Florida Power & Light Company, 6501 South Ocean Drive, Jensen Beach, FL 34957

September 20, 2002

L-2002-190
10 CFR 50.4

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Request for Information
Reinitiation of ESA Section 7 Consultation

By letter dated August 23, 2002, the NRC notified Florida Power & Light Company (FPL) that the NRC had decided to reinitiate Endangered Species Act (ESA) Section 7 consultation with the National Marine Fisheries Service (NMFS) with respect to green and loggerhead turtles incidentally captured in the intake canal of the St. Lucie Plant. In support of the consultation, the NRC requested FPL to provide information concerning sea turtle mortalities that occurred during calendar year 2001, as well as information regarding FPL's planned modifications to the intake canal and the existing turtle net.

In response to the NRC's request, Attachment 1 provides the requested information on the incidental lethal take of loggerhead and green sea turtles for 2001. Attachment 2 provides a discussion of the 5-inch barrier net improvements. FPL is proud of its sea turtle conservation efforts at the St. Lucie Plant and we are pleased to cooperate with NRC and NMFS in addressing questions that may arise. Nonetheless, FPL respectfully submits that the NRC Staff's decision to reinitiate the ESA Section 7 consultation process is not supported by the facts or law.

From a legal perspective, the regulation governing interagency cooperation under the ESA, 50 CFR 402.16(a), provides that reinitiation of formal consultation is required "[i]f the amount or extent of taking specified in the incidental take statement is exceeded." The terms and conditions of the incidental take statement (ITS) limits were included in the May 4, 2001 NMFS Biological Opinion, as clarified by a letter from NMFS to NRC dated October 8, 2001. The October 8, 2001 NMFS letter was forwarded to FPL by NRC on November 6, 2001 and incorporated by reference into Appendix B of the St. Lucie Unit 1 and Unit 2 NRC operating licenses by Amendments 183 and 126 issued by the Staff on August 28, 2002. The limits established for injured and dead loggerhead and green turtles are based on a percentage (1%) of the total loggerhead and green turtles taken in one year rounded to the next whole number. Reinitiation of consultation would be required if the number of loggerhead and green turtles injured or killed because of plant operations were greater than the above limit in a calendar year. FPL removed 592 green and loggerhead turtles from the St. Lucie intake canal in 2001. FPL did not exceed the trigger value of greater than six loggerhead and green turtle mortalities for the calendar year 2001. Therefore, the criteria set forth in the governing regulations, in the ITS, and in the St. Lucie operating licenses for reinitiation of consultation has not been met by the number of sea turtle mortalities at St. Lucie Plant in 2001.

IE23

Additionally, FPL's proposed turtle net modifications do not trigger a reinitiation of the consultation process. The governing regulation, 50 CFR 402.16(c), requires reinitiation of consultation "[i]f the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion." FPL is modifying the existing turtle net because it is maintenance intensive, is subject to overstress from debris loading, and has stretched and fatigued. The pedestal foundation and cable suspension designs lack the ability to safely and efficiently transfer lateral hydrodynamic-induced loads from the net to the foundation. The heavily silted intake channel, between the headwall structures and the A1A Bridge, has aggravated these design problems. NRC and NMFS were briefed on the original net design and design criteria as part of the previous consultation when the 5-inch barrier net became a requirement contained in the incidental take statement. The modifications to the 5-inch barrier net are being made to correct the design problems discussed above and restore the 5-inch barrier net performance to the original design criteria. FPL expects that the modifications will enhance the protection of the species. Therefore, the net improvements do not trigger a reinitiation of consultation.

Please contact George Madden at 772-467-7155 if there are any questions about this submittal.

Very truly yours,

Donald E. Jernigan
Vice President
St. Lucie Plant

DEJ/GRM

Attachments (2)

ST LUCIE PLANT SEA TURTLE INCIDENTAL LETHAL TAKES IN 2001 AND CORRECTIVE ACTIONS

Event Descriptions

At approximately 1000 hours on March 30, 2001, a dead green turtle (*Chelonia Midas*) was recovered from the 5-inch barrier net in the intake canal. The turtle, which weighed approximately seven pounds, was found at the surface of the net, near the center. The turtle was not entangled in the net and had no signs of external injury. The turtle was slightly underweight.

At approximately 0800 hours on November 7, 2001, a dead green turtle was recovered from the 5-inch barrier net in the intake canal. The turtle, which weighed approximately 6.5 pounds, had apparently drowned recently against the net.

At approximately 0800 hours on November 8, 2001, a dead green turtle weighing approximately seven pounds and a dead emaciated loggerhead turtle (*Caretta carreta*), weighing approximately 73 pounds, were recovered from the 5-inch barrier net. Later that day (approximately 1300 hrs), another green turtle weighing approximately 17 pounds was retrieved from this net by a diver cleaning and repairing the net. These three turtles all apparently drowned during the night or very early during the day of discovery. The loggerhead turtle was in an emaciated condition at the time of the incident.

At approximately 1100 hours on November 23, 2001, a weak, underweight green turtle, weighing approximately 11 pounds, was retrieved from the Unit 1 intake wells. This turtle died before it could be sent to rehabilitation, about two hours later.

Both Units of the St. Lucie Plant were at 100% power, with normal circulating water flow, at the time of all the events above. All events were reported to the Florida Fish and Wildlife Conservation Commission via the Sea Turtle Stranding and Salvage and Salvage Network – Stranding Report (see attached) and to the NRC as per 10 CFR 50.72 requirements. All specimens were sent to Florida Fish and Wildlife Commission for necropsy.

Cause of the Events

At the time of the March 30, 2001 green turtle mortality, the 5-inch net was in its normal configuration. The net had been inspected by divers on March 8, 2001. They cleaned the net and repaired eleven holes. A necropsy performed by the Florida Fish and Wildlife Conservation Commission was inconclusive. This was a gross necropsy performed without pathology work-up. The event was determined at that time to not be "causally related to plant operation" because no cause of death could be determined. Cause of death did not have any great significance at the time since all mortalities counted against the Incidental Take for the plant. Following the issuance of the

Biological Opinion by National Marine Fisheries Service in May 2001, as clarified in November 2001, "Death or injury resulting from other than plant operations will not be counted against the ITS." Because of this statement, the above incident was revisited and determined to be causal to plant operations.

During the November event where four turtle mortalities occurred over a two-day period, the 5-inch turtle barrier net slope had been compromised due to heavy loading of drift algae and Sargassum seaweed approximately two days prior to the first mortality. The passage of Hurricane Michelle south of the plant site caused high winds and increased seas, therefore resulting in a large influx of silt and seaweed. The net had to be lowered considerably to avoid catastrophic damage.

Net damage during the November silt and seaweed event could have been responsible for allowing the small green turtle back to the intake wells November 23, 2001. The net would normally retain turtles of this size where they could be captured by tangle nets.

The existing net is maintenance intensive, is subject to overstress from debris loading, and has stretched and fatigued. The pedestal foundation and cable suspension system designs lack the ability to safely and efficiently transfer lateral hydrodynamic-induced loads from the net to the foundation. The heavily silted intake channel, between the headwall structures and the A1A Bridge, has aggravated the design problems.

Corrective Actions

Divers started work to correct the 5-inch barrier net situation promptly after the silt and seaweed loading was discovered (November 8, 2001). This material was removed from the net until it could be placed back in a normal configuration on November 10, 2001. Sea turtle biologists increased monitoring of the net when it was noted that the net configuration was compromised to mitigate further sea turtle injury or mortalities.

It was determined that, if unusual circumstances such as these occur in the future, this net will be lowered completely and the plant will rely on the 8-inch back-up net as a means of preventing turtles from entering the intake wells.

To reduce the effect of environmental events such as those experienced in November of 2001, FPL is implementing the following plan.

- The intake canal has been dredged between the headwalls and the A1A Bridge (~30,000 cubic yards). This will reduce current velocities in the area of the barrier nets, which have been calculated to double during occurrence of seaweed/silt intrusion.

- The existing nylon 5-inch net will be replaced with a new net of more robust material. A 5-inch net woven with Dyneema rope and UV resistant coating has been purchased to replace the nylon net. The Dyneema rope is of higher strength, lower

stretch, and lower creep than the nylon material. The UV resistant coating will provide a smooth surface to help debris pass through the net.

- A debris removal system will also be added directly behind the net to keep sediment build-up from occurring. This system operates by a simple pump and eductor, which will transfer the silt west of the 8-inch barrier net as necessary.

- In addition to the new lower stretch net material, the net will be supported by two new intermediate posts and a guy system which will help minimize net deformation during periods of high influx of seaweed and silt.

Dredging of the canal was completed at end of July 2002. Mobilization for the net enhancements began in early August. Work began in early September 2002. The expected completion is scheduled for mid-October 2002. FPL believes that the above enhancements will provide a more effective barrier that will be better able to withstand silt and seaweed/jellyfish influxes similar to that observed in November of 2001 which directly resulted in several sea turtle mortalities.

SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First DAVID M I. A Last SINGEWALD
Affiliation QUANTUM RESOURCES
Address 6951 S. OCEAN DR.
JENSEN BEACH, FL 34957
Area code/Phone number 561-467-7726

STRANDING DATE:
Year 20[0][1] Month [0][3] Day [3][0]
Turtle number by day [0][1]

State coordinator must be notified within 24 hrs.
this was done by ☒phone (561)575-5407
☐email ☒fax (561)743-6228
☐FWC Turtle Pager 1-800-241-4653 ID#274-4367

SPECIES: (check one)
☐ CC = Loggerhead
☒ CM = Green
☐ DC = Leatherback
☐ EI = Hawksbill
☐ LK = Kemp's ridley
☐ UN = Unidentified
Check Unidentified if not positive. Do Not Guess.
Photos taken? ☒Yes ☐No
Species verified by state coordinator? ☐Yes ☒No

STRANDING LOCATION: ☐Offshore (Atlantic or Gulf beach) ☒Inshore (bay, river, sound, inlet, etc)
State FLORIDA County ST. LUCIE
Descriptive location (be specific) ST. LUCIE POWER PLANT INTAKE CANAL, 15 Km SOUTH OF THE FT. PIERCE INLET
Latitude _____ Longitude _____

CONDITION: (check one)
☐ 0 = Alive
☒ 1 = Fresh dead
☐ 2 = Moderately decomposed
☐ 3 = Severely decomposed
☐ 4 = Dried carcass
☐ 5 = Skeleton, bones only

FINAL DISPOSITION: (check one)
☐1 = Left on beach where found; painted? ☐Yes* ☐No(5)
☐2 = Buried. ☐ on beach / ☐ off beach, carcass painted before buried? ☐ Yes* ☐ No
☒3 = Salvaged: ☐ all / ☐ part(s). what/why? KEPT ON ICE FOR FWCC NECROPSY.
☐4 = Pulled up on beach/dune; painted? ☐Yes* ☐No
☐6 = Alive, released
☐7 = Alive, taken to rehab. facility, where? _____
☐8 = Left floating, not recovered; painted? ☐Yes* ☐No
☐9 = Disposition unknown, explain _____
*If painted, what color? _____

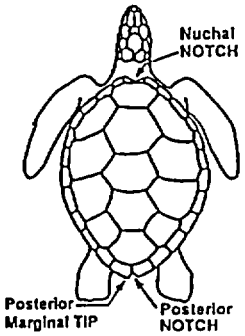
SEX: (check one)
☒ Immature, undetermined
☐ Female ☐ Male
How was sex determined?
☐ Necropsy
☐ Tail length (adult only)
Length of tail beyond carapace _____ cm / in

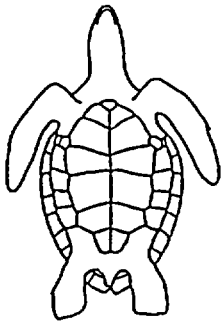
TAGS: *Contact state coordinator before disposing of any tagged animal!!*
Flipper tags present? ☒ Yes ☐ No
Check all 4 flippers. If found, record tag number(s) / tag location / return address
XXD 286 XXD 289

PIT tag scan? ☒ Yes ☐ No
If found, record number / tag location

Coded wire tag scan? ☐ Yes ☒ No
If positive response, record location (flipper)

Checked for living tag? ☒Yes ☐ No
If found, record location (scute number & side)





CARAPACE MEASUREMENTS: (see *drawing*)

Using calipers		Circle unit
Straight length (NOTCH-TIP)	28.3	cm / in
Minimum length (NOTCH-NOTCH)	28.0	cm / in
Straight width (Widest Point)	22.3	cm / in
Using non-metal measuring tape		**Circle unit**
Curved length (NOTCH-TIP)	30.5	cm / in
Minimum length (NOTCH-NOTCH)	30.1	cm / in
Curved width (Widest Point)	26.3	cm / in
		Circle unit
Weight ☒actual / ☐ est.	3.2	kg / lb

Mark wounds / abnormalities on diagrams at left and describe below (note tar or oil, gear or debris entanglement, propeller damage, epibiota, papillomas, emaciation, etc). Please note if no wounds / abnormalities are found.
TURTLE WAS FOUND AT SURFACE (NEAR CENTER) OF 5" MESH BARRIER NET.
NO SIGNS OF EXTERNAL INJURIES. SLIGHTLY UNDERWEIGHT.

SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First MICHAEL M.I. J Last BRESETTE
Affiliation QUANTUM RESOURCES
Address 6451 SOUTH OCEAN DR
JENSEN BEACH, FL 34957
Area code/Phone number 561-467-7726

STRANDING DATE:
Year 20[0][1] Month [ ][1] Day [ ][7]
Turtle number by day [ ][1]
State coordinator must be notified within 24 hrs; this was done by ☒phone (561)575-5407 ☐email ☒fax (561)743-8228 ☐FWC Turtle Pager 1-800-241-4653 ID#376-4867

SPECIES: (check one)
- ☐ CC = Loggerhead
- ☒ CM = Green
- ☐ DC = Leatherback
- ☐ EI = Hawksbill
- ☐ LK = Kemp's ridley
- ☐ UN = Unidentified

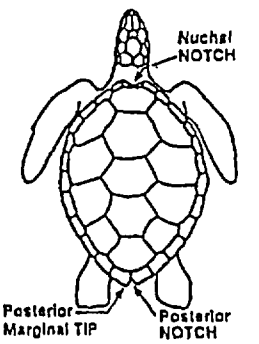
Check Unidentified if not positive. Do Not Guess.

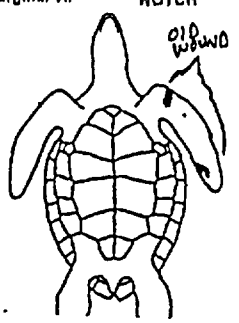
Photos taken? ☒Yes ☐No
Species verified by state coordinator? ☐Yes ☒No

SEX: (check one)
- ☒ Immature, undetermined
- ☐ Female ☐ Male

How was sex determined?
- ☐ Necropsy
- ☐ Tail length (adult only)

Length of tail beyond carapace _____ cm / in





STRANDING LOCATION: ☐Offshore (Atlantic or Gulf beach) ☐Inshore (bay, river, sound, inlet, etc)
State FLORIDA County ST. LUCIE
Descriptive location (be specific) ST. LUCIE NUCLEAR POWER PLANT INTAKE CANAL.
Latitude 26° 20.5' N Longitude 80° 15' W

CONDITION: (check one)
- ☐ 0 = Alive
- ☒ 1 = Fresh dead
- ☐ 2 = Moderately decomposed
- ☐ 3 = Severely decomposed
- ☐ 4 = Dried carcass
- ☐ 5 = Skeleton, bones only

TAGS: *Contact state coordinator before disposing of any tagged animal!*
Flipper tags present? ☐ Yes ☒ No
Check all 4 flippers. If found, record tag number(s) / tag location / return address

PIT tag scan? ☒ Yes ☐ No
If found, record number / tag location —

Coded wire tag scan? ☐ Yes ☒ No
If positive response, record location (flipper)

Checked for living tag? ☒Yes ☐ No
If found, record location (scute number & side)

FINAL DISPOSITION: (check one)
- ☐1 = Left on beach where found, painted? ☐Yes* ☐No(5)
- ☐2 = Buried ☐ on beach / ☐ off beach; carcass painted before buried? ☐ Yes* ☐ No
- ☐3 = Salvaged. ☒ all / ☐ part(s), what/why? FOR FWCC
- ☐4 = Pulled up on beach/dune; painted? ☐Yes* ☐No
- ☐6 = Alive, released
- ☐7 = Alive, taken to rehab facility, where? _____
- ☐8 = Left floating, not recovered; painted? ☐Yes* ☐No
- ☐9 = Disposition unknown, explain _____

*If painted, what color? _____

CARAPACE MEASUREMENTS: (see drawing)

Using calipers		Circle unit
Straight length (NOTCH-TIP)	28.4	cm / in
Minimum length (NOTCH-NOTCH)	28.0	cm / in
Straight width (Widest Point)	33.4	cm / in
Using non-metal measuring tape		**Circle unit**
Curved length (NOTCH-TIP)	30.3	cm / in
Minimum length (NOTCH-NOTCH)	29.8	cm / in
Curved width (Widest Point)	25.9	cm / in
		Circle unit
Weight ☒actual / ☐ est.	2.95	kg / lb

Mark wounds / abnormalities on diagrams at left and describe below (note tar or oil, gear or debris entanglement, propeller damage, epibiota, papillomas, emaciation, etc.). Please note if no wounds / abnormalities are found.

APPARENTLY DROWNED JUST BELOW SURFACE OF 5" BARRIER NET. BARRIER NETS SLOPE WAS AFFECTED BY LARGE INFLUX OF SARGASSUM SEAWEED. MORTALITY CAUSED TO PLANT OPERATION. CARCASS HELD FOR FWCC.

SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First DAVID M.I. A Last SINGEWALD
Affiliation QUANTUM RESOURCES
Address 6451 SOUTH OCEAN DR.
JENSEN BEACH, FL 34957
Area code/Phone number (561) 467-7726

STRANDING DATE:
Year 20[0][1] Month [1][1] Day [0][8]
Turtle number by day [0][1]

State coordinator must be notified within 24 hrs; this was done by ☒ phone (561)575-5407 ☐ email ☒ fax (561)743-6228 ☐ FWC Turtle Pager 1-800-241-4653 ID#274-4867

SPECIES: (check one)
- ☐ CC = Loggerhead
- ☒ CM = Green
- ☐ DC = Leatherback
- ☐ EI = Hawksbill
- ☐ LK = Kemp's ridley
- ☐ UN = Unidentified

Check Unidentified if not positive. Do Not Guess.

Photos taken? ☒ Yes ☐ No
Species verified by state coordinator? ☐ Yes ☒ No

SEX: (check one)
- ☒ Immature, undetermined
- ☐ Female ☐ Male

How was sex determined?
- ☐ Necropsy
- ☐ Tail length (adult only)

Length of tail beyond carapace _____ cm / in

STRANDING LOCATION: ☐ Offshore (Atlantic or Gulf beach) ☐ Inshore (bay, river, sound, inlet, etc)
State FLORIDA County ST. LUCIE
Descriptive location (be specific) ST. LUCIE NUCLEAR POWER PLANT + INTAKE CANAL
Latitude 26°20.5' N Longitude 80°15' W

CONDITION: (check one)
- ☐ 0 = Alive
- ☒ 1 = Fresh dead
- ☐ 2 = Moderately decomposed
- ☐ 3 = Severely decomposed
- ☐ 4 = Dried carcass
- ☐ 5 = Skeleton, bones only

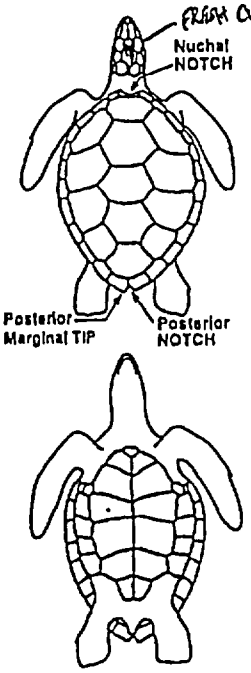
FINAL DISPOSITION: (check one)
- ☐ 1 = Left on beach where found; painted? ☐ Yes* ☐ No(S
- ☐ 2 = Buried. ☐ on beach / ☐ off beach; carcass painted before buried? ☐ Yes* ☐ No*
- ☒ 3 = Salvaged ☒ all / ☐ part(s). what/why? FOR FWCC
- ☐ 4 = Pulled up on beach/dune; painted? ☐ Yes* ☐ No
- ☐ 6 = Alive, released
- ☐ 7 = Alive, taken to rehab. facility, where? _____
- ☐ 8 = Left floating, not recovered, painted? ☐ Yes* ☐ No
- ☐ 9 = Disposition unknown, explain _____

*If painted, what color? _____

TAGS: *Contact state coordinator before disposing of any tagged animal!*
Flipper tags present? ☒ Yes ☐ No
Check all 4 flippers. If found, record tag number(s) / tag location / return address
XXS140 FRONT FLIPPERS
XXS141 DEPT. ZOOLOGY UF GAINESVILLE, FL. NOTE: RECAPTURE-POWER PLANT
PIT tag scan? ☒ Yes ☐ No
If found, record number / tag location (QUANTUM)
Coded wire tag scan? ☐ Yes ☒ No
If positive response, record location (flipper)
Checked for living tag? ☒ Yes ☐ No
If found, record location (scute number & side)

CARAPACE MEASUREMENTS: (see drawing)

Using calipers		Circle unit
Straight length (NOTCH-TIP)	28.7	(cm) / in
Minimum length (NOTCH-NOTCH)	28.6	(cm) / in
Straight width (Widest Point)	23.5	(cm) / in
Using non-metal measuring tape		**Circle unit**
Curved length (NOTCH-TIP)	31.2	(cm) / in
Minimum length (NOTCH-NOTCH)	31.0	(cm) / in
Curved width (Widest Point)	27.4	(cm) / in
		Circle unit
Weight ☒ actual / ☐ est.	3.3	(kg) / lb



Mark wounds / abnormalities on diagrams at left and describe below (note tar or oil, gear or debris entanglement, propeller damage, epibiota, papillomas, emaciation, etc.). Please note if no wounds / abnormalities are found.

APPARENTLY DROWNED BELOW SURFACE OF 5" MESH BARRIER NET. SLOPE OF BARRIER NET AFFECTED DUE TO LARGE INFLUX OF DRIFT ALGAE / SEAWEED ON NET. MORTALITY CAUSAL TO PLANT OPERATION.
CARCASS HELD FOR FWCC.

SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First DAVID M.I. A Last SINGEWALD
Affiliation QUANTUM RESOURCES
Address 6451 SOUTH OCEAN DR.
JENSEN BEACH, FL 34957
Area code/Phone number (561) 467-7726

STRANDING DATE:
Year 20[0][1] Month [1][1] Day [0][5]
Turtle number by day [0][2]

State coordinator must be notified within 24 hrs. this was done by ☒ phone (561)575-5407 ☐ email ☒ fax (561)743-6228 ☐ FWC Turtle Pager 1-800-241-4653 ID#274-4167

SPECIES: (check one)
☒ CC = Loggerhead
☐ CM = Green
☐ DC = Leatherback
☐ EI = Hawksbill
☐ LK = Kemp's ridley
☐ UN = Unidentified
Check Unidentified if not positive. Do Not Guess.

Photos taken? ☒ Yes ☐ No
Species verified by state coordinator? ☐ Yes ☒ No

SEX: (check one)
☒ Immature, undetermined
☐ Female ☐ Male
How was sex determined?
☐ Necropsy
☐ Tail length (adult only)
Length of tail beyond carapace _____ cm / in

STRANDING LOCATION: ☐ Offshore (Atlantic or Gulf beach) ☐ Inshore (bay, river, sound, inlet, etc)
State FLORIDA County ST. LUCIE
Descriptive location (be specific) ST. LUCIE NUCLEAR POWER PLANT INTAKE CANAL
Latitude 26°20.5'N Longitude 80°15'W

CONDITION: (check one)
☐ 0 = Alive
☒ 1 = Fresh dead
☐ 2 = Moderately decomposed
☐ 3 = Severely decomposed
☐ 4 = Dried carcass
☐ 5 = Skeleton, bones only

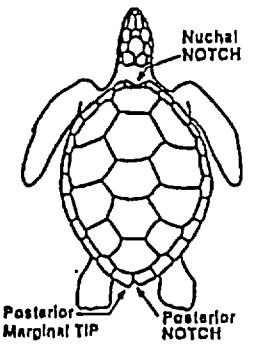
TAGS: *Contact state coordinator before disposing of any tagged animal!*
Flipper tags present? ☐ Yes ☒ No
Check all 4 flippers. If found, record tag number(s) / tag location / return address

PIT tag scan? ☒ Yes ☐ No
If found, record number / tag location

Coded wire tag scan? ☐ Yes ☒ No
If positive response, record location (flipper)

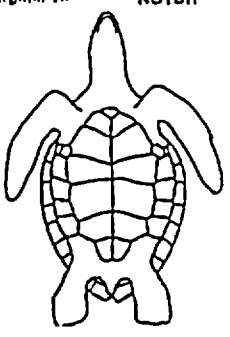
Checked for living tag? ☒ Yes ☐ No
If found, record location (scute number & side)

FINAL DISPOSITION: (check one)
☐ 1 = Left on beach where found; painted? ☐ Yes* ☐ No(5)
☐ 2 = Buried ☐ on beach / ☐ off beach;
carcass painted before buried? ☐ Yes* ☐ No
☒ 3 = Salvaged. ☒ all / ☐ part(s), what/why? FOR FWCC
☐ 4 = Pulled up on beach/dune; painted? ☐ Yes* ☐ No
☐ 6 = Alive, released
☐ 7 = Alive, taken to rehab. facility, where? _____
☐ 8 = Left floating, not recovered; painted? ☐ Yes* ☐ No
☐ 9 = Disposition unknown, explain _____
*If painted, what color? _____



CARAPACE MEASUREMENTS: (see drawing)

Using calipers		Circle unit
Straight length (NOTCH-TIP)	68.9	(cm) / in
Minimum length (NOTCH-NOTCH)	68.0	(cm) / in
Straight width (Widest Point)	54.4	(cm) / in
Using non-metal measuring tape		**Circle unit**
Curved length (NOTCH-TIP)	75.7	(cm) / in
Minimum length (NOTCH-NOTCH)	74.5	(cm) / in
Curved width (Widest Point)	70.0	(cm) / in
OB – OVER BARNACLES		Circle unit
Weight ☒ actual / ☐ est.	33.0	(kg) / lb



Mark wounds / abnormalities on diagrams at left and describe below (note tar or oil, gear or debris entanglement, propeller damage, epibiota, papillomas, emaciation, etc.). Please note if no wounds / abnormalities are found.

TURTLE WAS FOUND AT SURFACE OF 6" MESH BARRIER NET. APPARENTLY DROWNED BELOW SURFACE DUE TO SLOPE OF BARRIER NET BEING PULLED DOWN DUE TO LARGE INFLUX OF DRIFT ALGAE (SEAWEED). TURTLE WAS EMACIATED WITH A FAIRLY HEAVY LOAD OF COCOONS AND LEECHES.
MORTALITY MOST LIKELY CAUSED BY PLANT OPERATION.

SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First DAVID M.I. A Last SINGEWALD :
Affiliation QUANTUM RESOURCES
Address 6451 SOUTH OCEAN DR.
JENSEN BEACH, FL 34957
Area code/Phone number (561) 467-7726

STRANDING DATE:
Year 20 0 1 Month 1 1 Day 0 8
Turtle number by day 0 3

State coordinator must be notified within 24 hrs; this was done by ☒ phone (561)575-5407 ☐ email ☒ fax (561)743-6238 ☐ FWC Turtle Pager 1-800-241-4633 ID#274-4367

SPECIES: (check one)
- ☐ CC = Loggerhead
- ☒ CM = Green
- ☐ DC = Leatherback
- ☐ EI = Hawksbill
- ☐ LK = Kemp's ridley
- ☐ UN = Unidentified

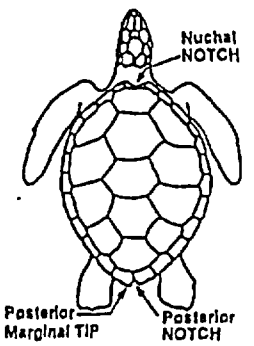
Check Unidentified if not positive. Do Not Guess.

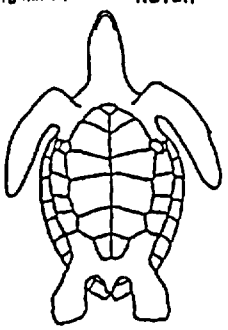
Photos taken? ☒ Yes ☐ No
Species verified by state coordinator? ☐ Yes ☒ No

SEX: (check one)
- ☒ Immature, undetermined
- ☐ Female ☐ Male

How was sex determined?
- ☐ Necropsy
- ☐ Tail length (adult only)

Length of tail beyond carapace _____ cm / in





STRANDING LOCATION: ☐ Offshore (Atlantic or Gulf beach) ☐ Inshore (bay, river, sound, inlet, etc)
State FLORIDA County ST. LUCIE
Descriptive location (be specific) ST. LUCIE NUCLEAR POWER PLANT
Latitude 26°20.5'N Longitude 80°15'W

CONDITION: (check one)
- ☐ 0 = Alive
- ☒ 1 = Fresh dead
- ☐ 2 = Moderately decomposed
- ☐ 3 = Severely decomposed
- ☐ 4 = Dried carcass
- ☐ 5 = Skeleton, bones only

FINAL DISPOSITION: (check one)
- ☐ 1 = Left on beach where found; painted? ☐ Yes* ☐ No(s)
- ☐ 2 = Buried: ☐ on beach / ☐ off beach; carcass painted before buried? ☐ Yes* ☐ No*
- ☒ 3 = Salvaged. ☒ all / ☐ part(s). what/why? FOR FWCC
- ☐ 4 = Pulled up on beach/dune, painted? ☐ Yes* ☐ No
- ☐ 6 = Alive, released
- ☐ 7 = Alive, taken to rehab. facility, where? _____
- ☐ 8 = Left floating, not recovered, painted? ☐ Yes* ☐ No
- ☐ 9 = Disposition unknown, explain _____

*If painted, what color? _____

TAGS: *Contact state coordinator before disposing of any tagged animal!!*
Flipper tags present? ☒ Yes ☐ No
Check all 4 flippers. If found, record tag number(s) / tag location / return address
XXD 794 FRONT FLIPPERS
XXD 795 DEPT. ZOOLOGY UF, GAINESVILLE, FL
NOTE: RECAPTURE - POWER PLANT (QUANTUM)
PIT tag scan? ☒ Yes ☐ No
If found, record number / tag location

Coded wire tag scan? ☐ Yes ☒ No
If positive response, record location (flipper)

Checked for living tag? ☒ Yes ☐ No
If found, record location (scute number & side)

CARAPACE MEASUREMENTS: (see drawing)

Using calipers		Circle unit
Straight length (NOTCH-TIP)	38.0	(cm) / in
Minimum length (NOTCH-NOTCH)	37.6	(cm) / in
Straight width (Widest Point)	31.2	(cm) / in
Using non-metal measuring tape		**Circle unit**
Curved length (NOTCH-TIP)	40.9	(cm) / in
Minimum length (NOTCH-NOTCH)	40.5	(cm) / in
Curved width (Widest Point)	37.0	(cm) / in
		Circle unit
Weight ☒ actual / ☐ est.	75	(kg) / lb

Mark wounds / abnormalities on diagrams at left and describe below (note tar or oil, gear or debris entanglement, propeller damage, epibiota, papillomas, emaciation, etc.). Please note if no wounds / abnormalities are found.
APPARENTLY DROWNED BELOW SURFACE OF 5" MESH BARRIER NET. FOUND BY DIVER BELOW SURFACE. SLOPE OF BARRIER NET AFFECTED DUE TO INFLUX OF DRIFT ALGAE / SEAWEED OR NET. MORTALITY CAUSAL TO PLANT OPERATION.
CARCASS HELD FOR FWCC.

St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
L-2002-190 Attachment 1 Page 9

SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

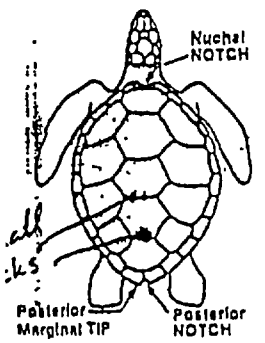
OBSERVER'S NAME / ADDRESS / PHONE:
First RICK M.I ___ Last HERREN
Affiliation QUANTUM RESOURCES INC
Address 6451 S. OCEAN DR.
JENSEN BEACH, FL 34957
Area code/Phone number (561) - 467 - 7726

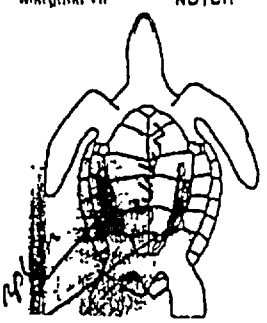
STRANDING DATE:
Year 20[0][1] Month [1][1] Day [2][3]
Turtle number by day [0][1]
State coordinator must be notified within 24 hrs: this was done by ☐phone (561)575-8407 ☐email ☒fax (561)743-8231 ☒FWC Turtle Pager 1-800-241-4552 ID#374-4557

SPECIES: (check one)
☐ CC = Loggerhead
☒ CM = Green
☐ DC = Leatherback
☐ EI = Hawksbill
☐ LK = Kemp's ridley
☐ UN = Unidentified
Check Unidentified if not positive. Do Not Guess.

Photos taken? ☒Yes ☐No
Species verified by state coordinator? ☐Yes ☒No

SEX: (check one)
☒ Immature, undetermined
☐ Female ☐ Male
How was sex determined?
☐ Necropsy
☐ Tail length (adult only)
Length of tail beyond carapace ___ cm / in





STRANDING LOCATION: ☒Offshore (Atlantic or Gulf beach) ☐Inshore (bay, river, sound, inlet, etc.)
State FL County ST. LUCIE
Descriptive location (be specific) HUTCHINSON ISL.; FPL ST. LUCIE POWER PLANT INTAKE CANAL; UNIT 1 WELL
Latitude 27° 20.8' N Longitude 80° 14.8' W

CONDITION: (check one)
☐ 0 = Alive DIED 2 1/2 hrs
☒ 1 = Fresh dead AFTER CAPTURE
☐ 2 = Moderately decomposed
☐ 3 = Severely decomposed
☐ 4 = Dried carcass
☐ 5 = Skeleton, bones only

TAGS: *Contact state coordinator before disposing of any tagged animal!!*
Flipper tags present? ☐ Yes ☒ No
Check all X flippers. If found, record tag number(s) / tag location / return address

PIT tag scan? ☒ Yes ☐ No
If found, record number / tag location

Coded wire tag scan? ☐ Yes ☒ No
If positive response, record location (flipper)

Checked for tag? ☒ Yes ☐ No
If found, record location (scute number & side)

FINAL DISPOSITION: (check one)
☐ 1 = Left on beach where found; painted? ☐Yes* ☐No(5
☐ 2 = Buried: ☐ on beach / ☐ off beach; carcass painted before buried? ☐ Yes* ☐ No
☒ 3 = Salvaged: ☒ all / ☐ part(s), what/why? KEPT IN FREEZER FOR LATER NECROPSY.
☐ 4 = Pulled up on beach/dune; painted? ☐Yes* ☐No
☐ 6 = Alive, released
☐ 7 = Alive, taken to rehab facility, where? ___
☐ 8 = Left floating, not recovered, painted? ☐Yes* ☐No
☐ 9 = Disposition unknown, explain ___
*If painted, what color? ___

CARAPACE MEASUREMENTS: (see drawing)

Using calipers		Circle unit
Straight length (NOTCH-TIP)	29.6	cm / in
Minimum length (NOTCH-NOTCH)	29.3	cm / in
Straight width (Widest Point)	22.8	cm / in
Using non-metal measuring tape		Circle unit
Curved length (NOTCH-TIP)	31.4	cm / in
Minimum length (NOTCH-NOTCH)	31.1	cm / in
Curved width (Widest Point)	26.8	cm / in
Weight ☐ actual / ☒ est.	5	kg / lb

Mark wounds / abnormalities on diagrams at left and describe below (note tar or oil, gear or fishing tackle entanglement, propeller damage, epibiota, papillomas, emaciation, etc.). Please note if no wounds / abnormalities are found.

NO EXTERNAL INJURIES; SEVERELY UNDERWEIGHT; EMACIATED, SUNKEN PLASTRON; WEAK, HARDLY MOVING. CLEARLY HAS BEEN IN THE CANAL FOR SOME-TIME (MONTHS?) TO BE IN THIS CONDITION AND MAY BE CAUSAL TO PLANT OPERATION

DEAD

5-INCH BARRIER NET IMPROVEMENTS

Introduction

The St Lucie Power Plant records approximately 600 sea turtles within the intake canal each year. These turtles find their way into the intake canal from the Florida coastal waters near the plant. A 5-inch barrier net exists within the canal with the intended purpose to prevent the turtles from passing through the canal and into the intake wells, without causing the turtles harm. Unfortunately, since the existing net has been contributing to the death of a number of sea turtles each year, and because of certain other design deficiencies, improvements in the net design are required.

The existing net is maintenance intensive, is subject to overstress from debris loading, and has stretched and fatigued. The pedestal foundation and cable suspension system designs lack the ability to safely and efficiently transfer lateral hydrodynamic-induced loads from the net to the foundation. The intake canal is heavily silted between the headwall structures and the A1A road bridge and this has aggravated the design problems. Therefore, the net will be replaced and its support design will be modified.

FPL has contracted design engineering services with URS Corporation to design a replacement turtle barrier net with a modified net support structure. In order to effectively retrofit the existing net system with the new URS design, dredging of silt and sand in the canal from the headwall structures to the A1A Bridge will be performed. Any necessary canal slope restoration will also be performed. FPL has contracted with Dredge America Inc. to perform maintenance dredging of the intake canal. In addition, a separate contract will be issued for construction and installation services for the net replacement.

Design Basis And Analysis

1. Barrier Net Replacement

The first and most significant issues attributed to the present net design are the increased turtle lethal takes and material fatigue since the net was deployed. The existing UV-coated nylon mesh net is only capable of being tightened in the vertical direction by tensioning the catenary of the ¾-inch stainless steel net cable across the canal. At the least, the existing net cable only tensions the vertical ¼-inch stainless steel stringer cables set at 10-foot intervals along the net cable. This has a limited effect on the square mesh net fixed to the stringer cables, as there is no capability for providing tension in the net's horizontal direction. This condition results in significant billow, stretching, and deformation of the net, which exacerbates turtle entrapment and subsequent drowning. Secondly, the lightly coated surface of the existing nylon net is rough and tends to catch and retain seaweed and flotsam.

The 5-inch barrier net design improvements include using a net with a heavier rope configured in a diamond pattern. The diamond pattern allows the net to be simultaneously tensioned vertically and horizontally without warping. The existing ¾-inch stainless steel net cable will remain part of the replacement design for lowering, raising, and tightening the diamond pattern net. The net will hang at the requisite 45° angle, and be affixed to the bottom of the canal utilizing a new precast concrete sill, new helical anchors, and the existing anchor blocks. The replacement net will be dip coated with a UV stable thick urethane providing a more slippery surface, far less prone to retaining organic debris. The net opening will remain at 5 inches, per the plant operating license, Appendix B, Environmental Protection Plan (EPP).

No EPP limitations are involved for the net replacement which is considered a maintenance and repair activity. However, temporary turtle protection measures east of the existing net may be provided in accordance with requirements of all permits associated with the project during construction/installation of the improved net. In addition, performance of this modification will adhere to all plant security procedures related to activity in the intake canal.

2. Cable System Retrofit

Two factors have contributed to the overstress condition that has compromised the integrity of the net and the suspension cable system; debris loading and canal sedimentation.

a) Debris Loading

Episodes of heavy debris loading on the 5-inch barrier net from flotsam, seaweed, and jellyfish that become trapped and entangled in the net, impart load on the catenary cable, which is transferred to the concrete support pedestals. The induced moment applied by these overstress conditions appears to have resulted in rotational movement of the concrete support pedestals. Plumb measurements indicate that the pedestals are presently skewed. To prevent support failure, net maintenance technicians have had to lower the net during periods of heavy loading. In the lowered position, turtles can easily pass over the net, which defeats the purpose of this barrier. Furthermore, lowering the net endangers turtles because the net flagellates and billows and can trap turtles. In order to raise the net after a major debris event, divers must be used to clean the net.

b) Canal Sedimentation

The heavy siltation of the canal bed has superficially raised the bottom of the canal and consequently reduced the operational depth of the canal. Within the reach of the barrier net project, the depth of the sediment, which is mostly sand, averages 15 feet, and the volume of sand in this 350-foot reach is approximately 16,000 cubic yards. This change in canal cross-sectional area results in an almost doubling of the flow velocities and quadrupling of the drag forces for the original design flow of 2300 cubic feet per second.

The lower portion of the existing net is buried by the sedimentation, which compounds the loading problem. The increased drag loads due to higher than anticipated flow velocities, combined with the accumulation of sediment, has resulted in compromised structural integrity.

A modification and retrofit to the existing net suspension cable system has been designed to remedy its compromised condition. This modification includes a renovation of the present concrete support pedestals, and the addition of several new structural elements to the system. Re-use of the existing pedestals requires a retrofit with new screw anchors to supplement its overturning resistance.

The addition of new structural elements to the existing cable system includes two new concrete pier founded, pin-connected, guyed, cable-support towers. The purpose of the guyed towers is to reduce the lateral loading that the net transfers to the cable, and the cable transfers to the concrete pedestals. Lateral loads would be transferred to new, screw anchored foundation blocks on the bank of the canal via adjustable cable guy wires. The towers also transform the vertical geometry of the net cable from a single, shallow long-span catenary to that of an inverted trapezoid. The span reductions would be greater than ½ the current span conditions, thus affording much stiffer support for the net. Additional guy cables support the net cable in the region of the sloped sides of the canal.

3. Sediment Removal and Active Sand Trap Sill

Prior to retrofitting the existing net system with the new design, sand and sediment will be dredged from the intake canal between the headwall structures and just east of the A1A Bridge. The service of divers will be employed to preclude turtle injury during dredging between the existing net and the headwall structures of the canal.

To reduce the drag loads due to high flow velocities on the net and to reduce the frequency of required maintenance dredging of the canal, an active sand trap sill (ASTS) will be an added. After the canal is dredged clean, as described above, the ASTS is designed to trap the movement of sand before it passes the barrier net and fills the canal within reach of the net. There are essentially two components to the ASTS; a precast concrete double stem wall sill and a discharge manifold.

The precast concrete module doubles as a base anchor for the net. With the use of the discharge manifold attached to a centrifugal pump, sand that becomes trapped in the ASTS is vacuumed out of the galley. The jet pump manifold has no moving parts. It operates on the venturi principal as water flows through the pipe at constant velocity, small holes in the pipe suck sand and water slurry. The slurry is discharged into the canal downstream of the net system west of the A1A Bridge so that the operational depth of the canal within the reach of the barrier net is not reduced.

The centrifugal pump that vacuums the sand trap sill and discharges the slurry downstream is specified to use a 10hp motor, and to have a stainless steel housing.

To confirm that the slurry discharge is not causing undue turbidity at the intake cooling water (ICW) pump suction locations at the intake structures, monitoring turbidity at the intake bays will be conducted both before and after operation of the ASTS discharge. Because of this monitoring, the discharge location will be adjusted, as necessary, to avoid any increase in canal turbidity. No increase in turbidity will be outside that considered for plant design basis as described in St Lucie UFSAR Unit 1, Section 9.2.1.3.4 and Unit 2, Section 9.2.1.3.3. The ASTS discharge will be operated periodically when sediment buildup at the net is present. No significant suspended material increase above that presently experienced at the intake during normal plant operation is expected because periodic maintenance dredging at the net using portable pumping equipment has not caused increases.

Conclusion

The new net design utilizes much of the existing installed net equipment. While the existing net is out of service during construction, temporary sea turtle protective measures east of the existing net will be implemented.

A heavy sand build-up in the canal is considered one of the significant contributing factors affecting the present net design and therefore, thorough cleaning of the existing sediments is considered a necessary part of the improved barrier net solution. The improved net design includes a sediment removal system that is intended to prevent the type of accumulation that has affected the present system.

The improved net system is designed to:

- Significantly reduce or eliminate turtle mortality due to interaction between turtles and the 5-inch barrier net.
- Resist all hydrodynamic and biological loading without deformation.
- Minimize maintenance and reduce maintenance costs associated with cleaning the barrier mesh.
- Increase safety of operation during episodic debris loading on the 5-inch barrier net.
- Remove sedimentary sand from within reach of the 5-inch barrier net in the canal bed.