all Electrical connections [Engine to Electrical Control; EC to Transformers and Wiring of the Main Office and the Warehouse] as well as the construction of the Main Office and Warehouse buildings.
3. DECCO: a)Carrying-out the construction, erection, testing of all Tanks. b) The assembly of all accessories to the Engines, c) construction of the Exhaust Tower, d)setting-up of the Fire-fighting system.

Power Plant Site [1]

- State of the Power Plant Site (as of 03/31/12):
  1. ALL six (6) engines and their supports: the Heater Unit and the Air Compressor Unit were placed on their specific platforms.
  2. The three (3) containers that made the Electrical Control Building were welded together and placed on their specific platform.
  3. The Main office building and the Warehouse frames were erected on their anchor bolts.
  4. The Exhaust containers were also placed on their platform.
  5. All eight (8) tanks are being welded. The sheet metal also came on the ship.
  6. The Pumping container and Water Treatment containers were placed on their specific platforms.
  7. The Transformer building's fire walls were completed.
- **It is important to note that the Koreans came with all their tools, welding equipments and accessories**.

SECURITY

- ESD plans to hire armed security guards for the evenings. They will probably start in April.
- ESTRELLA completely finished the perimeter wall and put-up a gate to access the Site.
- Entry into the main Industrial Park has become strictly controlled by armed guards. This mainly to control the invading Monday crowd to be hired.

Plans for the Month of April

- Work to be done in the month of April.
  1. Completely finish the outer shell of both the Main Office and Warehouse buildings.
  2. Install and Test all eight(8)Tanks.
  3. Install and test the Firefighting system.
  4. Run all cables from the Engines to the Electrical Control Room and then to the Transformer.
  5. Assemble all accessories of the Engines and the Exhaust Tower.
  6. Complete the Dyke walls around the Tank Farm.

SITE OVERVIEW [1]

VIEW OF THE TANK FARM

Photo-1

VIEW OF ELECTRICAL CONTROL

Photo-2

SITE OVERVIEW [2]

REAR VIEW OF ENGINE SETS

Photo-3

FRONT VIEW OF ENGINE/BOILER

Photo-4

WORK PROGRESS [1]

[TANK PLATFORMS]

Tanks being partially welded

Photo-5

HFO and DIESEL Tanks in the background

Photo-6

TANK PREPARATION

HFO TANK BEING PREPARED TO BE LOWERED ON THE FINAL RUNG.

1- The 2 Huge Tanks [HFO & DIESEL] have five (5) welded levels.

2- The six other Tanks have three (3) welded levels.

•The Dyke was partially built in order to allow the movement of the crane and the tanks.

Photo-7

WORK PROGRESS [2]

[FIRE FIGHTING BUILDING]

Firefighting building Frame set-up on anchor bolts

Photo-8

Photo-9

WORK PROGRESS [3]

[ENGINE SETS]

Front and Rear views of the EDUs, HTU and ACU on their platforms

Photo-10

Photo-11

ENGINE SETS

NOTE THE ABOVE GANGWAY/OVERPASS AND RAILS JOINING THE ENGINE SETS.

Photo-12

WORK PROGRESS [5]

[ENGINE SETS]

Cables from each engine control compartment to the Electrical Control Building through the Cable Trench

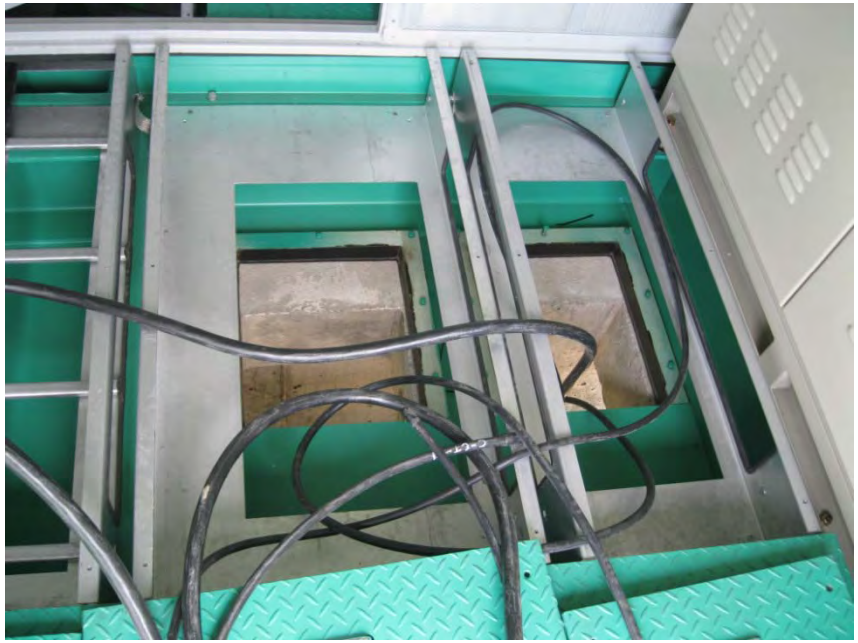

Photo-13

Photo-14

WORK PROGRESS [6]

[ENGINE SETS]

View of one Engine Control Compartment

Photo-15

Photo-16

WORK PROGRESS [7]

[ELECTRICAL CONTROL ROOM]

Outer and Inner view of the Electrical Control Building

Photo-17

Photo-18

WORK PROGRESS [8]

[ELECTRICAL CONTROL ROOM]

Korean workers setting-up the Electrical Control Building

Photo-19

Photo-20

WORK PROGRESS [9]

[MAIN OFFICE BUILDING]

Outside Rear and Front views of the Main Office Building

Photo-21

Photo-22

WORK PROGRESS [10]

[WAREHOUSE BUILDING]

Outside Rear and Front Views of the Warehouse Building

Photo-23

Photo-24

WORK PROGRESS [11]

[DYKE-TANK FARM]

Partial View of the Dyke around the Tank Farm area

Photo-25

Photo-26

WORK PROGRESS [12]

[GUARD-HOUSE]

Preparing the platform for the Front Guard-House

Photo-27

Photo-28

EHS [HEALTH]

OUTER VIEW OF THE MEDICAL AREA

Photo-29

MEDICAL AREA WITH MEDICINES&NURSE

Photo-30

SERIAL NUMBERS OF MAIN EQUIPMENTS

MAIN ALTERNATOR

TYPE: HSR7637-8P

- **Main Alternator-**
  - **Type: HSR7637-8P**
- No.1 20114607RBH16301
- No.2 20114607RBH16302
- No.3 20114607RBH16303
- No.4 20114607RBH16304
- No.5 20114607RBH16305
- No.6 20114607RBH16306

HFO ENGINE

TYPE: HIMSEN-9H21/32

- **HFO Engine**
  - **Type: HIMSEN-9H21/32**
- No.1 BF0824
- No.2 BF0825
- No.3 BF0826
- No.4 BF0828
- No.5 BF0830
- No.6 BF0846

MAIN TRANSFORMER

- STEP-UP TRANSFORMER MADE BY HYUNDAI
  - TYPE: KOM-2489
  - SERIAL-#: 114607KPC001-001

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Site Progress Report – April 2012

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AECOM

SITE WORK OVERVIEW

- The Work is divided into three parts: HANIL and DECCO are subs to ESD:

1. ESD: Performing all civil works and supplying man power to the two other Korean groups.
2. HANIL: Performing all Electrical connections [Engine to Electrical Control; EC to Transformers and Wiring of the Main Office and the Warehouse] as well as the construction of the Main Office and Warehouse buildings.
3. DECCO: a) Performing the construction, erection, testing of all Tanks. b) Assembling all accessories to the Engines, c) Constructing the Exhaust Tower, d) Setting-up the Fire-fighting System.

KEY ITEMS

- Setting-up the Tank Farm and Pipe Racks.
- Assembling all auxiliaries to the Engines and their containers.
- Connecting and preparing the Main and Auxiliary Transformers.
- Constructing the Main Office and Warehouse Buildings.

Power Plant Site Status [1]

1. ALL auxiliaries systems of the 6 Engines were assembled
   - Container air Intake and Exhaust manifold.
   - Engine Exhaust Manifolds installed and connected to the Chimney Tower.
   - Engines' Water Cooling system installed and connected to the Radiators.
2. The Main Office and the Warehouse buildings were assembled , outer walls and roof made of a sandwich of polyurethane between two metal sheets. All wiring was laid out.
3. All power connections from the Engines, the Electrical Control Building and the Transformers were laid out, crimped and bolted-up.
4. All eight (8) tanks were welded and assembled on their respective platforms.
5. The pipe rack as well as the piping support bridge was installed.

Power Plant Site Status [2]

6. All tank piping was laid out on the pipe rack, in preparation for welding and bolting-up to the tanks.
7. The Firefighting system, including the Building and its Water Tank, was laid out.
8. The Transformer building's fire walls were completed and the sprinkling system installed.
9. The Switchgear Building was constructed and its equipment placed.
10. The Guard House was erected at the main entrance of the Site.
11. 80% of the dyke around the Tank Farm Area was constructed.

Industrial Park Status

- Industrial Park being prepared by the Dominican construction group: ESTRELLA
  1. Project Manager: Raul Martinez Tremols; tel: 509 366 97582.
  2. The inside roads of the Park are being prepped for asphalt.
  3. Estrella has built a Housing Facility/Dormitory/Hotel for the Korean Expats. The original completion date of March was extended to end of April. However, work will continue until mid-May.
  4. The complex for the first Korean company, SAE, was originally scheduled for completion end of April. The new deadline is end-July
  5. The construction of the nearest bridge, stopped for six weeks, was re-started April 17.
  6. ESD has installed all the poles(3.5km) from the power plant site to SAE.

SPECIAL ITEM

DELAY IN THE COMMISSIONING OF THE ENGINES

- ESD is on schedule with their plans to fully test the Engines during the last two(2) weeks of June.
- ESTRELLA is 2 months behind schedule and will not be able to provide the Load to necessary to ESD to fully test the Engines.
- Various meetings between USAID+AECOM+ESD+ESTRELLA+UTE were held in order to solve this most urgent problem.
  - ESTRELLA cannot advise ESD the location of the POLES(for the power lines). EESTRELLA is still working on the final layout of the roads.
  - ESTRELLA ordered the Step-down transformers needed on 4/16.
  - ESTRELLA cannot supply on time the necessary water needed to run the Plant.
- ESTRELLA's best estimated time to have the needed Load was first scheduled around the third week of July but is now set for the middle of August.
- Most of ESD's subcontractors (DECCO and HANIL) are slated to leave mid June and HYUNDAI's engine experts are expected mid June for the Final commissioning.
- USAID asked ESD to investigate the feasibility of using a resistive "LOAD BANK" to test the engines.

Plans for the Month of May

1. Finish the Main Office and Warehouse buildings (lights, AC, bathrooms, floors and ceiling).
2. Connect all eight(8)Tanks to their respective circuit and color code them.
3. Complete the concrete floor of the Tank Farm area.
4. Complete the dyke and the Oil-Water separator.
5. Complete installing and testing the Firefighting System.
6. Finish the cabling inside the Electrical Control Building and to the Switchgear Building.
7. Run piping systems to and from all Engines.
8. Insulate all Engines' Exhaust Manifolds/Mufflers and the Exhaust Stack.

SITE OVERVIEW [1]

VIEW OF THE TANK FARM

Photo-1

VIEW OF ENGINES AND AUXILIARIES

Photo-2

SITE OVERVIEW [2]

REAR VIEW OF ENGINE SETS

Photo-3

FRONT VIEW OF ENGINE SETS

Photo-4

WORK PROGRESS [1]

[TANK FARM]

All Tanks prepared: prime or insulated (HFO Settling and Service)

Photo-5

Photo-6

WORK PROGRESS [2]

[FIRE FIGHTING BUILDING & TANKS]

The Firefighting Building and Water Tank are connected to the Hydrant system

Photo-7

Photo-8

WORK PROGRESS [3]

[ENGINE SETS]

POWER CABLES FROM ALTERNATOR TO THE ELECTRICAL CONTROL BLDG.

Photo-9

ELECTRICAL CONTROL COMPARTMENT OF THE MDU (WIRING UNFINISHED)

Photo-10

WORK PROGRESS [4]

[ENGINE SETS]

PARTIAL VIEW OF THE ALTERNATOR THROUGH THE REAR DOOR ACCESS

Photo-11

EXHAUST FAN FOR THE ENGINE'S SURROUNDING COOLING AIR

Photo-12

WORK PROGRESS [5]

[ENGINE SETS]

Side and Front view of Engine's auxiliaries (& ABB Turbocharger)

Photo-13

Photo-14

WORK PROGRESS [6]

[ENGINE SETS]

INTAKE FANS FOR THE MDU ENGINE'S SURROUNDINGS COOLING AIR

Photo- 15

MDU ENGINE'S SURROUNDINGS COOLING AIR INTAKE

Photo-16

WORK PROGRESS [7]

[ELECTRICAL CONTROL ROOM]

Outer and Inner view of the Electrical Control Building

Photo-17

Photo-18

WORK PROGRESS [8]

[ELECTRICAL CONTROL ROOM]

All Power connections are completed

Photo-19

Control Panel yet to be set-up

Photo-20

WORK PROGRESS [9]

[WAREHOUSE & MAIN OFFICE BUILDINGS]

Outside Rear and Front view of the Warehouse & Main Office Buildings

Photo-21

Photo-22

WORK PROGRESS [10]

[MAIN OFFICE BUILDING]

Ceramics placed in the whole building

Photo-23

Ceiling 90 % finished

Photo-24

WORK PROGRESS [11]

[WAREHOUSE BUILDING]

FENCED-IN STORAGE AREA

Photo-25

CRANE/REPAIR AREA & OFFICES

Photo-26

WORK PROGRESS [12]

[DYKE/TANK FARM]

Finished Dyke wall at the western end of the Tank Farm

Photo-27

Unfinished Dyke extension at the northern end of the Tank farm

Photo-28

WORK PROGRESS [13]

[DYKE/TANK FARM]

OIL/WATER RECEPTION RESERVOIR [FROM TANK FARM SURFACE AREA AND MDU SURFACE AREA]

Photo-29

Photo-30

TANK PREPARATION

HFO SERVICE AND SETTLING TANKS COMPLETELY INSULATED.

1- HFO Receiving Tank in the background.

2- The other Fuel/Oil tanks are primed white.

3- The Water Tank for Firefighting will be painted red.

Photo-31

ENGINE SETS

ENTRANCE TO THE MDU THROUGH THE CONTROL COMPARTMENT.

1- NOTE THE AC UNIT.

2- CONTROL COMPARTMENT DOORS OPENED.

2- NOTE REAR DOOR ACCESS TO THE ALTERNATOR.

Photo-32

EHS [SECURITY] [1]

WARNING BOARD PLACED AT THE ENTRANCE OF THE SITE

Photo-33

Photo-34

EHS [SECURITY] [2]

Fire-Hose container next to each Fire Hydrant

Photo-35

FIRE-HOSE

Photo-36

EHS [SECURITY] [3]

Photo-37

Photo-38

USAID

North Power Plant Project
Caracol, Haiti

CONTRACT NO: EDH-I-00-08-00024-00

ORDER NO: EDH-I-06-08-00024-00

Site Progress Report – May 2012

Prepared By

AECOM

SITE WORK OVERVIEW

THE WORK AT THE SITE IS DIVIDED INTO THREE MAJOR PARTS

1. **ESD:** Performing all civil works and supplying man power to the two other Korean groups.
2. **HANIL:** Performing all Electrical connections [Engine to Electrical Control; EC to Transformers and Wiring of the Main Office and the Warehouse] as well as the construction of the Main Office and Warehouse buildings.
3. **DECCO:** a)Performing the construction, erection, testing of all Tanks. b) assembling all accessories to the Engines, c) constructing the Exhaust Tower, d)setting-up the Fire-fighting system.

WORK PROGRESS (1)

Work performed in the month of May 2012

1. Finished the Main Office and Warehouse buildings (lights, AC, bathrooms, floors and ceiling).
2. Connected all eight (8) Tanks to their respective circuit and color coded them.
3. Completed the concrete floor of the Tank Farm area.
4. Completed the dyke and the Oil-Water Separator.
5. Completed and tested the Firefighting system.
6. Finished the cabling inside the Electrical Control Building and to the Switchgear Building.
7. Ran piping systems to and from all Engines.
8. Insulated all Engines' Exhaust Manifolds/Mufflers and the Exhaust Stack.

WORK PROGRESS (2)

9. Lightning Rods were installed on top of the following equipment:
   a. Chimney [as they are near exhaust lightning rods should be inspected regularly to maintain integrity] - Photos: 13 & 14
   b. Top of the tallest tank in tank farm: Diesel Tank - Photos: 11 & 12
   c. On top the 2nd and 5th MTU/Engine Set
      a. Photos: 15-16
      b. Rods were placed on top of the radiator assembly. AECOM raised its regarding this installation and their proximity to the engines.
      c. ESD should verify/explain why installation is acceptable.

Industrial Park Developments

Industrial Park being prepared by the Dominican Construction Group: ESTRELLA

1. Project Manager: Raul Martinez Tremols; tel: 509 366 97582.
2. The inside roads of the Park were being prepped for asphalt.
3. Estrella has built a Housing Facility/Dormitory/Hotel for the Korean Expats. It is now fully operational. ESD has put a 65KW Genset to supply power to the facility .
4. The complex for the first Korean company, SAE, was originally scheduled to be finished end of April. The new schedule of Mid-June has slipped to July 27.
5. The construction of the nearest bridge, stopped for six weeks, was re-started April 17.
6. ESD has installed all the poles (3.5km) from the power plant site to SAE.

POWER PLANT

1-COMPLETELY INSTALLED.

2-ALL EXHAUST MANIFOLDS AND STACKS WERE INSULATED.

3-ALL PIPINGS WERE CONNECTED AND LAID ON THE PIPE BRIDGE TO THE TANK FARM AREA.

4-ALL CONNECTIONS TO THE ELECTRICAL CONTROL ROOM WERE COMPLETED.

5-ALL LIGHTNING RODS WERE INSTALLED.

6- ALL SURROUNDING GROUNDS HAVE BEEN COMPRESSED AND READIED FOR ASPHALT.

NOTE: REMAINING WORK:

A] FINAL HOOK-UPS TO THE TANK FARM.

B] COLOR CODE PAINTING OF THE PIPES.

Photo-01

TANK FARM

1-ALL TANKS ARE COMPLETELY READY TO RECEIVE THEIR RESPECTIVE LIQUIDS.

2-ALL TANKS ARE COLOR CODED.

3- ALL PIPING IS ALSO COLOR CODED.

4-ALL CONNECTIONS TO THE HFO PURIFIER AND THE PUMPING STATION ARE COMPLETED.

5-CONCRETE SURFACE AREA COMPLETED.

6-DRAINAGE GULLY FOR RUN-OFFS COMPLETED.

7- ALL THE SURROUNDING GROUNDS HAVE BEEN COMPRESSED AND READIED FOR ASPHALT.

Photo-02

FIREFIGHTING & WATER TREATMENT

1- THE FIREFIGHTING SYSTEM WAS COMPLETED AND TESTED.

2-THE WATER TREATMENT PLANT WAS COMPLETED AND TESTED.

3- THE OIL/WATER SEPARATOR UNIT WAS COMPLETED.

4- ALL THE SURROUNDING GROUNDS HAVE BEEN COMPRESSED AND READIED FOR ASPHALT.

Photo-03

PIPE RACK

1-ALL PIPES WERE CONNECTED TO THE PUMPING STATION (CONTAINER).

2-PIPING TO THE PURIFIER (HFO) WAS CONNECTED.

3-ALL PIPES WILL BE COLOR CODED FOR EASE OF IDENTIFICATION.

4-HOT PIPES WILL BE INSULATED IN JUNE.

Photo-04

PIPE BRIDGE

1-PIPE BRIDGE BRINGING ALL PIPES FROM THE ENGINES TO THE TANK FARM AREA.

2-FINAL LINKAGES ARE STILL BEING ADJUSTED AND BOLTED-UP.

3-ALL PIPES WILL BE COLOR CODED FOR EASE OF IDENTIFICATION.

Photo-05

MUFFLER ASSEMBLY

1- ALL FOUR (4) MUFFLERS AND THEIR CONNECTING PIPES WERE INSULATED.

2-CONECTIONS TO THE EXHAUST STACK AND CHIMNEY WERE INSULATED.

3- A LIGHTNING ROD WAS INSTALLED ON TOP OF THE CHIMNEY BLOCK.

Photo-06

SWICTHGEAR AND TRANSFORMER

1- ALL SURROUNDING GROUNDS OF THE SWITCHGEAR ROOM, THE TRANSFORMER AREA AND THE MTU AREA WERE COMPRESSED AND READIED FOR ASPHALT.

2- A CHAIN LINK FENCE IS BEING INSTALLED AROUND THE TRANSFORMER AREA.

Photo-07

MAIN OFFICE AND WAREHOUSE

1- THE MAIN OFFICE AND THE WAREHOUSE BUILDING WERE COMPLETED

2-NOTE PALM TREES ALREADY PLANTED.

3- ALL SURROUNDING GROUNDS WERE COMPRESSED AND READIED FOR ASPHALT.

Photo-08

FENCE BEING ERECTED AROUND THE SITE TO THE REAR WALL

Photo-09

Photo-10

LIGHTNING RODS (1)

LIGHTNING ROD INSTALLED ON THE HIGHEST TANK (DIESEL)

Photo-11

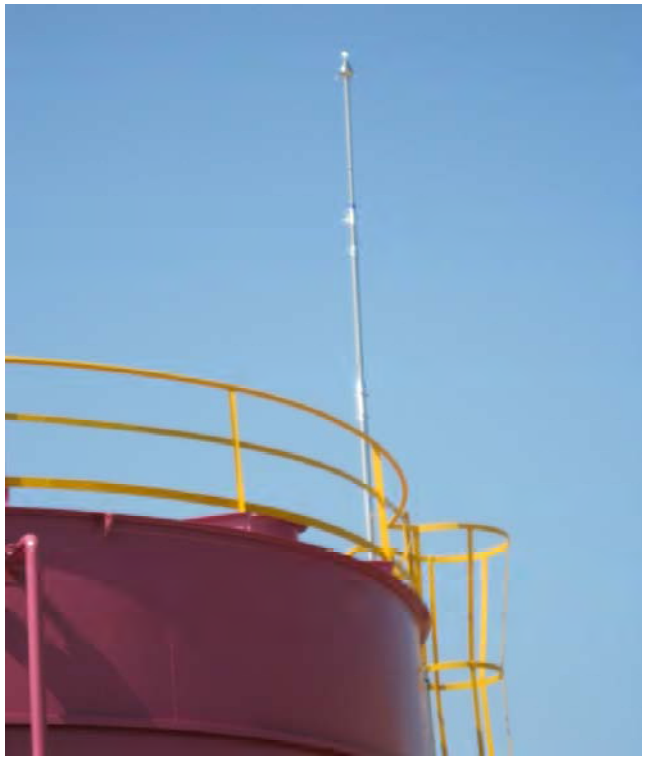

Photo-12

LIGHTNING RODS (2)

LIGHTNING ROD INSTALLED ON THE CHIMNEY

Photo-13

Photo-14

LIGHTNING RODS (3)

LIGHTNING RODS INSTALLED ON THE 2nd & 6th ENGINE RADIATORS

Photo-15

Photo-16

USAID

North Power Plant Project
Caracol, Haiti

CONTRACT NO: EDH-I-00-08-00024-00

ORDER NO: EDH-I-06-08-00024-00

Site Progress Report – June 2012

Prepared By

AECOM

DIVISION OF SITE WORK

- THE WORK AT THE SITE IS DIVIDED INTO THREE MAJOR PARTS:

1. ESD: Carrying-out all civil works and supplying man power to HYUNDAI.
2. HYUNDAY: Startups and Shutdowns of all engines plus performing all Engines' tests.
3. V & F: Asphalting the roads at the Site.

WORK PROGRESS-1

- Work Completed
  1. Color coding of all piping from the Tanks to the Engines (DECCO)
  2. Insulation of all hot pipes from the corresponding Tanks to all engines (DECCO)
  3. Preparation of grounds for asphalt. Contract signed with V&F (ESD)
  4. Erected a Fence around the Transformer Building
  5. Finished the Fence on all three (3) sides of the Site
  6. Cleaned and cleared Site of unneeded, unnecessary materials

WORK PROGRESS-2

- Work Completed (continued)
  a) All HANIL personnel left the first week of June
  b) All of DECCO personnel left by June 23rd
  c) All ESD local hires were laid off
  d) All Koreans of the construction group left end of June
  e) All Haitian employees brought from Port-au-Prince were sent back
  f) ESD brought in 7 employees from their E-Power site as the Maintenance and Operation crew. Their Leader is Emilio ACEVEDO.

WORK PROGRESS-3

- Work Completed (continued)
  a) HYUNDAY performed all Tests prior to Start-up as well as Emergency shutdowns
  b) HYUNDAY carried out Engine Run tests and verified all operating temperatures and pressures were within to allowable limits
  c) HYUNDAY to return to perform final acceptance tests including: synchronization and fuel consumption, once the Industrial Park can provide a minimum load of 1.7MW.

Overview of Industrial Park

- Industrial Park being prepared by the Dominican construction group: ESTRELLA
  1. Project Manager: Raul Martinez Tremols; tel: 509 366 97582.
  2. Main roads in the Park are being asphalted.
  3. Estrella has built a Housing Facility/Dormitory/Hotel for the Korean Expats. It is now fully operational. ESD has installed a 65KW GenSet to supply power to the hotel .
  4. The complex for the first Korean company, SAE, targeted to be finished end April, was made operational on June 30th 2012.
  5. The construction of the nearest bridge, stopped for six weeks, was re-started April 17. The finish deadline is still scheduled as July 31, 2012.
  6. ESD has increased the poles(now 109) and the length of the line(now 5.4km) from the power plant site to SAE.

NIGHT/LIGHTED VIEW OF THE SITE-1

NIGHT VIEW OF THE SITE FROM THE WEST

Photo-01

Photo-02

NIGHT VIEW FROM THE MAIN ENTRANCE

1- PHOTO TAKEN FROM A BUCKET TRUCK NEAR THE DITCH

Photo-03

V&F ASPHALT

THE SLOPE ORIGINATES FROM THE CENTER OF THE ROAD.

Photo-04

GRAVEL

1- ALL AREAS NOT CEMENTED OR ASPHALTED WAS COVERED WITH GRAVEL.

2- WORK DONE BY ESD.

Photo-05

TRANSFORMER AREA

1- A CHAIN LINK FENCE PAINTED GREEN WAS PUT AROUND THE TRANSFORMER AREA.

2- ALL THE WALLS WERE PAINTED GREY.

Photo-06

SITE FENCE

FENCE ERECTED ALL AROUND THE SITE TO THE REAR WALL

Photo-07

Photo-08

ENGINE TESTS

1- ALL ENGINES WERE STARTED AND SHUT DOWN FROM DIFFERENT LOCATIONS, INCLUDING REMOTE EMERGENCY SHUTDOWN.

2-ALL TEMPERATURES AND PRESSURES WERE RECORDED.

Photo-09

VISIT OF TOP USAID PEOPLE

1-MRS. DAY , MR. A. CHAN, MR E. PAULTRE, MR. NICOLEAU AND OTHER PUBLIC RELATIONS STAFFERS OF USAID CAME TO INAUGURATE THE SITE.

2- ALL SIGNED THE VISITORS BOOK.

Photo-10

INDUSTRIAL PARK

FIRST FACTORY BUILDING

Photo-11

PEOPLE BEING TRAINED

Photo-12

MAIN WATER RESERVOIR

1- THE INDUSTRIAL PARK WILL HAVE TWO MAIN WATER RESERVOIRS.

2- THE WATER WILL COME FROM WELLS DUG NEARBY.

3- ESTRELLA STILL HAS TO PIPE WATER TO THE ESD SITE.

4- ESTRELLA STILL HAS TO ROUTE THE DRAINAGE PIPES TO THE ESD SITE.

USAID

North Power Plant Project
Caracol, Haiti

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Site Progress Report – July/August 2012

Prepared By

AECOM

SITE WORK OVERVIEW

MOST OF THE WORK INCLUDED COMPLETING THE FINAL ITEMS FOR PROJECT

- SUBCONTRACTOR VORBES & FILS PREPARED AND ASPHALTED ON THE ROADS INSIDE THE SITE (Photos: 1 TO 10)
- THEY ALSO PLACED CURBS WERE APPROPRIATE
- A HELICOPTER PAD WAS ERECTED FOR THE ARRIVAL OF PRESIDENT J.M.MARTELLI , Mrs. MILLS AND THE US EMBASSADOR.
- THE SITE NOW HAS ITS OWN DISH FOR INTERNET ACCESS
- THE ACCESS ROAD TO THE SITE WAS ALSO ASPHALTED
- FIVE (5) LEVELS OF BARBED WIRES WERE STRETCHED ON TOP OF THE FENCE INSTALLED AROUND THE SITE.

WORK PROGRESS - 1

- NO NET OUTPUT POWER GENERATED DURING JULY:
  - THE PARK WAS NOT READY TO ACCEPT POWER
  - A SUCCESSFUL TEST WAS PERFORMED DURING PRESIDENT MARTELLI'S VISIT

- POWER WAS GENERATED DURING AUGUST:
  - ONLY ENGINE NUMBER SIX (6) WAS UTILISED
  - SPECIFICALLY REQUESTED BY USAID
    - STARTED ON AUGUST 6TH.
    - OPERATED DURING WORKING HOURS: 7am to 5pm

WORK PROGRESS - 2

- UTILISATION OF THE OTHER FIVE (5) ENGINES:
  - ALL FIVE ENGINES ARE OPERATED AT THE SAME TIME EVERY MONDAY @ 8AM FOR 20 to 25 MINUTES
  - ALL FIVE ENGINES ARE THEN TURNED OFF
  - ALL FIVE ENGINES HAVE THEIR THE PRE-LUBRIFICATION SYSTEMS TURNED ON AND LEFT RUNNING MONDAY TO FRIDAY UNTIL NOON
    - THIS LUBRIFIES THE COMPLETE ENGINE AT A PRESSURE OF 1.5 BAR
  - ALL SYSTEMS ARE THEN SHUTDOWN TILL THE FOLLOWING MORNING.
  - THE FIVE(5) ENGINES DO NOT OPERATE DURING THE WEEKEND.

WORK PROGRESS - 3

TOTAL HOURS OF OPERATION BY ALL ENGINES THROUGH END AUGUST

• ENGINE No.1	6.9	
• ENGINE No.2	4.6	
• ENGINE No.3	5.9	
• ENGINE No.4	0.5	*
• ENGINE No.5	10.2	
• ENGINE No.6	134	**

* = ENGINE No.4 (POSSIBLE HOURMETER DEFECT – IN VERIFIFICATION PROCESS)

** = ENGINE No.6 (SUPPLYING POWER TO THE INDUSTRIAL PARK)

POWER GENERATED BY ENGINE No. 6 DAILY DURING AUGUST(KWH)

8/6	4398	
8/7	4759	
8/8	7930	
8/9	2750	*
8/10	2500	*
8/11	2500	*
8/12	.750	*
8/13	5100	
8/14	4900	
8/15	3500	*
8/16	5160	
8/17	5250	
8/18	3883	

* = SITE AUXILLIARIES ONLY

8/19	3500	*
8/20	5593	
8/21	5914	
8/22	4577	
8/23	5205	
8/24	5543	
8/25	4367	
8/26	.500	*
8/27	5150	
8/28	4868	
8/29	5210	
8/30	5226	
8/31	4942	

* = SITE AUXILLIARIES ONLY

POURING ASPHALT ON THE INTERNAL ROADS OF THE SITE

ROAD PREPARATION AND ASPHALTING DONE BY VORBES & FILS

Photo-01

Photo-02

VIEW FROM THE TANK FARM AREA

<u>SLOPE REQUIRED IMPROVEMENT</u>

a) AFTER A DOWNPOUR, PUDDLES OF WATER REMAINED IN THE MIDDLE OF THE ROAD.

b) MOST OF THE RAIN WATER IS NOT CHANNELED TO THE GUTTERS BUT TO THE GROUNDS AROUND THE SITE.

c) ESD DIRECTED THE ASPHALT COMPANY FIX THE AREAS WHERE RAINWATER WOULD ACCUMULATE.

Photo-03

VIEW FROM THE MAIN ENTRANCE TO THE SITE

MAIN ENTRANCE TO THE SITE

Photo-04

FINISHED SECURITY OFFICE

Photo-05

OUTSIDE VIEW OF THE SITE

NOTE THAT SLOPE OF ROAD FACILITATES DRAINAGE TOWARDS OUTSIDE GROUND AREAS

Photo-06

Photo-07

V&F ASPHALT

NOTE WATER RUNOFFS TOWARDS THE INSIDE OF THE ROAD

Photo-08

GRAVEL

1- ALL AREAS NOT CEMENTED OR ASPHALTED WAS COVERED WITH GRAVEL

2- WORK DONE BY ESD

Photo-09

PRE-LUBRICATING PUMP

1- A PUMP IS INSTALLED WITH EVERY ENGINE,

2 – PUMP CAN BE POWERED BY OUTSIDE SOURCES

2- PUMP USED DAILY FOR UP TO 4 HOURS TO LUBRICATE EACH HFO ENGINE

Photo-10

ADDITIONAL WORK

THE ESD TEAM (M&O) CONTINUES TO IMPROVE THE INSTALLATION (EXAMPLE: COVERS ADDEDTO PROTECT EACH ENGINE'S EXTERNAL PUMPING SYSTEMS)

Photo-11

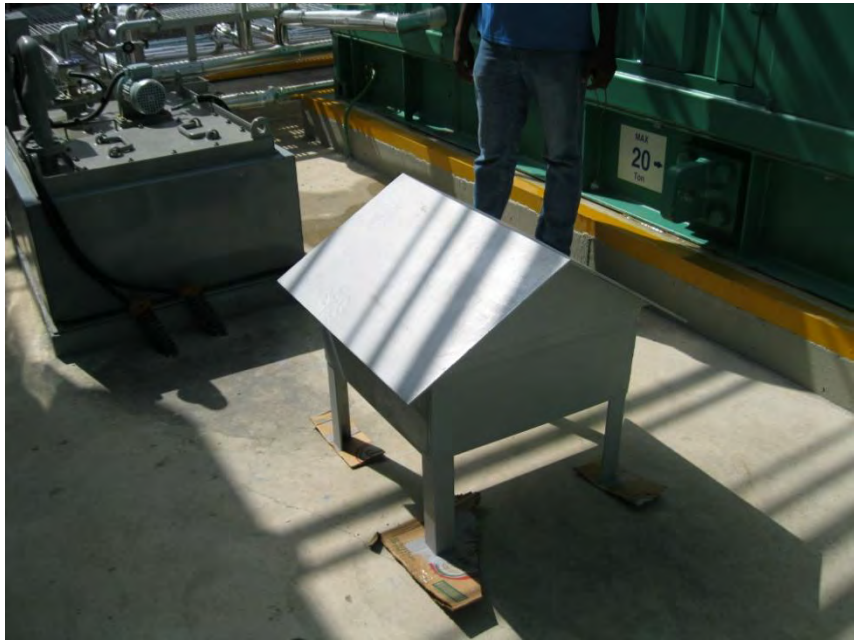

Photo-12

USAID

North Power Plant Project
Caracol, Haiti

CONTRACT NO: EDH-I-00-08-00024-00

ORDER NO: EDH-I-06-08-00024-00

Final Site Synopsis Report
September 2012

Prepared By

AECOM

SYNOPSIS SITE REPORT

- This Synopsis Site Report contains the highlights of the Haiti North Power Plant Project activities associated with the Construction Oversight Services provided by AECOM.
- The contents include the salient site progress with a descriptive text and photos that provide a summary of the evolution of construction from the initial site work until end September 2012.
- The final testing of the Gensets will be completed after the Industrial Park can provide the available load – schedule of completion is uncertain at this time.
- In lieu of having AECOM be continually engaged to support the uncertain schedule with the potential of added cost to the contract, USAID has elected to terminate AECOM's services by the current contract end date of September 30, 2012.
- This Synopsis Report constitutes the final document and associated services to be provided to USAID under the contract.

Various Entities Involved With The North Power Plant Project

Project envisioned by the Government of Haiti, BID/USAID and the US State Department at CARACOL

- BID
- USAID
- GOH(UTE, Ministry of Finance)
- SONAPI (National Company of the Industrial Parks)
- AECOM (USA Consulting Firm – Power Plant Conceptual Design/Construction Oversight)
- ESD (Korean Firm Constructing the Power Plant)
- ESTRELLA (Dominican Construction Firm for the Park)

AECOM

DISTINGUISHED VISITORS

The Power Plant Site was visited
by the following Dignitaries:

1. William “Bill” Clinton, Former US President
2. Michel Joseph Martelly, President of Haiti
3. Pamela A. White, US Ambassador to Haiti
4. Kenneth H. Merten, Former US Ambassador to Haiti

AECOM

SITE WORK RESPONSIBILITIES

Site Work was Divided into Three Major Parts:

1. ESD: Overall Responsibility - performed all Civil Works and supplying site staff to the two other Korean groups
2. HANIL: Performed all Electrical Connections [Engine to Electrical Control; EC to Transformers and Wiring of the Main Office and the Warehouse] as well as the construction of the Main Office and Warehouse buildings
3. DECCO: Performed a)construction, erection, testing of all Tanks, b)assembly of all accessories to the Engines, c)construction of the Exhaust Tower, and d)installing the Firefighting System

AECOM

SYNOPSIS - 1

Power Plant Location - Six (6) Hectares:

1. Situated on the North East corner of the overall site.
2. Rectangular plot longer along the North/South axis.
3. A ditch runs North to South in the top third of the NPP site.
4. Located west of the ditch.
5. A 3Ha platform was to be prepared for the Power Plant.
6. Construction Phase Started with the Kick-off Meeting in October 2011

AECOM

SYNOPSIS - 2

Power Plant Platform:

- 3Ha square (about 173m by 173m) on the west side of the ditch
- One (1) meter of top soil was stripped off.
- Platform was built utilizing a nearby quarry providing good quality fill
- Height is 17 inches higher than the surrounding ground
- Platform was made level and the rear tampered off towards the ditch

AECOM

SYNOPSIS - 3

ESD started effective construction of the Plant Platforms early December 2011:

- An access road to the platform was finished end November 2011.
- The Industrial Park construction was kicked off end November 2011.
- Seven (7) holes were bored on the eastern part of the land.
- Two (2) additional holes were bored at the platform site to ensure consistency of results .
- ESD brought all their necessary staff on site by early December 2011.

AECOM

SYNOPSIS - 4

- During The First Three Months ESD Focused On Constructing The Following:
  - Equipment Platforms [6 Gensets, Compressed Air and Fuel Heating units].
  - Building Platforms : Main Office, Warehouse, Firefighting Building Switchgear Building
  - Tank Platforms: For Seven (7) Tanks
  - Temporary Building: To House Staff

- Gensets Factory Acceptance Tests
  - Performed 1st Week of December 2011
  - At Hyundai Heavy Industries Factory in Ulsan City, South Korea
  - All Gensets passed
  - Factory Acceptance Test (FAT) Report issued 1st Week of January 2012

AECOM

SYNOPSIS - 5

Most Significant Occurrence: Ship - Vectis Eagle

- The ship, "*Vectis Eagle", arrived* Monday afternoon, 3/5/12
- It ran aground on a sandbar 200 yards from shore, which resulted in the following sequence of events:
  - On Tuesday, all maneuvers failed to dislodge the ship.
  - On Wednesday, the ship owners sent another ship captain and two divers to check the problem and propose a quick solution. These efforts to free the ship failed.
  - Late Thursday, two tugboats arrived from Port-au-Prince to assist in freeing the ship.
  - On Friday, the ship was freed and towed to the wharf around 5pm.
  - All equipment /containers were offloaded and transported to the Site <u>safely</u>, Friday evening through Sunday morning.

AECOM

SYNOPSIS - 6

- Construction proceeded with the arrival of the major equipment and materials until completion of the installation – occurred on schedule
- Gensets were successfully no-load tested in June 2012
- Gensets are currently awaiting final full-load testing which requires availability of the Industrial Park
- Gensets are being maintained as required and will be full-load tested after completion of the Park
- USAID elected to terminate AECOM's services on the Power Plant Project as of September 30, 2012, the contract end date, due to Industrial Park unavailability

AECOM

DECEMBER 2011

EARLY CONSTRUCTION ACTIVITIES

Sludge Discharge Pump D1 and Used Lube Oil Discharge Pump D2
Forms used to make Platforms

AECOM

DECEMBER 2011

PLATFORMS NEARING COMPLETION

Fuel Loading and HFO Purifier Platforms - Note water on top

AECOM

JANUARY 2012

CONSTRUCTION ACTIVITIES

Transformer Building Walls Being Erected.

Engine Platforms Completed

AECOM

JANUARY 2012

DITCH PREPARATION AND ACCESS

Drain pipes being lowered at the ditch to give access to Site

AECOM

FEBRUARY 2012

PLATFORMS NEARING COMPLETION

Main Office Platform

Warehouse Platform

AECOM

FEBRUARY 2012

PLATFORMS NEARING COMPLETION

HFO Tank Platform

Final Phase of Tank Platforms

AECOM

FEBRUARY 2012

ROADS UNDER CONSTRUCTION

New Road Linking the Dirt Road to Jacquezy-Town and
Site being prepared by ESTRELLA [ease of access to the Site]

AECOM

MARCH 2012

GENSETS

Rear View

Front View

AECOM

MARCH 2012

GENSETS

Front and Rear views of EDUs, HTU and ACU on their platforms

AECOM

MARCH 2012

TANK FARM

Tanks being partially welded

HFO and Diesel Tanks in the background

AECOM

MARCH 2012

ELECTRICAL CONTROL BUILDING

Outside and Inside view of the Electrical Control Building

AECOM

MARCH 2012

MAIN OFFICE BUILDING

Outside Rear and Front views of the Main Office Building

AECOM

MARCH 2012

EHS [HEALTH]

Outer View of the Medical Area

Medical Area with Medicines & Nurse

AECOM

APRIL 2012

GENSETS

Rear View

Front View

AECOM

APRIL 2012

SITE VIEWS

View of Tank Farm

View of Gensets and Auxiliaries

AECOM

APRIL 2012

TANK FARM

All Tanks completed, primed or insulated

AECOM

APRIL 2012

GENSETS

Side and Front view of Engine's auxiliaries (& ABB Turbocharger)

AECOM

APRIL 2012

ELECTRICAL CONTROL BUILDING

Outside and Inside Views

AECOM

APRIL 2012

WAREHOUSE & MAIN OFFICE BUILDINGS

Rear View

Front View

AECOM

APRIL 2012

DYKE/TANK FARM

Oil/Water Receiving Reservoir

AECOM

MAY 2012

POWER PLANT

1-COMPLETELY INSTALLED.

2-ALL EXHAUST MANIFOLDS AND STACKS WERE INSULATED.

3-ALL PIPINGS WERE CONNECTED AND LAID ON THE PIPE BRIDGE TO THE TANK FARM AREA.

4-ALL CONNECTIONS TO THE ELECTRICAL CONTROL ROOM WERE COMPLETED.

5-ALL LIGHTNING RODS WERE INSTALLED.

6- ALL SURROUNDING GROUNDS HAVE BEEN COMPRESSED AND READY FOR ASPHALT.

AECOM

MAY 2012

TANK FARM

1-ALL TANKS ARE COMPLETELY READY TO RECEIVE THEIR RESPECTIVE LIQUIDS.

2-ALL TANKS ARE COLOR CODED.

3- ALL PIPINGS ARE ALSO COLOR CODED.

4-ALL CONNECTIONS TO THE HFO PURIFIER AND THE PUMPING STATION ARE DONE.

5-SURFACE AREA COMPLETELY CONCRETED OVER.

6-DRAINAGE GULLY FOR RUN-OFFS ALSO COMPLETELY FINISHED.

7- ALL THE SURROUNDING GROUNDS HAVE BEEN COMPRESSED AND READIED FOR ASPHALT.

AECOM

MAY 2012

FIREFIGHTING & WATER TREATMENT

1- THE FIREFIGHTING SYSTEM IS COMPLETED AND TESTED.

2-THE WATER TREATMENT PLANT IS COMPLETED AND TESTED.

3- THE OIL/WATER SEPARATOR UNIT IS ALSO COMPLETED.

4- ALL THE SURROUNDING GROUNDS HAVE BEEN COMPRESSED AND READIED FOR ASPHALT.

AECOM

MAY 2012

PIPE RACK

1-ALL PIPES ARE CONNECTED TO THE PUMPING STATION (CONTAINER).

2-PIPING TO THE PURIFIER (HFO) IS ALSO CONNECTED.

3-ALL PIPES WILL BE COLOR CODED FOR EASE OF IDENTIFICATION.

AECOM

MAY 2012

PIPE BRIDGE

PIPE BRIDGE BRINGING ALL PIPES FROM THE ENGINES TO THE TANK FARM AREA.

AECOM

MAY 2012

Muffler Assembly

1- ALL FOUR (4) MUFFLERS AND THEIR CONNECTING PIPES WERE INSULATED.

2-CONNECTIONS TO THE EXHAUST STACK AND CHIMNEY WERE ALSO INSULATED.

3- A LIGHTNING ROD WAS INSTALLED ON TOP OF THE CHIMNEY BLOCK.

AECOM

MAY 2012

SWICTHGEAR AND TRANSFORMER AREA

1- ALL GROUNDS SURRIUNDING THE SWITCHGEAR ROOM, THE TRANSFORMER AREA AND THE MTU AREA WERE COMPRESSED AND READIED FOR ASPHALT.

2- A CHAIN LINK FENCE IS BEING INSTALLED AROUND THE TRANSFORMER AREA.

AECOM

JUNE 2012

V&F ASPHALT

THE SLOPE ORIGINATES FROM THE CENTER OF THE ROAD.

AECOM

JUNE 2012

GRAVEL

1 - ALL AREAS NOT CEMENTED OR ASPHALTED WAS COVERED WITH GRAVEL.

2 - WORK DONE BY ESD.

AECOM

JUNE 2012

ENGINE TESTS

1 - ALL ENGINES WERE STARTED AND SHUT DOWN FROM DIFFERENT LOCATIONS, INCLUDING REMOTE EMERGENCY SHUTDOWN.

2 - ALL TEMPERATURES AND PRESSURES WERE RECORDED

3 - ALL ENGINES PASSED NO-LOAD TESTING

AECOM

JULY & AUGUST 2012

BRIDGE

THE BRIDGE LINKING THE POWER PLANT TO THE INDUSTRIAL PARK WAS FINISHED LATE AUGUST.

THE PIPINGS FOR WATER SUPPLY AND RETRIEVAL(SEWAGE) ARE TO BE INSTALLED IN OCTOBER

JULY & AUGUST 2012

ROAD WORK

Road Preparation and Asphalting done by VORBES & FILS

AECOM

JULY & AUGUST 2012

VIEW OF TANK FARM AREA

1 - AFTER A DOWNPOUR, PUDDLES OF WATER REMAINED IN THE MIDDLE OF THE ROAD.

2 - MOST OF THE RAIN WATER IS NOT CHANNELED TO THE GUTTERS BUT TO THE GROUNDS AROUND THE SITE.

3 - ESD DIRECTED THE ASPHALT COMPANY TO FIX THE AREAS WHERE RAINWATER WOULD ACCUMULATE.

AECOM

JULY & AUGUST 2012

SITE ACCESS

Site Entrance

Security Office

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JULY & AUGUST 2012

PERIMETER VIEW

Slope of Road facilitates drainage away from the Site

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LIGHTED NIGHT VIEWS FROM THE WEST

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USAID

North Power Plant Project
Caracol, Haiti

CONTRACT NO: EDH-I-00-08-00024-00

ORDER NO: EDH-I-06-08-00024-00

Final Inspection Report
September 2012

Prepared By

AECOM

FINAL INSPECTION REPORT

A FINAL INSPECTION OF THE PROJECT WAS PERFORMED IN ORDER TO DETERMINE THAT ESD (AND ITS SUBCONTRACTORS) COMPLETED THEIR CONTRACTUAL AGREEMENTS BY:

- SUPPLYING EQUIPMENT AND MATERIALS,
- ASSEMBLING COMPONENTS
- INSTALLING,
- AND CONSTRUCTING

THE 10 MW HAITI NORTH PARK POWER PLANT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

DIVISION OF WORK

THE WORK AT THE SITE WAS DIVIDED INTO THREE MAJOR PARTS:

1. ESD: Performed all civil works and supplying man power to the two other Korean groups.
2. HANIL: Performed all Electrical connections [Engine to Electrical Control; EC to Transformers and Wiring of the Main Office and the Warehouse] as well as the construction of the Main Office and Warehouse buildings.
3. DECCO: a) Performed the construction, erection, testing of all Tanks, b) Performed the assembly of all accessories to the Engines, c) Performed the construction of the Exhaust Tower, d) Performed the installation of the Fire-fighting system.

HYUNDAY-MAIN ALTERNATOR & ENGINE SETS

TYPE: HYUNDAY - HSR7637-8P

4160 Volts; 295.1 Amps, 900RPM

- SN - 20114607RBH16301
- SN - 20114607RBH16302
- SN - 20114607RBH16303
- SN - 20114607RBH16304
- SN - 20114607RBH16305
- SN - 20114607RBH16306

TYPE: HIMSEN - 9H21/32

1800KW @ 900RPM

- SN - BF0824
- SN - BF0825
- SN - BF0826
- SN - BF0828
- SN - BF0830
- SN - BF0836

PUMPING STATION

1-THE PUMPING STATION SERVES TO RECEIVE AS WELL AS TO SUPPLY FUEL, OIL AND WATER TO THE ENGINES SETS.

2- ELEVEN [11] MOTORS ARE FROM: BROOK-CROMPTON

a) EIGHT[8] 4KW MOTORS [400/690V—8.75A] @1440RPM

b) TWO[2] 1.5KW MOTORS [230/400V--@1440RPM]

c) ONE[1] 0.75KW MOTORS [230/400V--@1440RPM]

3- TWO [2] MOTORS ARE FROM: HYOSUNG

d) ONE[1] 3.7KW MOTOR [480V--@1160RPM]

e) ONE[1] 1.5KW MOTOR [230/400V—1440RPM]

PUMPING STATION WIRING AND PIPING

1 - 4KW - Serial #s

- IF-771895
- IF-771894
- IF-771892
- IF-771891
- IF-771887
- IF-771884
- IG-772477
- IG-772482

2 - 1.5KW - Serial #s

- IG-303150
- IG-303167
- 9255113001(HYOSUNG)

3 - 0.75KW - Serial #

- IG-188932

4 - 3.7KW - Serial #

- 21507101001(HYOSUNG)

STANDBY DIESEL GENERATOR

DOOSAN ENGINE:
150KW @ 1800RPM

HYUNDAY GENERATOR :
MODEL: D1G4100

IMPROVEMENTS MADE BY ESD - 1

RAIN/SUN PROTECTION FOR VARIOUS MOTORS

IMPROVEMENTS MADE BY ESD - 2

STEP LADDERS INSTALLED TO FACILITATE ACCESS TO THE ENGINE SETS

HYUNDAY MAIN ALTERNATOR

NAMEPLATE OF ONE MAIN ALTERNATOR OF AN ENGINE SET

HIMSEN HFO ENGINE

NAMEPLATE OF AN HFO ENGINE

ENGINE SET CONTROL PANELS

PATRICK MICHEL , OF AECOM-HAITI, PARTICIPATING AT THE FINAL INSPECTION OF THE 10MW SITE AT CARACOL

ELECTRICAL CONTROL ROOM

THE ELECTRICAL CONTROL ROOM CONTAINS THE PANELS THAT CONTROL EACH AND EVERY ENGINE SET

HGR PANELS

THREE PANELS
CONNECTED IN <u>PAIRS:</u>

TYPE: HANKOOK

MODEL: HKR-N-100410

a) GENSETS 1&2:
SN-110123

b) GENSETS 3&4:
SN-110125

c) GENSETS 5&6:
SN-110124

VACUUM CIRCUIT BREAKERS

ONE FOR EACH ALTERNATOR AND ONE FOR ENTIRE CIRCUIT

VACUUM CIRCUIT BREAKER

TYPE: HVF 1141C
RATED VOLTS: 7.2KV
RATED AMPS: 630A

a) GENSET-1: Serial #V411-07163
b) GENSET-2: Serial #V411-07161
c) GENSET-3: Serial #V411-07162
d) GENSET-4: Serial #V411-07160
e) GENSET-5: Serial #V411-07164
f) GENSET-6: Serial #V411-07159

SWITCHGEAR ROOM

- DURING THE INSPECTION PERIOD THE POWER PLANT WAS CONSTANTLY BEING PROVIDED TO THE INDUSTRIAL PARK @ 23KV
- ACCORDINGLY DUE TO OPERATIONAL AND SAFETY CONSTRAINTS SWITCHGEAR COMPARTMENTS COULD NOT BE OPENED

FINAL INSPECTION RESULTS

- FINAL INSPECTION DETERMINED THAT ESD (AND ITS SUBCONTRACTORS) PROVIDED THE EQUIPMENT AND MATERIALS AND CONSTRUCTED THE 10MW HAITI NORTH PARK POWER PLANT IN ACCORDANCE TO THE CONTRACT DOUCUMENTS AND SPECIFICATIONS.
- THE AS-BUILT DRAWINGS CONFORMED TO THE EQUIPMENT AND CIRCUITS.