

Sea Turtle Take Assessment
Wilmington Harbor Ocean Bar, Maintenance Dredging
Contract No W912HN-08-C-0002
Dredge Liberty Island

Summary

A small (CCL - 30.6 cm) juvenile green sea turtle was taken by the Liberty Island hopper dredge on 17 December during load #38 (start – 1638 hrs; end – 1941 hrs) (see Attachments (observer forms and photographs)) while working the Wilmington Harbor Ocean Bar maintenance dredging contract. The turtle was found by the endangered species observer (Gib Frye – Coastwise Consulting) in the mid-inflow box at 2030. The dredge was directed by the Corps contracting officer representative to shut down upon reporting of the take until details regarding the incident could be gathered and coordinated appropriately. The Contractor was directed to resume dredging at about 1000 on 18 December after a re-inspection, performed by the CQC, of the sea turtle compliance measures was completed, including an evaluation of the approach angle calculations by the CQC relative to the current dredging depths as well as a new paint test performed and documented. The Contractor continues to work with 100% inflow screening and no lateral overflow screening (no overflow screening is in accordance with the 1995 and 1997 South Atlantic Regional Biological Opinion as long as 100% inflow screening is implemented) due to excessive wood debris and plugging concerns. Understanding the site specific conditions of this contract (i.e. excessive wood debris) as well as assuming a continued decline in water temperature, sea turtle relocation trawling is not currently being considered as an effective mitigation option to reduce risk of turtle take. To date, the contractor has dredged approximately 120,000 CY of the required quantity (~760,000 CY) and the contract duration extends through 2 February.

This year there have been a large number of juvenile green sea turtles sighted in NC waters as well as an unusual number stranded on NC beaches. Considering these increased numbers, the occurrence of a juvenile green take during this dredging contract is not surprising (pers. Comm – Matthew Godfrey (NC sea turtle coordinator)). After review of the recent weather patterns, sea state, and water temperature data (bottom and surface) (Figures 1-5), it is possible that the turtle was cold stunned and more susceptible to take by the dredge; however, this assumption can not be confirmed. After review of the Silent Inspector data by Jay Rosatti (SI customer support) as well as Doug Piatkowski (CESAW), there were no obvious indications of the Contractors operations being non-compliant with the contract specification requirements for draghead operations. The dredging environment at the Wilmington Harbor Ocean Bar presents a myriad of difficulties for hopper dredges, with respect to draghead operations relative to sea turtle compliance measures, that may result in a greater risk of turtle take. These difficulties include: (1) wood debris plugging pipes, (2) uneven bottom contours, and (3) trenching or crabbing. After review of the silent inspector data, there were specific circumstances during load #38 in which the draghead operations could be correlated with this specific

turtle take incident (Figures 6-8). Specifically, the data near the beginning of the load show the draghead suddenly dropping (2-3ft) into holes or ruts with the velocity and density remaining relatively constant. This would imply that the contractor is accounting for the holes by putting some slack in the dragwire. Any time the draghead suddenly drops into a hole, the potential for a take exists. Though these circumstances are inherent in most hopper dredging contracts with specific dredging difficulties as outlined above, the Contractor should continue to be diligent of the draghead operating requirements for sea turtle compliance and consider ways to minimize turtle take risk when clearing lines due to plugging. Specific details regarding weather and water temperature as well as Silent inspector data analysis are provided in Figures 1-8.

Figure 1. Bottom water temperature data was collected from an Acoustic Doppler Current Profiler (ACDP) located nearby the project vicinity in Oak Island. From 15 November through 09 December there was a generally cooling trend from ~16°C to ~13 °C. From 10-14 December the air temperature was unseasonably warm resulting in an increase in water temperature back up to about 15 °C. (Based on the Wilmington District’s sea turtle take history, a water temperature threshold of 14°C is considered the point at which turtle take risk is reduced). This warm weather pattern was followed by a cold front arriving on 15 December bringing strong SE-SW wind and swell. The strong winds from the southerly direction likely pushed warmer gulfstream water closer inshore and the increased swell contributed to a mixed the water column. The subsequent warmer water and southerly push could have provided more favorable conditions for sea turtles in the area during an otherwise low risk timeframe. On December 16-17 the air temperature dropped significantly with a low of about -4 °C (25°F). Subsequently, the water temperature began to quickly drop. This warming and cooling trend relative to the weather patterns can be seen in the sea surface temperature maps as well, provided in Figures 2-5. Considering the take occurred on the evening of the 17th following the significant drop in temperature, it is possible that the turtle was cold stunned and more vulnerable to take by the dredge; however, this can not be confirmed.

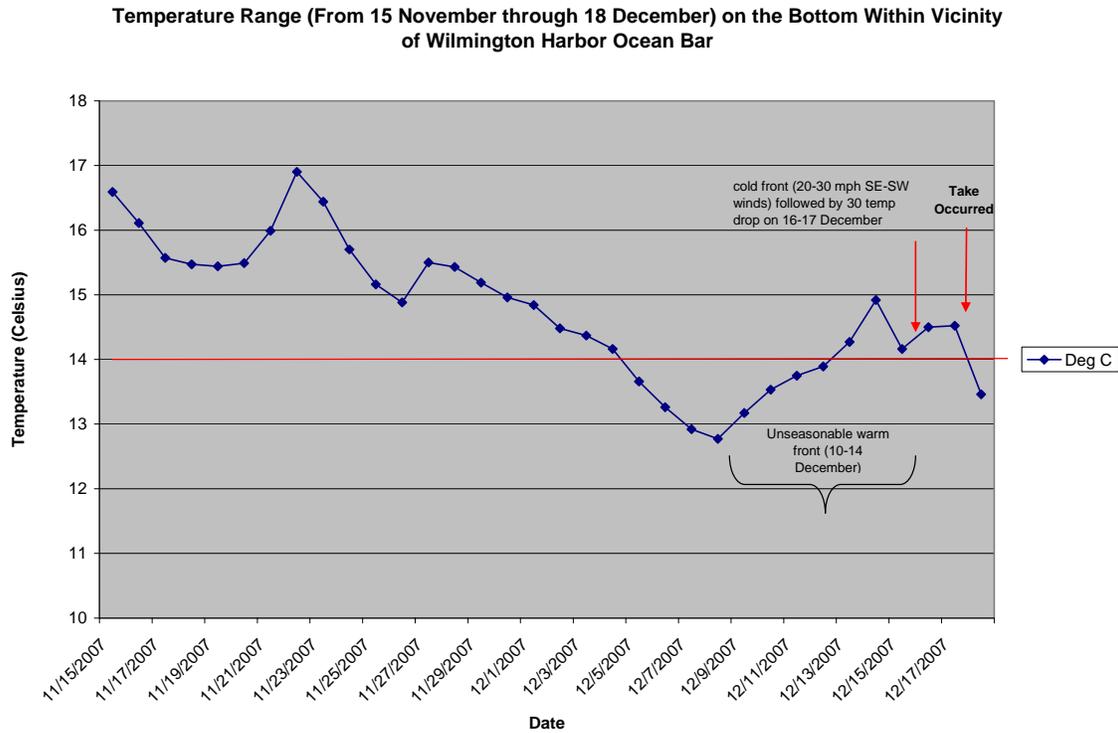


Figure 2.

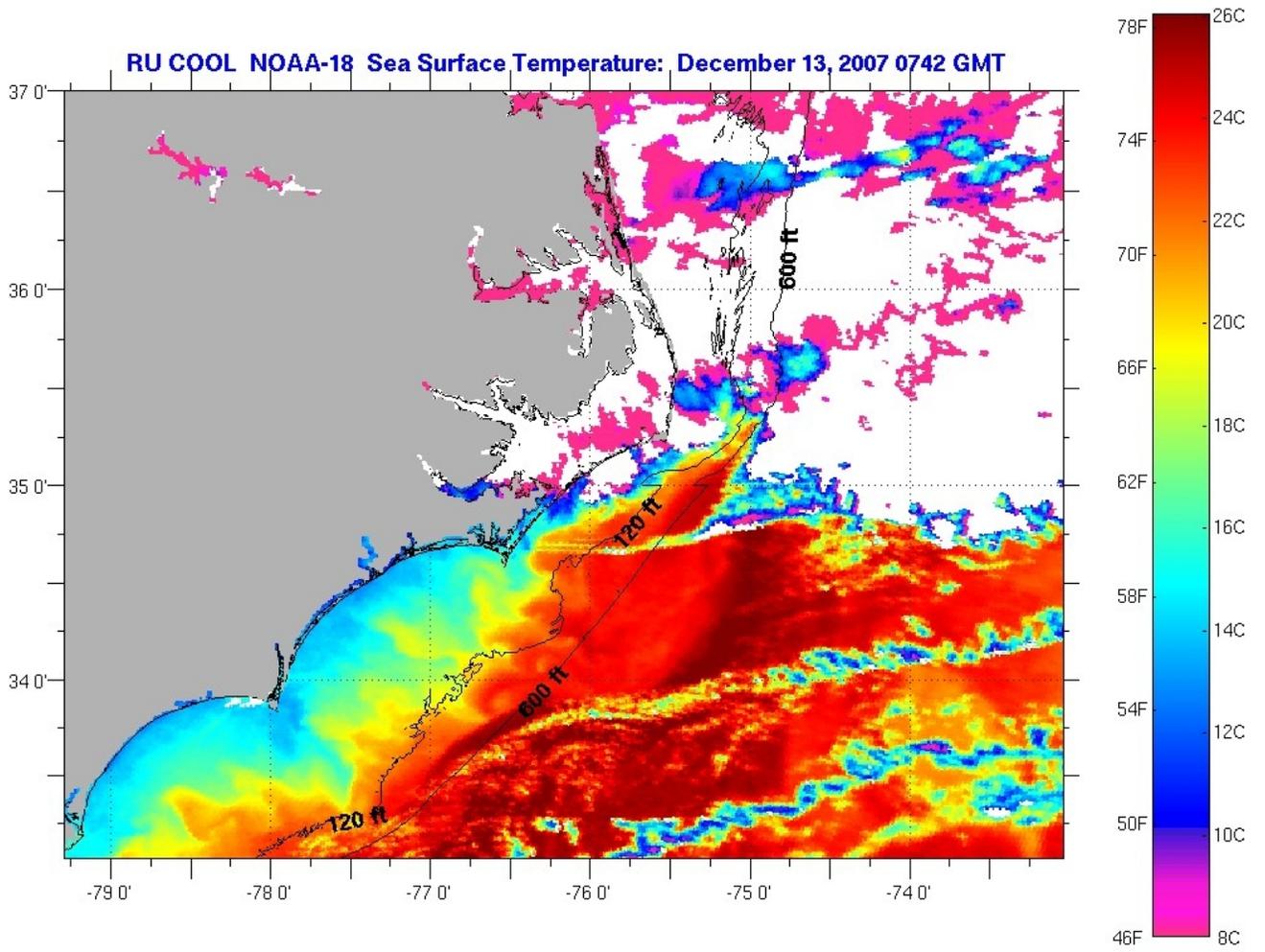


Figure 3.

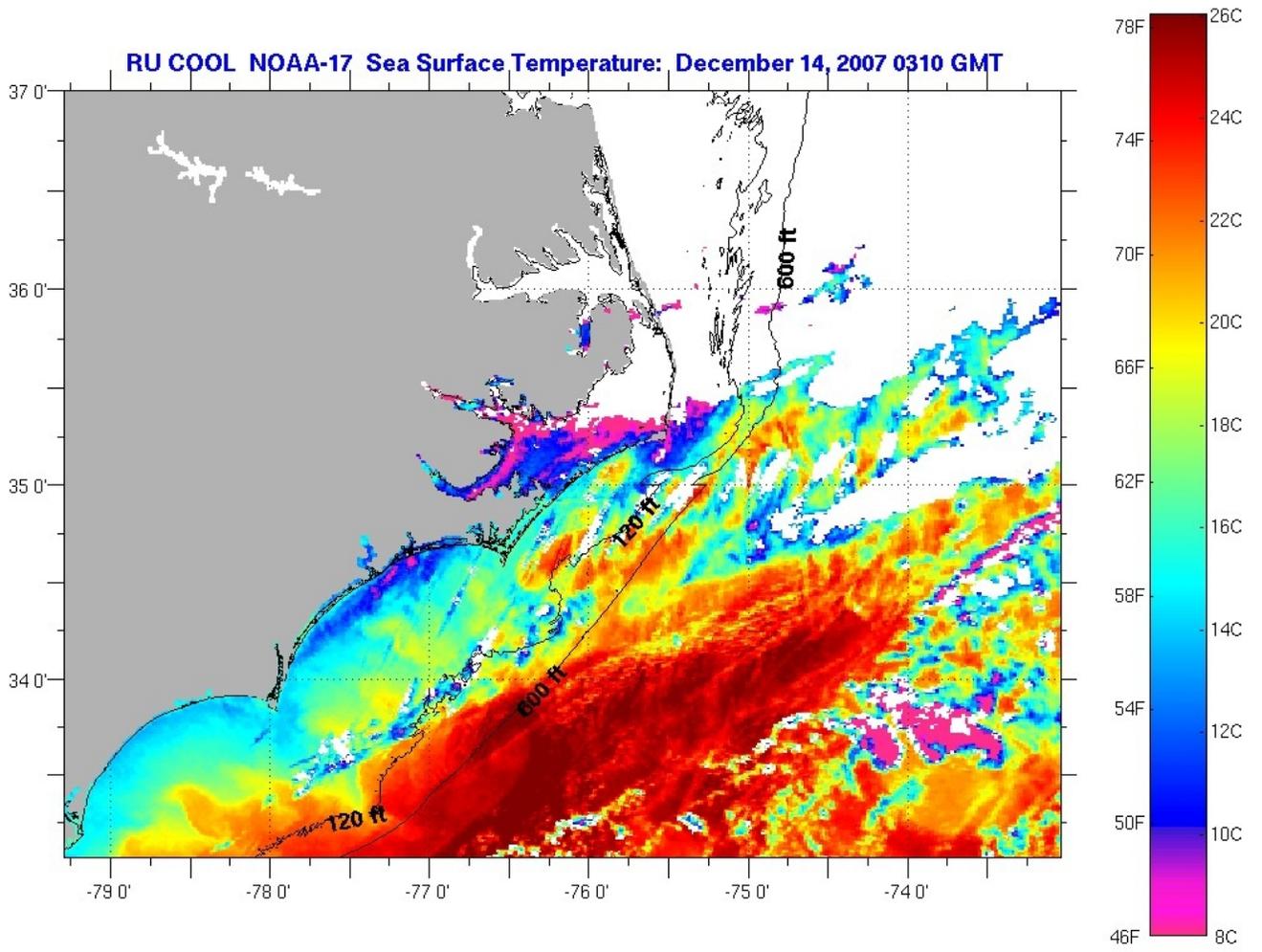


Figure 4.

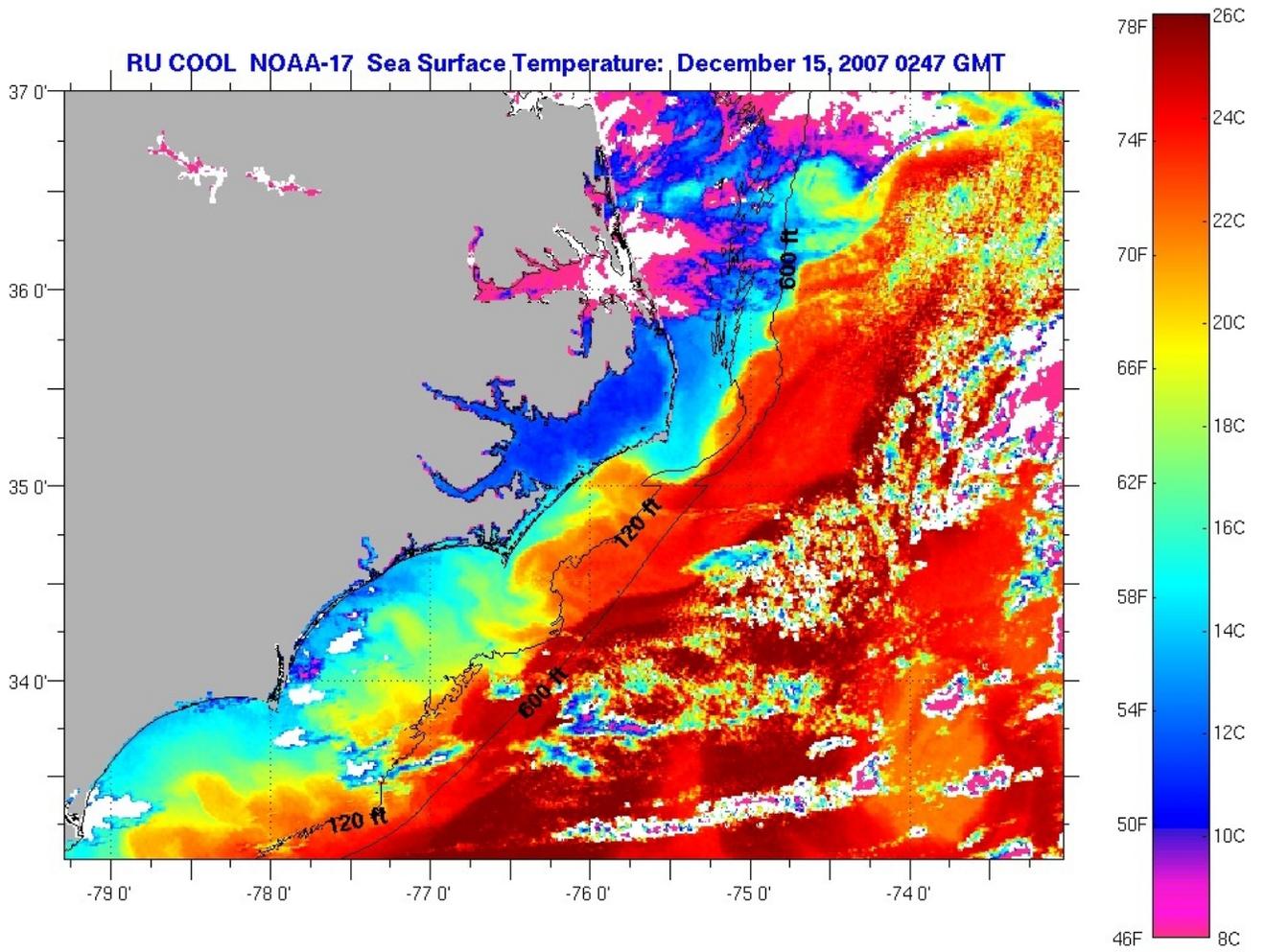
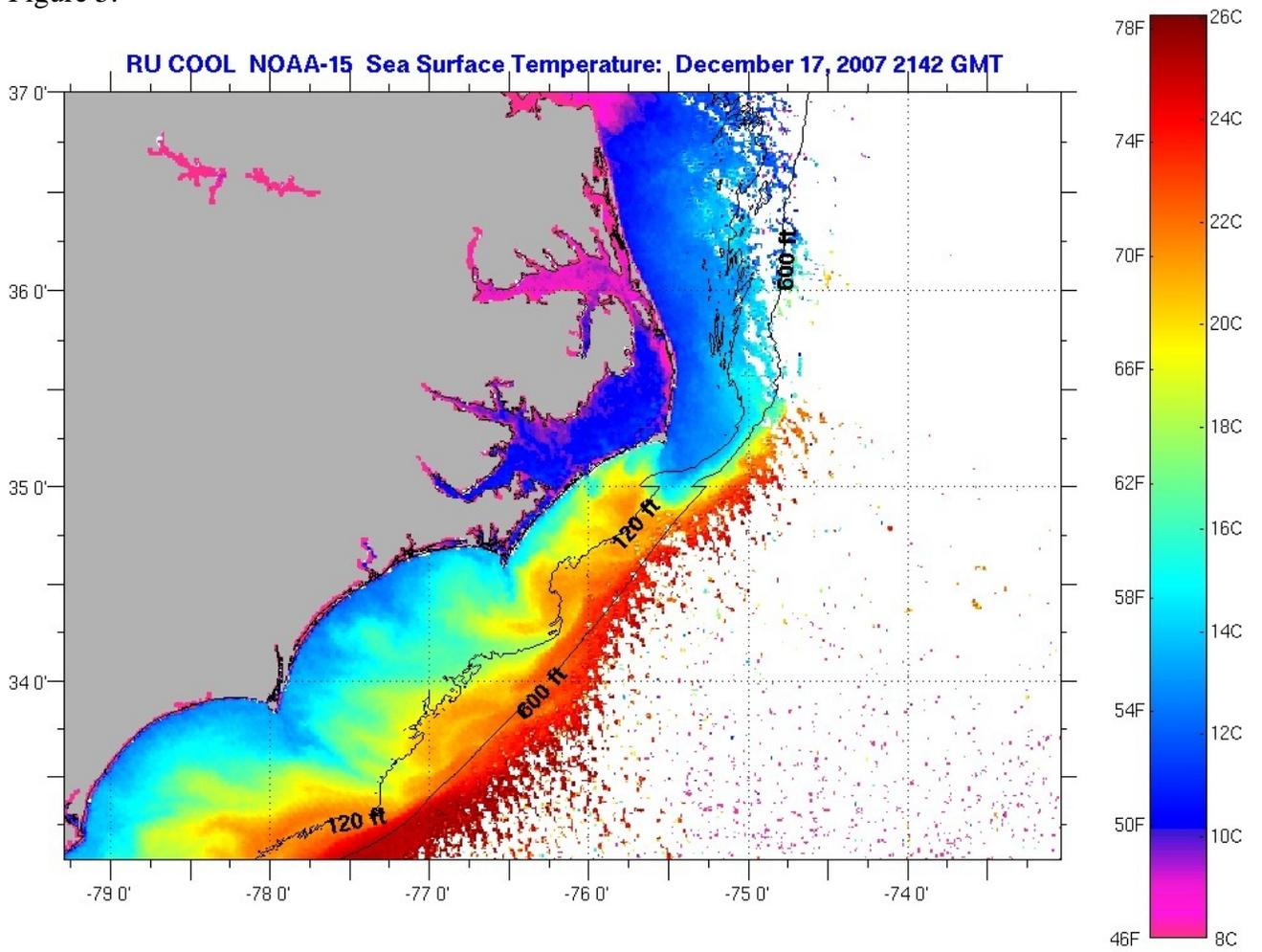


Figure 5.



Silent Inspector Data Analysis
Performed by Jay Rosatti

Figure 6. At about 1800, the port draghead suddenly raised up about 4 ft. The density decreased at that time, possibly to the point of pumping water. There were no turns going on at that time; thus, this sudden change could be due to the dragtender having to clear debris plugging the lines.

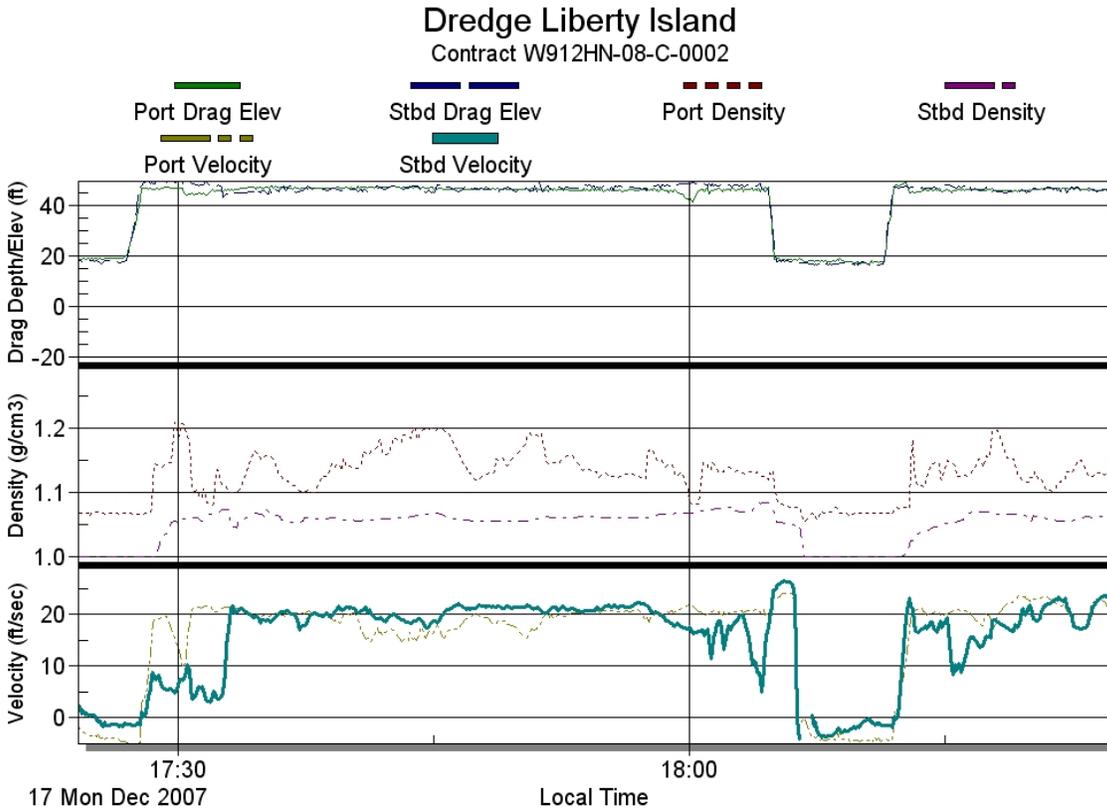


Figure 7. At about 1850 the dragtender raised the stbd draghead off the bottom. The data show a near pipe plugging incident, where the density goes up and the velocity down. The drag tender raised the arm to pump more water and clear the pipe (see Figure 8).

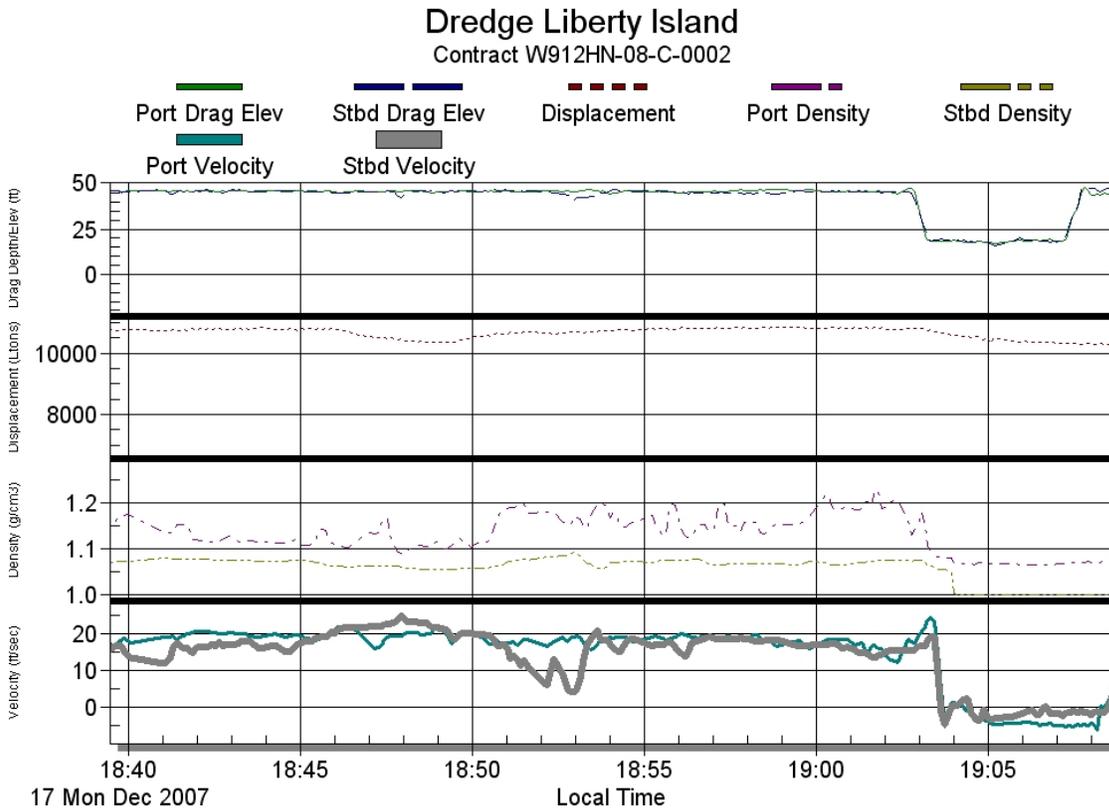
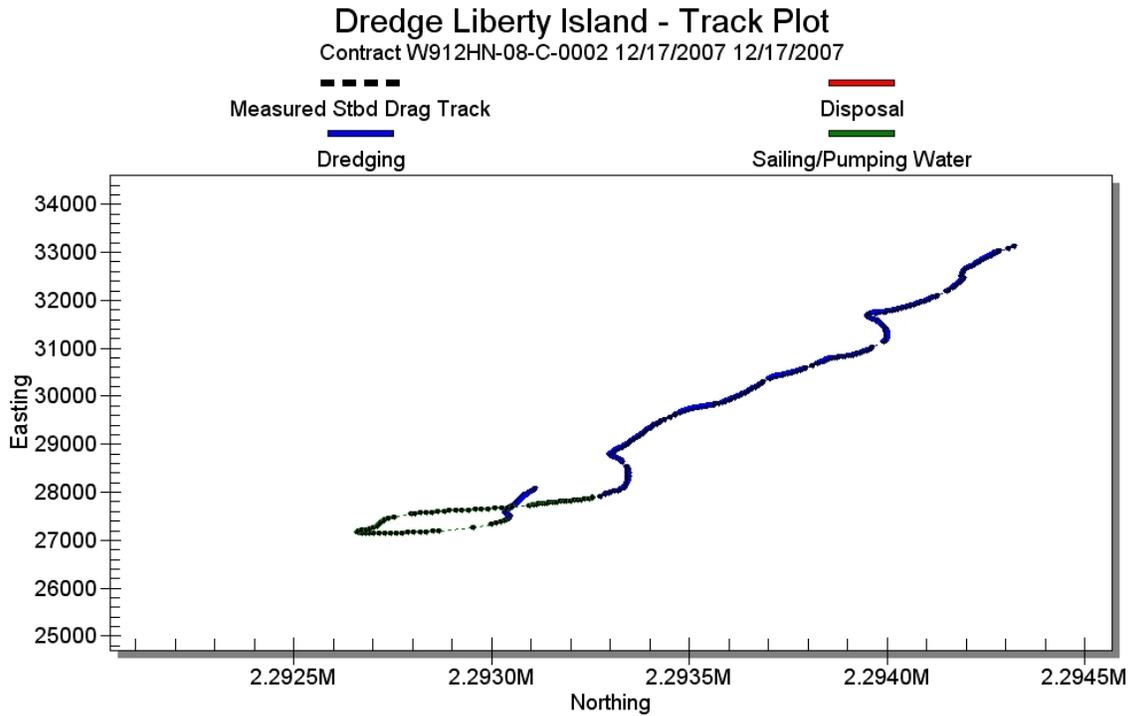


Figure 8. The position data was plotted for the Figure 7 time series and it appears that the dredge was in a rather sharp turn with the drags down. SOP in soft bottom dredging with turtle deflectors is to dig in S curves to avoid going over the same dredge tracks. However it could be that during this particular turn more material was presented to the drag arm than it could handle without plugging. Also, the drag could have been crabbing under the ship during the turn, requiring it to be raised to avoid damage.



ATTACHMENTS

**Endangered Species Observer Forms
(Load, Daily, and Incidental Take)
and Incidental Take Photographs**

**ENDANGERED SPECIES OBSERVER PROGRAM
DAILY REPORT**

DATE: 17, Dec, 07

Project Name: WILMINGTON OCEAN BAR MAINTENANCE USACE District: WILMINGTON
 Dredge Name: LIBERTY ISLAND Dredge Firm: GLDD
 Contract # W112HN-08-C-0002 Maintenance X / New Work

Load #: 37 - 38 Area worked (stations, etc): 209+00 - 118+00

Location, Lat/Long: N 33° 49.560 x W 78° 01.95

Beaufort Sea State: 0 1 2 3 4 5 6 7 8 9 10 11 12

AIR TEMP: 6-15 °C / °F Wind Direction and Speed NNW-5-15 KTS

WATER TEMP: Surface 14.5 °C / °F Column (mid-depth) °C / °F Bottom °C / °F

Condition of deflector: Good Condition of screening: Good

Were there incidents involving endangered or protected species? YES NO

Which species? (complete incident form(s)) C. MYDINS (SEE ATTACHED INCIDENT REPORT)

Comments (type of material, biological specimens, unusual circumstances, etc):

- DREDGE WAS 'HOVE TO' FROM 1:15 AM TO 11:35 AM DUE TO ADVERSE CONDITIONS.
- BEGAN DREDGING AGAIN AT 11:35 AM
- REQUIRED TO WEAR HARNESS IN BOX WHEN BOTTOM IS OPEN - (AND SIGN JSA FORM)
- GUS FRYE REPLACED STACE/KNIGHT AS OBSERVER @ ~ 0830
- A FRESHLY DEAD JUVENILE GREEN SEA TURTLE WAS FOUND IN THE MID INFLOW SCREENING ON LOAD # 38. FUG. DIEDUS SEC INCIDENT REPORT. DREDGING WAS SUSPENDED FOR USACE NOTIFICATION & ADJUSTMENT.
- BIOLOGICAL SPECIMENS OBSERVED IN SCREENING INCLUDED CLAMMUS, SCALLOPS AND WHELLS.
- ABOTIC DEBRIS REMOVED IN SCREENING CONSISTED OF ROCK, MARL, WOOD & PLASTIC
- THE MATERIAL BEING DREDGED IS MUD.

BRIDGE WATCH SUMMARY

Time	Species	# Sightings/# Animals	Location/Comments
NO SIGHTINGS		/	
		/	
		/	
		/	
		/	
		/	

Observers Names Nikki Doyle & Gus Frye
 Observer Firm COASTWISE CONSULTING

**Endangered Species Observer Program
LOAD DATA FORM**

Project Name: WILMINGTON OCEAN BIRK MAINTENANCE USACE District: WILMINGTON

Dredge Name: LIBERTY ISLAND Dredge Firm: GLDD

Date 12/17/07 LOAD #: 38

Times (24hrs): Start 1638 End 1941 Dump 2014

Location, Lat/Long: N 33° 49.560 W 78° 01.95

Condition of screening: Port ^{MID} GOOD Starboard N/A Overflow N/A

Number of dragheads in use: 2 Type of dragheads used: SLIT END WIRE Size of dragheads: 10
 Draghead deflector? YES NO Condition of deflector: GOOD

Type of material dredged: MUD
 Weather conditions: MISTY/CLEAR

Tidal stage (CIRCLE ONE): Slack Rising High Falling Low Unknown

Beaufort Sea State (Enter BSS 1-8) 3 Wave Height: 2-3' ft

Wind (speed & direction): NNW 10-15 AIR TEMP: 60 °F (°F - 95 (°C) + 32; °C - 59 (°F - 32))

WATER TEMP: Surface 14.5 °C/F Column (mid-depth) --- °C/F Bottom --- °C/F

SCREEN TYPE	inflow screening:	None	25%	50%	75%	100%
<input checked="" type="checkbox"/>	Overflow screening:	None	25%	50%	75%	100%
<input type="checkbox"/>	Other screening:	None	25%	50%	75%	100%

MID
 SCREEN CONTENTS: 1 - CHOLONIA WADIAS *
1 - CLEARWATER SKATE
WOOD, METAL, PLASTIC & ROCK

STARBOARD SCREEN CONTENTS: _____

Estimate number entrained on this load for the following:
 Sturgeon (any species) _____
 Shark (any species) _____
 Horseshoe crab _____
 Blue crab _____

TURTLE OR TURTLE PARTS PRESENT THIS LOAD: YES NO

SPECIES OF TURTLE TAKE: Unknown Loggerhead Green Kemp's ridley Hawksbill Leatherback

Comments: * JUVENILE C. WADIAS FOUND INTACT AND FRESHLY DEAD IN MUD IMMEDIATELY UPON SCREENING.

Number observers used/24hrs: 2 % Monitoring/24 hrs: None 25% 50% 75% 100%

Observer's Name: M.B. FISKE Observer firm: COASTWISE CONSULTING

ENDANGERED SPECIES OBSERVER PROGRAM
SEA TURTLE INCIDENTAL TAKE DATA FORM

Project Name: WILMINGTON OCEAN EMT MAINTENANCE USACE District: WILMINGTON

Dredge Name: LIBERTY ISLAND Dredge Firm: GREAT LAKERS

DATE: 12/17/07 Time turtle take recovered (24hr): 20:30 Turtle take # for project: 1

LOAD #: 38 Times (24hrs): Start 1638 End 1941 Load start date 12/17/07

SPECIES OF TURTLE TAKE: Unknown Loggerhead Crook Kemp's ridley Hawksbill Leatherback

Channel location of take: Latitude 33°49.560 N Longitude 78°21.950 W

Other location / Channel description (e.g. buoy markers, landmarks): STATIONS 148⁺⁰⁰ - 209⁺⁰⁰

Location take recovered on dredge: MID INFLOW BOX

Number of dragheads in use at time of incident: 2 Draghead deflector? YES NO

Condition of deflector: GOOD Condition of screening: GOOD

Beaufort Sea State: 0 1 2 3 4 5 6 7 8 9 10 11 12

AIR TEMP: 6 °C/F (°F = 9S (°C) + 32; °C = 59 (F - 32))

WATER TEMP: Surface 14.5 °C/F Column (mid-depth) °C/F Bottom °C/F

Condition of specimen: THE TURTLE WAS INTACT WITH ABRASIONS ON THE HEAD, CARAPACE, PASTRONS, AND FLIPPERS. BLOOD WAS PRESENT IN THE MOUTH AND WOUNDS. NO ODOR OF DECOMPOSITION WAS EVIDENT.

0 = Alive; 1 = Fresh dead; 2 = Moderately decomposed; 3 = Severely decomposed; 4 = skeleton/old bone; 5 = undetermined

Sex: M F UN How determined? Age class: Juv Sub-Adult Adult UN

Measurements: Circle units

Plastron Length: 24.8 cm/in Head Width: 5.4 cm/in

Carapace Straight Length: 28.7 cm/in Plastron Width: 22.9 cm/in

Carapace Curved Length: 30.6 cm/in Carapace Straight Width: 22.9 cm/in

Carapace Curved Width: 26.7 cm/in

Measurement/description of part: n/a

Genetic samples taken: YES NO Photos taken: YES NO

Turtle tagged?: YES NO Tag type: n/a Tag #: n/a Tag date: n/a

Final disposition of specimen:

Comments: 12/18 8:10am Turtle double bagged & placed in turtle cooler in freezer

Load data form attached: YES NO Dredge load log attached: YES NO

Observer's name: Stacy Feys

Use diagrams below to illustrate specimen/part recovered:

Incidental Take Photographs (1-4)

