

**Attachment 1
to**

**NRC Staff's Answer to
Entergy's Motion to Dismiss Contention RK-EC-8
(Endangered and Threatened Species) as Moot (Aug. 6, 2013)**

NUREG-1437, Supplement 38, Vol. 4 (June 2013)

(Excerpted)

PART 3 of 3

4.0 SECTION 7 CONSULTATION

At the time the NRC staff published the FSEIS, the NRC and NMFS had not completed Section 7 consultation under the Endangered Species Act of 1973, as amended (ESA) for the shortnose sturgeon (*Acipenser brevirostrum*). During the course of the Section 7 consultation, the NRC staff obtained more studies and information on the thermal plume (previously discussed in Chapter 3 of this document). As a result, the NRC staff has revised its conclusions regarding thermal impacts to the shortnose sturgeon based on this new thermal modeling information. Section 2.2.5.5 of the FSEIS, which includes the shortnose sturgeon's life history, remains unchanged. The staff identified one correction to Section 4.6.1 of the FSEIS, shown below.

In addition to supplementing the FSEIS for the reasons stated in Chapter 1 of this supplement, the staff is also taking this opportunity to provide an update on the status of its consultation with NMFS related to Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3). This chapter provides an update on the Section 7 consultation history provided in Section 4.6.1 of the FSEIS, as well as a summary of the biological opinion that NMFS issued in October 2011 as a result of consultation. This chapter also provides a summary of the reinitiation of consultation regarding the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Consultation with NMFS regarding the Atlantic sturgeon was reinitiated as a result of NMFS's February 2012 listing of Atlantic sturgeon as an endangered species under the ESA and concluded in January 2013 with NMFS's issuance of a final biological opinion for both the shortnose and Atlantic sturgeon, which included an Incidental Take Statement (ITS).

4.1 Corrections to Section 4.6.1, "Aquatic Special Status Species"

In the FSEIS, the NRC staff concluded that the potential impacts of heated discharge from IP2 and IP3 on shortnose sturgeon could not be determined because the staff did not have enough information to quantify the extent and magnitude of the IP2 and IP3 thermal plume. Since publication of the FSEIS, the NRC staff has obtained additional information on the IP2 and IP3 thermal plume. Chapter 3 of this document describes the new thermal plume information. Based on Swanson et al.'s (2011a) triaxial thermal plume study, Mendelsohn et al.'s (2011) and Swanson et al.'s (2011b) responses to NYSDEC staff comments on the study, and NYSDEC staff's (2011) conclusions regarding the study, the NRC staff has revised its discussion regarding thermal impacts to shortnose sturgeon, which appears in Section 4.6.1 of the FSEIS.

Lines 40–43 on page 4-58 in Section 4.6.1 of the FSEIS are changed as follows:

~~The potential impacts of thermal discharges on shortnose and Atlantic sturgeon cannot be determined at this time because additional studies are required to quantify the extent and magnitude of the thermal plume, as discussed in Section 4.1.4 of this SEIS.~~

In July 2011, the NRC (2011c) supplemented its analysis of the thermal effects from IP2 and IP3 on the shortnose sturgeon that was presented in NRC's (2010) December 2010 revised biological assessment. The NRC staff's (2011c) supplement to the revised biological assessment considered newly available thermal plume information (Swanson et al. 2011a, 2011b; Mendelsohn et al. 2011; NYSDEC 2011) as well as various studies on shortnose sturgeon biology and thermal preferences (Dadswell 1979; Dadswell et al. 1984; Heidt and Gilbert 1978; Ziegeweid et al. 2008a, 2008b). In its July 2011 supplement, the NRC (2011c)

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concluded that the proposed license renewal of IP2 and IP3 is not likely to adversely affect the Hudson River population of shortnose sturgeon.

~~NMFS issued its biological opinion in October 2011 (NMFS 2011e). In its biological opinion, NMFS concluded that shortnose sturgeon are likely to avoid the small area of water elevated above the species' preferred temperature range and that—~~

~~it is extremely unlikely that these minor changes in behavior will preclude shortnose sturgeon from completing any essential behaviors such as resting, foraging or migrating or that the fitness of any individuals will be affected.~~

~~Based on the NRC's (2011c) previous analysis and NMFS's (2011e) biological opinion, the NRC staff concludes that the heated discharge resulting from the proposed IP2 and IP3 license renewal would have SMALL impacts on the shortnose sturgeon.~~

Lines 13–20 on page 4-59 and Lines 1–16 on page 4-60 in Section 4.6.1 of the FSEIS are modified as follows:

The NRC staff reviewed information from the site audit, Entergy's ER for the IP2 and IP3 site, other reports, and information from NMFS. Based on the WOE information presented in Table 4-4, The NRC staff concludes that the impacts associated with the IP2 and IP3 cooling system are Small for both Atlantic and shortnose sturgeon. The population trend LOE evaluation was unresolved because the Hudson River monitoring programs were not designed to catch either species. The NRC staff was also unable to determine the strength of connection for either species using the Monte Carlo simulation modeling. Because historical impingements of sturgeon have been relatively low, especially for shortnose sturgeon, the NRC staff concluded

that the strength of connection was low. Based on the WOE analysis described above, a determination of Moderate or Large impact is not supported, and the NRC staff concludes that the impacts of an additional 20 years (beyond the current term) of operation and maintenance of the site on aquatic species that are Federally listed as threatened or endangered is SMALL. The NRC staff is sending a revised biological assessment (BA) of the impacts of license renewal on the shortnose sturgeon to NMFS to review as this SEIS goes to press (the BA will be publicly available at ML10299042). Should NMFS determine that continued operation of IP2 and IP3 has the potential to adversely impact the shortnose sturgeon, NMFS will issue a biological opinion. Included in the biological opinion would be any reasonable and prudent measures that the applicant could undertake, as well as the terms and conditions for the applicant to comply with the formal Section 7 consultation. Possible mitigation measures could range from a resumption of monitoring to determine the number of shortnose sturgeon impinged at IP2 and IP3 to changes in the cooling water intake system, as described in Section 4.1.5 of this FEIS. Additionally, as described in Chapter 8, the installation of cooling towers could reduce impingement, entrainment, and thermal impacts for all aquatic resources, including those that are Federally listed.

In addition to the WOE information provided in Table 4-4, the staff examined the new information from the ESA Section 7 consultations with NMFS to determine the level of impact for the purposes of NEPA. Because NMFS (2013) finds that license renewal would not change the status or trend of the Hudson River

population of shortnose sturgeon or the species as a whole, the NRC staff finds that the level of impact would be SMALL for this species. For Atlantic sturgeon, NMFS finds that license renewal would not change the status or trend of the Hudson River population of Atlantic sturgeon or the status and trend of the NYB DPS as a whole. NMFS (2013) calculates that the highest observed annual impingement of Atlantic sturgeon at the traveling screens would represent about 0.5 percent of the Hudson River origin juveniles. This potential reduction would not be observable or noticeable through any population study. Therefore, the staff finds that the level of impact would be SMALL for Atlantic sturgeon. Furthermore, development and implementation of an appropriate monitoring plan for these species at IP2 and IP3 would help ensure protection of these species. Based on the NRC's (2011C) previous analysis, as corrected herein, and NMFS's (2013) biological opinion, the staff finds that the level of impact for aquatic special status species would be SMALL.

4.2 History of Section 7 Consultation for Shortnose Sturgeon

Under Section 7 of the ESA, the NRC staff (2008b) initiated consultation with NMFS in a letter dated December 22, 2008, upon publication of the draft supplemental environmental impact statement (SEIS) and the staff's (NRC 2008a) original biological assessment, which found that the relicensing of IP2 and IP3 could adversely affect the shortnose sturgeon, which had been listed as endangered under the ESA in 1967. In response to that biological assessment, on February 24, 2009, NMFS (2009) requested additional information from the NRC. NMFS stated that it required this information before it could begin formal consultation. On July 1, 2009, the NRC staff obtained the relevant information from Entergy (2009). On August 10, 2009, the NRC (2009) provided that information (including revised impingement data) to NMFS and stated that the data would be addressed in the FSEIS and in a revised biological assessment. The NRC staff published its FSEIS in December 2010 and transmitted its revised biological assessment to NMFS on December 10, 2010 (NRC 2010b).

On February 16, 2011, NMFS (2011) formally responded to the NRC staff's letter of December 10, 2010, and stated that (1) NMFS currently has all the information it needs to complete a formal consultation, (2) NMFS considers formal consultation to have begun on December 16, 2010, (3) NMFS expects the consultation will conclude within 90 days after it began (i.e., by March 16, 2011) unless extended, and (4) NMFS expects to issue its biological opinion by April 30, 2011. On March 1, 2011, Entergy (2011a) formally notified the NRC staff that it will participate in the consultation process and requested a 45-day extension of the consultation conclusion date in accordance with 50 CFR 402.14(e).

In teleconferences on March 9 and March 11, 2011, NMFS and the NRC staff discussed extending the consultation to allow time for Entergy to submit additional information on the shortnose sturgeon pertinent to the consultation (NRC 2011h). NMFS formally extended the consultation period in a March 16, 2011, letter (NMFS 2011a) for a period of 60 days until June 29, 2011, in accordance with 50 CFR 402.14(e). On April 18, 2011, the NRC staff (2011a) held a Category 1 public meeting during which Entergy presented a data synthesis on the shortnose sturgeon updated with the most recent annual Hudson River monitoring reports. On April 28, 2011, Entergy (2011c) formally submitted to the NRC the information it had presented during this public meeting.

On June 16, 2011, the NRC staff learned that Entergy had submitted a final, verified triaxial thermal model to NYSDEC concerning aquatic conditions at IP2 and IP3. The staff also learned that NYSDEC had relied on that model and Entergy's associated information to reach

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conclusions about thermal conditions at Indian Point for inclusion in a draft SPDES permit (NYSDEC 2011). The NRC staff (2011b) brought this information to NMFS's attention in an e-mail to NMFS on June 16, 2011.

The NRC staff held three teleconferences with NMFS and Entergy during the weeks of June 20 and June 27, 2011 (NRC 2011d). On June 20, 2011, the NRC staff and NMFS discussed the NRC's statutory authority to implement terms and conditions or reasonable and prudent measures identified in a biological opinion. On June 22, 2011, the NRC staff, NMFS, and Entergy discussed NMFS's outstanding questions on thermal impacts, impingement, and entrainment of prey species and the design of the IP2 and IP3 cooling system. The NRC staff also requested that Entergy formally submit to the NRC the thermal modeling information that Entergy had given to NYSDEC. By letter dated June 29, 2011, Entergy (2011d) formally submitted to the NRC various documents related to the thermal studies it had conducted. During a teleconference on June 29, 2011, the NRC staff, NMFS, and Entergy addressed questions that had arisen during the teleconference on June 22, 2011, and the parties agreed to a revised consultation schedule in which the consultation would end by September 20, 2011, provided that Entergy and the NRC staff would supply NMFS with the information related to NMFS's outstanding questions in a timely manner. The NRC staff (2011c) supplemented its revised biological assessment on July 26, 2011, as a result of the information that Entergy submitted to the staff on June 29, 2011.

NMFS (2011b) issued a draft biological opinion on August 26, 2011. In an e-mail dated September 6, 2011, the NRC staff provided NMFS with Entergy's comments on the draft biological opinion (NRC 2011f). In a separate e-mail on the same day, the staff submitted its comments on the draft biological opinion (NRC 2011e). The NRC staff stated that its comments on the draft biological opinion were complete and that it would respond to the procedural issues raised in NMFS's cover letter to the draft biological opinion in a separate letter. On September 19, 2011, NMFS (2011c) requested more time to complete the final biological opinion. On September 20, 2011, the NRC staff (2011g) sent its letter addressing the issues NMFS had raised in the cover letter to its draft biological opinion.

NMFS (2011d, 2011e) issued its final biological opinion for shortnose sturgeon on October 14, 2011 (referred to as the 2011 biological opinion), which concluded the Section 7 consultation for the IP2 and IP3 license renewal. The NMFS 2011 biological opinion is discussed below.

4.3 Summary of the National Marine Fisheries Service's Biological Opinion for Shortnose Sturgeon

NMFS's 2011 biological opinion (2011d, 2011e) included an ~~incidental take statement~~ ITS for shortnose sturgeon and stipulated a number of reasonable and prudent measures, as well as terms and conditions with which the NRC and Entergy must comply to be exempt from prohibitions of Section 9 of the ESA.

Under the 2011 biological opinion, IP2 and IP3 may take up to the following numbers of shortnose sturgeon during the terms of their renewed operating licenses, which NMFS assumed would not begin before the completion of the initial operating licenses for IP2 and IP3:

- 6 shortnose sturgeon at Unit 1
- 104 shortnose sturgeon at Unit 2
- 58 shortnose sturgeon at Unit 3

NMFS included Unit 1, even though it is not in operation, because Unit 2 uses water from the Unit 1 intake as service water.

The 2011 biological opinion stipulated four reasonable and prudent measures that require Entergy to (1) implement an NMFS-approved monitoring program, (2) release all live sturgeon back to the Hudson River, (3) transfer any dead sturgeon to NMFS for necropsy, and (4) report all shortnose sturgeon impingements or sightings to NMFS. The terms and conditions provided the NRC and Entergy with more specific details on how the reasonable and prudent measures must be carried out. The terms and conditions can be found on pages 64–67 of the biological opinion. If the NRC renews the IP2 and/or IP3 licenses, compliance with the terms and conditions of the biological opinion (as later revised) will be required, as appropriate¹.

4.4 Reinitiation of Consultation Due to NMFS's Listing of Atlantic Sturgeon

On February 6, 2012, NMFS listed five distinct population segments (DPSs) of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) under the ESA (77 FR 5880; 77 FR 5914). In the Hudson River near Indian Point, Atlantic sturgeon primarily belong to the New York Bight DPS, which NMFS listed as endangered. The NRC staff had previously addressed the environmental impacts of license renewal on the Atlantic sturgeon in the final SEIS and had requested that NMFS conduct a Section 7 conference with the staff regarding the Atlantic sturgeon, which was proposed for listing at that time. On May 16, 2012, in response to the listing, the NRC staff (2012) prepared and submitted a biological assessment to NMFS, along with a request to reinitiate Section 7 consultation for the newly-listed Atlantic sturgeon. ~~The NRC staff expects to continue consultation with NMFS in 2012 regarding Atlantic sturgeon at IP2 and IP3, and will consider the results of that consultation, as appropriate.~~

The NRC provided much of the information needed for this reinitiated consultation in its FSEIS (NRC 2010a) and the revised biological assessment for shortnose sturgeon (NRC 2010b) and its supplement (NRC 2011). Entergy (2011e) and its consultants (Barnthouse et al. 2011) provided additional information to NMFS on shortnose and Atlantic sturgeon in the Hudson River, the characteristics of IP2 and IP3, and the facility's effects on the two sturgeon species. Entergy (2012) also provided lists and reviews of reports providing information on the effects of IP2 and IP3 on Atlantic sturgeon.

In its May 16, 2012, biological assessment, the NRC (2012a) concluded that

...operation of IP2 and IP3 may affect, but is not likely to adversely affect, the Atlantic sturgeon during the remainder of the current operating license period and the 20-year license renewal term (through September 28, 2033 and December 12, 2035, respectively), if license renewal is approved.

NMFS considers reinitiation of consultation to have begun on May 17, 2012, the day after it received the NRC staff's biological assessment. On July 3, 2012, in a telephone call between NMFS and the NRC staff, the NRC staff clarified that its was requesting reinitiated consultation to consider the effects to shortnose sturgeon and the five DPS of Atlantic sturgeon due to operation of IP2 and IP3 during both the remainder of the present license terms and the possible renewed license terms. On July 23, 2012, Entergy supplied additional information on Atlantic and shortnose sturgeon impingement at IP2 and IP3 (AKRF et al. 2012). The NRC staff and NMFS, by mutual agreement, then

¹ The 2011 biological opinion stated: "This [incidental take statement] ITS applies to the extended operating period, beginning at the date that the facility begins to operate under the terms of a new license and extending through the expiration date of that license." (NMFS 2011e)

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extended the consultation to allow time to review and incorporate the new information in accordance with 50 CFR 402.14(e). NMFS transmitted the draft biological opinion to the NRC for review on October 26, 2012, and the NRC staff then transmitted it to Entergy. On November 9, 2012, the NRC (2012b) transmitted to NMFS both Entergy's and the NRC staff's comments on the draft biological opinion. The NRC staff requested, via a conference call, that the consultation period be extended for 7 days on November 26, 2012. On December 5, 2012, NMFS requested that the consultation be extended to January 9, 2013, to allow time for the NRC and NMFS to discuss language in the ITS. During a conference call on January 8, 2013, the NRC and Entergy provided additional comments related to the ITS, and Entergy submitted additional comments on wording to NMFS on January 9, 2013. On January 9, 2013, the NRC staff and Entergy requested an extension of consultation until January 30, 2013, to afford time for NMFS to consider the comments. NMFS submitted the final biological opinion to the NRC on January 30, 2013 (NMFS 2013), which concluded the formal consultation in accordance with 50 CFR 402.14(l).

After reviewing the proposed action, the status of the species, the environmental baseline, the effects of the action, and the cumulative effects including climate change, the biological opinion (NMFS 2013) concludes that

[T]he continued operation of Indian Point Unit 2 is likely to adversely affect but is not likely to jeopardize the continued existence of shortnose sturgeon or the New York Bight, Gulf of Maine or Chesapeake Bay DPS [distinct population segments] of Atlantic sturgeon. It is also NMFS' biological opinion that the continued operation of Indian Point Unit 3 is likely to adversely affect but is not likely to jeopardize the continued existence of shortnose sturgeon or the New York Bight, Gulf of Maine or Chesapeake Bay DPS of Atlantic sturgeon. No critical habitat is designated in the action area; therefore, none will be affected by the proposed actions.

The biological opinion (NMFS 2013, page 126) finds that the "Hudson River population of shortnose sturgeon has experienced an increasing trend and is stable at high levels" and that renewal of the operating licenses would "not change the status or trend of the Hudson River population of shortnose sturgeon or the species as a whole" (NMFS 2013, page 119). It also finds that license renewal would "not change the status or trend of the Hudson River population of Atlantic sturgeon or the status and trend of the NYB DPS [New York Bight Distinct Population Segment] as a whole" (NMFS 2013, page 125).

The 2013 biological opinion includes an ITS that applies to both shortnose and Atlantic sturgeon impinged at IP2 and IP3 for both the remainder of the present license terms and the possible renewed license terms (NMFS 2013, page 127). The ITS (NMPF 2013 pp 130) exempts the following take (injure, kill, capture or collect) as described below:

- A total of two dead or alive shortnose sturgeon (injure, kill, capture or collect) and 2 dead or alive New York Bight DPS Atlantic sturgeon (injure, kill, capture or collect) impinged at the Unit 1 intake screens from now until the IP2 proposed renewed operating license would expire on September 28, 2033.
- A total of 395 dead or alive shortnose sturgeon (injure, kill, capture or collect) and 269 New York Bight DPS Atlantic sturgeon (injure, kill, capture or collect) impinged at Unit 2 intakes (Ristroph screens) from now until the IP2 proposed renewed operating license would expire on September 28, 2033.

- A total of 167 dead or alive shortnose sturgeon (injure, kill, capture or collect) and 145 dead or alive New York Bight DPS Atlantic sturgeon (injure, kill, capture or collect) impinged at the Unit 3 intakes (Ristroph screens) from now until the IP3 proposed renewed operating license would expire on December 12, 2035.
- All shortnose sturgeon with body widths greater than 3" impinged at the IP1, IP2 and IP3 trash racks (capture or collect).
- All Atlantic sturgeon with body widths greater than 3" impinged at the IP1, IP2 and IP3 trash racks (capture or collect). These Atlantic sturgeon will originate from the New York Bight (92), Gulf of Maine (6% percent) and Chesapeake Bay DPSs (2% percent).

NMFS (2013, pages 130-131) would consider the ITS to be exceeded if any one of 16 conditions occurs, each of which specifies the species and population of impinged fish, the number impinged, the generating unit involved, the location of impingement (intake screens or trash racks), and a time period. The ITS states (NMFS 2013, pages 132-133) that Entergy must comply with the following reasonable and prudent measures that NMFS finds necessary or appropriate to minimize and monitor impacts of incidental take of endangered shortnose and Atlantic sturgeon:

- (1) A program to monitor the incidental take of shortnose and Atlantic sturgeon at the IP1, IP2 and IP3 intakes must be developed, approved by NMFS, and implemented as described in the Terms and Conditions [of the Biological Opinion]. This program must be implemented throughout the remaining duration of the existing IP2 and IP3 operating licenses as well as during the time IP2 and/or IP3 operate pursuant to the proposed renewed operating license(s).
- (2) All live, incidentally taken shortnose and Atlantic sturgeon must be released back into the Hudson River at an appropriate location away from the intakes and thermal plume that does not pose additional risk of take, including death, injury, harassment, collection/capture.
- (3) Any dead, incidentally taken shortnose or Atlantic sturgeon must be transferred to NMFS or an appropriately permitted research facility NMFS will identify so that a necropsy can be undertaken to attempt to determine the cause of death.
- (4) A genetic sample must be taken of all incidentally taken Atlantic and shortnose sturgeon.
- (5) All incidental takes of shortnose and Atlantic sturgeon associated with the Indian Point facilities and any shortnose or Atlantic sturgeon sightings in the action area must be reported to NMFS.

The ITS also contains eight specific, non-discretionary "terms and conditions" that implement the reasonable and prudent measures and outline required reporting and monitoring requirements. Entergy must comply with, and the NRC must ensure through enforceable terms of the existing and renewed licenses of IP2 and IP3 that Entergy does comply with, the terms and conditions of the ITS (NMFS 2013, pages 133-138). NMFS further identifies (NMFS 2013, pages 138-140) seven discretionary conservation recommendations that it recommends the NRC consider, and identifies the conditions for reinitiation of consultations.

4.5 Conclusion for Aquatic Special Status Species

In addition to the WOE information provided in Table 4-4, the staff examined the new information from the ESA Section 7 consultations with NMFS to determine the level of impact resulting from license renewal of IP2 and IP3 for the purposes of NEPA. Because NMFS (2013) finds that license renewal would not change the status or trend of the Hudson River population of shortnose sturgeon or the species as a whole, the NRC finds that the level of impact would be **SMALL** for this species. For Atlantic sturgeon, NMFS finds that license renewal would not change the status or trend of the Hudson River population of Atlantic sturgeon or the status and trend of the NYB DPS as a whole. NMFS (2013) calculates that the highest observed annual impingement of Atlantic sturgeon at the traveling screens would represent about 0.5 percent of the Hudson River origin juveniles. This potential reduction would not be observable or noticeable through any population study. Therefore, the staff finds that the level of impact would be **SMALL** for Atlantic sturgeon. Furthermore, development and implementation of an appropriate monitoring plan for these species at IP2 and IP3 would help ensure protection of these species. In addition, license renewal for IP2 and IP3 would be subject to the terms and conditions of the ITS as stated by NMFS. After assessing this new information, the staff finds that the level of impact for aquatic special status species would be **SMALL**.

5.0 REFERENCES

References that appear with an Agencywide Documents Access and Management System (ADAMS) accession number can be accessed through the U.S. Nuclear Regulatory Commission's (NRC's) Web-based ADAMS at the following URL: <http://adams.nrc.gov/wba/>.

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50 CFR 402. *Code of Federal Regulations*, Title 50, *Wildlife and Fisheries*, Part 402, "Interagency cooperation—Endangered Species Act of 1973, as amended."

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