

Revision 3 1/25/99

**MANATEE, MARINE MAMMAL, AND SEA TURTLE
SURVEY WATCH PLAN
Atlantic Dry Dock Corp.**

The plan is intended to minimize the impact on large marine wildlife of the explosive pretreatment of sub-aqueous rock at Atlantic Dry Dock during the construction of a floating dry dock facility. This Plan addresses the concerns of relating to the potential impacts of the activities to manatees, other marine mammals and sea turtles. This plan is intended for use during the non-migratory season for manatees in north Florida, December 1 through February 28. Changes to this plan will require written concurrence by the U.S. Fish & Wildlife Service and the Florida Department of Environmental Protection.

- 1 No less than thirty (30) days prior to the first detonation event, the following information will be provided to the U.S. Fish and Wildlife Service (USFWS) and the Department of Environmental Protection (FDEP) Office of Protected Species for review and approval:
 - (a) Proposed observer list with individuals' qualifications/experience.
 - (b) Detailed survey procedures and aerial survey route with map.
 - (c) Detonation schedule.
 - (d) Communications plan and procedures.
 - (e) Sample log sheets.

2. A formal Plan Coordination Meeting will be held no later than three days before the first detonation event to review the above listed items, to discuss the responsibilities of all parties, and to review and approve the schedule of events. Attendees will include the Atlantic Dry Dock Facility Engineer (ADDC), The Project engineer, the Dredging contractors representative, the entire Marine Wildlife Safety Observer team, the Blasting Consultant (CDB), the US Fish & Wildlife Service (USFWS), the Florida Department of Environmental Protection (FDEP), the U.S. Coast Guard (USCG), and other interested parties such as the Florida Marine Patrol. The agenda will be coordinated by ADDC with CDB, the USFWS, and the FDEP. It will include the latest information about the possible presence of manatee, other marine mammals, and sea turtles during the operation, the logistics of the detonation schedule, the communications plan, and the responsibilities of all parties involved.

- 3 The Marine Wildlife Safety Observer team will consist of five members. A Chief Observer, who will be the aerial observer in a helicopter, and four stationary ground or waterborne observers. The Manatee observers will have no other duties. The Chief Observer will have prior survey experience. Inexperienced observers will be trained in methods of surveillance, and this training will be documented. Training records will be kept until the completion of the operations covered by this plan.

4. Observers shall follow the protocol established for the Plan and shall conduct the survey in good faith and to the best of their ability. Detonation events will be conducted during daylight, on or about slack tide (high or low water) to maximize the ability to observe manatees, other marine mammals and sea turtles. Weather conditions such as high winds, precipitation, fog and any other situation in which any one of the observers cannot conduct an effective search will be taken into account. The Chief Observer will make the determination as to whether acceptable observation conditions exist to allow the survey to be initiated before the detonation event.
5. The perimeter of the safety zone will be marked with brightly colored buoys, and a 1000 ft. radius perimeter will be marked with white buoys for aerial reference. The ground observers will be positioned to maximize observations of the Safety Zone, with at least two observers at the 3400 ft. radius. The observer locations will be submitted for approval to the FDEP ^{orange} prior to the Plan Coordination Meeting.
6. The aerial survey of the safety zone will be conducted by helicopter beginning one hour prior to each detonation event and will continue for 30 minutes following each detonation event.
7. The aerial safety survey plan will be submitted prior to the Plan Coordination Meeting. It will generally include surveillance within a 1.5-mile radius (upstream and downstream) of the project site for one hour prior to the detonation event with emphasis on the safety zone. During the final 30 minutes before each detonation, the Chief Observer will concentrate on the area within the 3400 ft. radius. At the 15 minute notice to blast, aerial concentration will be within the 1500 ft. radius. The aerial survey plan must comply with all FAA and military air restrictions. The brightly colored buoys marking the perimeter of the safety zone must be clearly visible from the air.
8. All Observers will be equipped with a two-way radio that will be dedicated exclusively to the Safety Watch. The Chief Observer will be equipped with both a two-way radio and a marine band radio to ensure back-up communication. Observers will be equipped with polarized sunglasses, binoculars, and a sighting log with a map to record sightings in the Safety Zone. Each observer will also have two brightly colored flags, one to indicate all clear and a second color for mammals present. These flags will be used in the event of loss of radio contact.
9. The Marine Wildlife Safety Observer team will be in close communication with the Blaster in Charge in order to halt the detonation in the event that a manatee, marine mammal or sea turtle is spotted within, or approaching the Safety Zone around the blast site. The blasting countdown will be immediately halted by the chief observer upon the request of any of the observers. The blast countdown will not resume until the animal moves away from the area of its own volition. Manatees, other marine mammals, and sea turtles must not be herded away or harassed into leaving. If the animal is not sighted a second time, the event will not resume until 30 minutes after the sighting.

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10. All communications will be in accordance with the approved communications plan. Radio checks will be periodic to ensure that communications links are maintained. At the 5 and 1-Minute to Blast an All Clear must be received from all observers in order for the countdown to continue.
11. After detonation, the Chief Observer shall continue to survey the Safety Zone for 30 minutes before departing. If an injured or dead manatee, other marine mammal, or sea turtle is sighted after the detonation event, the observers will contact the FDEP through the Manatee Hotline 1-800-DIAL-FMP (342-5367) and the Florida Marine Research Institute NE Field Station (904-448-4300 Ext.229).
12. Any problems encountered during blasting events shall be evaluated by the observers and contractors and logistical solutions shall be presented to the USFWS and DNR. Corrections to the WP shall be made prior to the next blasting event.
13. If an injured or dead manatee, marine mammal, or sea turtle is rescued/recovered within the Safety Zone during the detonation period, operations shall be ceased until the Florida DEP or USFWS determines that the cause of injuries or mortality was not likely a result of the detonation event. If injuries are documented to be caused by detonation events occurring at the project site, all detonation events will cease until a review of the circumstances are completed and the Florida DEP and USFWS authorizes operations to resume.
14. Within two weeks after completion of all the detonation events the Chief Observer will submit a summary report to the Florida DEP and to the USFWS. This report will forward the observers' logs, provide the names of the observers and their positions during the event, the number and location of manatee, other marine mammals, or sea turtles sighted and the actions that were taken when the animals were observed.

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GROUND OBSERVER PROTOCOL

- 1) Observers will be at their observation site at least one-hour prior to the blast event and be equipped with the previously mentioned materials.
- 2) Observers will look for manatees, marine turtles & bottle nosed dolphin. Observers will keep continual watch over their entire safety area using polarized sunglasses and will periodically scan the area with binoculars.
- 3) Observers will be located in areas that optimize both visual accuracy and coverage of ingress/egress points. A map showing observer locations is attached to this document.
- 4) The observer will spot any animals in the area and alert the aerial team as to their location. This includes any animals in their visual range even if they are outside the blast safety zones.
- 3) Observers will remain on watch at all times unless there is a long delay, if that is the case, we will then need to re-establish the one hour prior watch before the next blast will take place
- 6) Observers will have a 15-minute interval check in with the aerial observers via radio. In the case of radio failure, green and red signal flags will be used to indicate clear/not clear status of the observers' position.
- 7) Observers will keep their green signal flag in a position that can be easily seen from the helicopter thus establishing a visual reference for the aerial crew during the aerial observations.
- 8) If an animal is spotted in the area, the observer will alert the helicopter via radio and give directions to the helicopter until the aerial crew confirms the sighting. If the radio is not working, the observer will have a red signal flag to wave indicating to the helicopter that an animal is in the area. The observer will visually direct the aerial crew to the location of the animal and radio communication will be reestablished.
- 9) Immediately prior to blast (1 minute), a radio check for all observers will be done to establish an "all clear" status
- 8) Data Sheets and Maps:
All observers will have maps and aerial photos with safety circles at 3400 ft and 1000 ft. drawn in to give a visual reference on where the danger zone is for animals. Any animal spotted will be recorded on the map using the common name of the animal (M = manatee, T = Turtle, D= Dolphin), the number of animals in the group, the direction the animals were traveling, and all the subsequent sightings of that group.

Additionally, written data sheets will be used to record all spotting information and weather & blasting data. One set of data sheets will be used for each blast event. There are comment sheets at the back of the clipboard, to write any information important to the observers' watch. Observations will be written down every 15-min, even if no animals are seen. Weather conditions will be recorded at the beginning of the watch and every hour thereafter.

Observers will remain on site and observe for one-half hour after the last blast to make sure there are no animals that need help.

At the end of each watch, all maps, aerials, comment forms, etc. will be attached to the data sheets and turned into the aerial observer at the site trailer. The aerial observer will review all data packets and clarify any questions before retiring the observers.

If an animal is spotted inside the safety circle after a blast, we need to follow it to determine its condition. The observer will be put in a boat, operations will be halted and the animal will be tracked, with the help of the aerial crew, until it is determined that the animal is fine, injured and needs rescue or dead. The observer will fill out an incident report for any of those three scenarios.

AERIAL OBSERVATION PROTOCOL

- 1) The primary observer will first coordinate all ground observers and be sure the entire watch team is prepared for the blasting event.
- 2) The aerial team will begin its watch one-hour prior to the blasting event.
- 3) The primary observer will be seated in the front of a "bubble-type" helicopter with doors affixed.
- 4) The observer will first visually confirm the locations of all ground observers and check to make sure they are all in the correct place. A radio check to all observers will be made and the time recorded as the official start time of the watch.
- 5) The aerial will be flown to progressively narrow the search area to the safety circle up to the point of the blast event. The outermost area of the aerial survey will be a shoreline survey including the shipping channel, will reach from the inlet to the Dames Point Bridge, and will include Pablo and Sisters Creek. Approximately 40 minutes prior to the blast, transects will be flown over the shipping channel within the safety circle. Within 30 minutes of the blast time, the survey area will be reduced to in and around the 3400' safety radius. Finally, circular patterns will be conducted on the smallest possible radius outside the danger zone of the blast. All waters will be surveyed to establish the presence and size of the general "population" in the area.
- 6) The aerial and ground observers will track animals near or inside the 3400' radius until the animals are in confirmed safety zones. These animals will be subsequently tracked during the normal survey until they move out of the survey area.

- 7) A radio and visual check will be made to the ground observers each 15 minutes.
- 8) Locations of all animals will be recorded on maps and on data sheets.
- 9) The aerial survey will continue one-half -hour after the blast event to insure that there are not injured animals.
- 10) Upon landing, the aerial observer will compile and review all data sheets and release the ground observers or make arrangements for the next blast event depending on the circumstances

MARINE WILDLIFE SAFETY PLAN

For

ATLANTIC DRY DOCK/ATLANTIC MARINE

This Marine Wildlife Safety Plan is prepared as required of the Florida Department of Environmental Protection Dredging Permit Modification No.16-138752-002-EM. The Marine Wildlife Safety Plan has been prepared to ensure the protection of those species large enough to be located visually within the zone of influence where blasting activities will be taking place.

Historical data from blasting underwater-buried charges is very limited. Some of the important characteristic and parameters to be considered are as follows:

- ◆ Substrata Characteristics
- ◆ The amount and type of stemming
- ◆ Decking and/or delaying
- ◆ Type of Explosives Used
- ◆ Blast Pattern and Geometry
- ◆ Geology

Note: The density, strength, and variety of the geology has a significant impact on energy attenuation and the path of pressure wave being transmitted. A number of pre-blast procedures will be employed to provide the maximum level of protection for Marine Mammal Wildlife.

The danger zone radius in feet from the blast can be determined by using the Safety Formula from the U.S. Navy Dive Manual for an uncontrolled blast suspended in the water column. This formula is extremely conservative since the charge(s) to be used for Atlantic Dry Dock are confined within the rock which is the most effective way of reducing both the pressure and impulse of a water shock wave. In addition, the borehole will be stemmed at the collar to further contain the pressures.

The danger zone radius in feet is determined by the following formula:

Safety Formula $R = 260 (W)^{1/3}$

R = Radius

W = Weight of Explosive in pounds per delay

The anticipated maximum pounds per delay for the Atlantic Dry Dock Facility is approximately **70.8 lbs.**

$R = 260 (70.8)^{1/3}$

$R = 260 (4.12)$

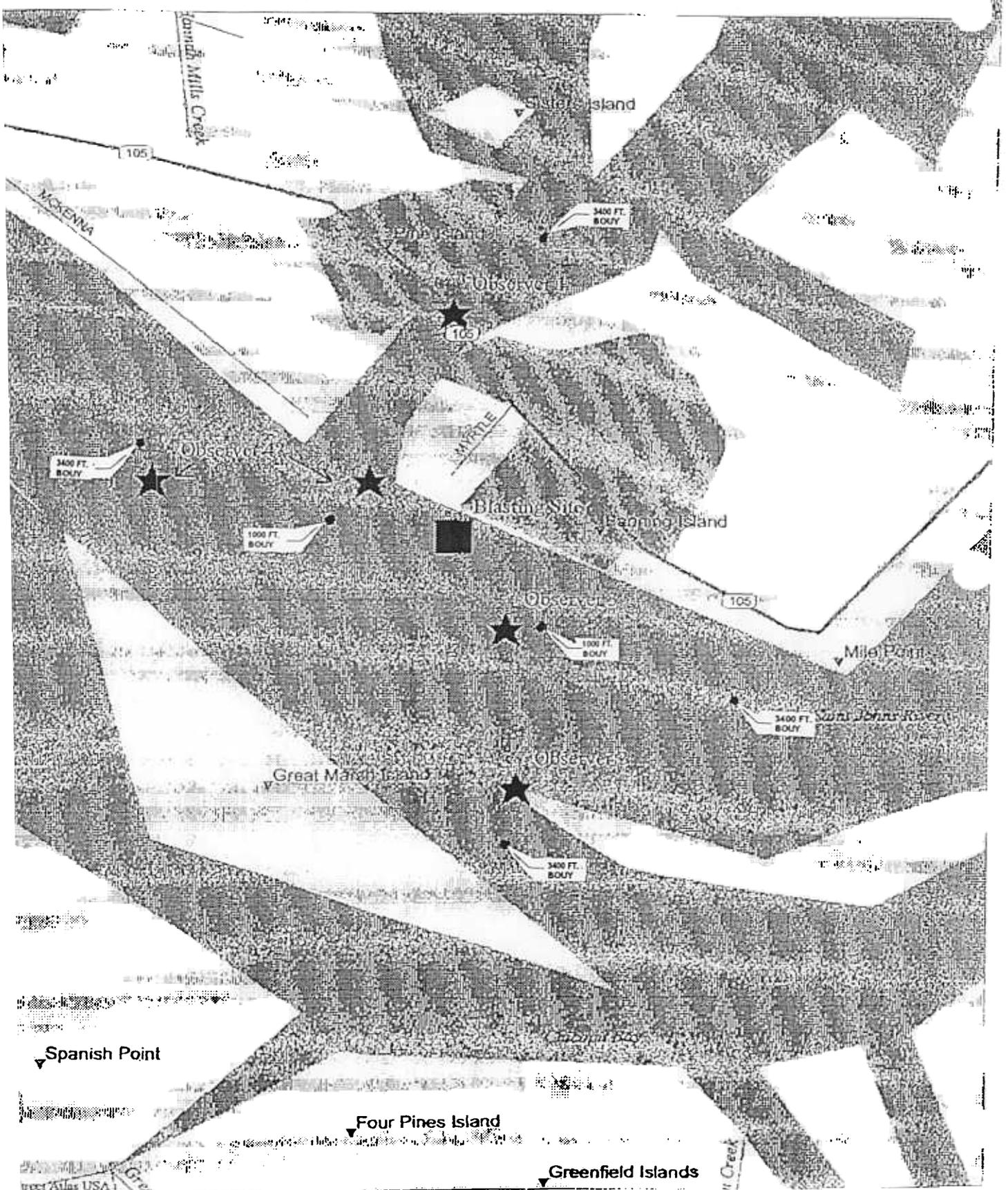
$R = 1073 \text{ ft.}$

To ensure the maximum protection for manatees, the Safety Zone radius is set by the direction of the Florida Department of Environmental Protection at 3422 ft.

Observer Locations and Blast Site



Observer Locations and Blast Site



Manatee, Marine Mammal, Sea Turtle Survey Watch
Standard Operating Procedure (SOP)

Prior to the formal Plan Coordination Meeting, all parties involved with the SOP will have reviewed the Plan and Procedures as outlined. This is to include all key players including the Drill Boat Captain(s), Senior Blaster, Project Superintendent, Safety Coordinator(s), and Owner Representative(s).

The following protocol will be followed for each detonation. Conditions and Methods of Operation are discussed in general.

At the Plan Coordination Meeting all observers and players will be identified as to their area of responsibility (AOR).

Each observer will be required to have the following equipment:

- Data Sheets
- Maps of the Area
- Clip Boards
- Pencils
- Disposable Camera
- Signal Flags
- Written Instructions for observation
- Communicative Radios
- Polarized Sunglasses
- Binoculars
- Watch
- Suitable clothing for inclimate weather
- Steel toed boots

During the Plan Coordination Meeting, tide charts with preferred time of detonation for the first blast will be discussed. For future blast day(s), the report time for observers will be confirmed at the conclusion of the previous blast.

All observers are required to report on or before the designated time at the Manatee Control Station to secure company issued equipment to include radio communication.

If for some reason an observer is unable to report, then he or she is to notify the Chief Manatee Observer the evening prior to, or 24 hours in advance of a scheduled conflict with a blast so that an alternate may be called in. *Failure to do so may result in removal from the active observer list.*

Observers will be required to park in the designated parking area and will be taken to the Control Station, then positioned at their station by a company vehicle/vessel.

Each observer will be given a station number to be referred to in all communication with the Chief, Drill Boat Captain(s) and all other observers.

Upon completion of the watch, all observers will return to the Control Station to submit inspection forms of the day and place their radio(s) on charge.

Prior to dismissal for the day, each observer will confirm their next report time and date with the Chief observer(s).

Communication Program

All observers, drill boats, watercraft and key personnel will be equipped with marine handheld radios.

All observers will carry two (2) brightly colored safety flags. One color will indicate an "All Clear" and the other a "Sighting." In the event of loss of radio communication, the appropriate flag will be used.

Observers will "radio check" on the hour and at 15-minute intervals with an "All Clear" or status.

Should a "Sighting" occur, the observer will alert the Chief Aerial observer and track the animal as directed by the Chief Aerial Observer.

Window of Opportunity

The necessary notification for the "Window of Opportunity" is as follows:

- ◆ 2-Hour notice to blast (see call list)
- ◆ 1-Hour notice for the aerial observer and land observers
- ◆ 30-Minute warning – CH 7A
- ◆ 15-Minute warning – CH 7A, CH 13, CH 16 (VTS Marine)
- ◆ 5-Minute warning – CH 7A, Audio Signal
- ◆ 1-minute warning – CH 7A, Audio Signal
- ◆ Countdown CH 7A
- ◆ Blast
- ◆ All Clear – CH 7, CH13, CH 16, Audio

Note: Because of the marine environment and potential intrusion of marine mammals or vessels into the *Safety Zone*, the 15-minute and 5-minute warning maybe accelerated, *provided a full one hour survey watch has been completed; however, the 1-minute must be completed.* The last 10-seconds of the 1-minute warning will be broadcast on CH 7A beginning with 10. Counts 3 and 2 will be silent with all radios unkeyed allowing any *Safety Zones* or *Manatee Observers* to "Abort" the blast.

PROJECT TEAM

ATLANTIC DRY DOCK

Edward J. Fleming.	President
Robert P. Tate	Project Manager
Randall L Mock, P.E.	Project Engineer

CDB, INC.

Mary Gray*	President/Manatee Observer
Emery Gray*	Senior Blasting Consultant
Shawn Junkins Cole	Corporate Attorney
Brett Pielstick	Professional Engineer
Christos Dedes	Structural Architect
Ralph Reese*	Field Superintendent
Ed Harvey*	Drilling Superintendent
Bill Hatch*	Blasting Superintendent
Hubert Dorough*	Manatee Observer
Connie Calhoun Hannah	Seismic Technician
Bonnie Andersen*	Contract Coordinator/Sr. Manatee Observer

MANATEE WATCH PROGRAM

(Dependent upon availability at the time of detonation events)

Sharon Tyson	Chief Manatee Observer
Mary Jo Barkazi	Deputy Chief Manatee Observer
Erin Bouthillier	Alternate Chief Manatee Observer
Hoke Smith	Pilot - SK Logistics
Jacob Swezey	Pilot - SK Logistics

CONSULTANTS

Dr. Calvin Konya	Vibration Analysis
Lou Oriard (Retired)	Vibration Specialist

DYNOSOUTH EAST

Jeff Smith	President
Jennifer Musick	Business Manager
Larry Christianson	Construction Sales Manager

* Observers for the Manatee Watch Program

ADDITIONAL GROUND MANATEE OBSERVERS

For
Atlantic Dry Dock

Approved by DEP Bureau of Protected Species Management

Chris Slay
Nathan Thomas
Amy Robinson
Amy Strogbs
Beck Smith
Reesa Reddick
Alicia Windham-Reid
Jana Pennington
Cyndi Thomas
Anthony Musante
Jackie Ciano
Tracy Gray