Technical Review of draft report-DCA18FM003: *Kristin Alexis/Mr Ervin* Bridge Strike:
Parties: USCG, LADOTD, NOAA, Marquette, Cooper Consolidated
Party Comments rec'd all by deadline of April 14, 2020

NTSB Draft Factual Report for Tech. Review

Page/Line	USCG COMMENTS	NTSB – Disposition of Party Comments
1/3	This time listed is different that the time mentioned above in the Incident Title	Corrected
2/18	I don't think you can say with certainty, such a definitive and absolute measurement like this when the previous sentence said the draft was "about 7 feet."	Changed to 'about 136 feet' for consistency throughout the report.
3/2	Wording here is slightly misleading - it makes it sound as if he has been working for 11 months straight. I'd recommend "assigned to the vessel for 11 months in which he worked shifts comprising of 2 weeks on and 1 wee off."	Concur. This was changed and moved to Personnel section to clarify.
9/25-26	When read, this sentence about calculating the vertical clearance sounds a little clumbsy as written. "add the vertical clearance to get the vertical clearance" X plus Y doesn't equal Y if you see what I mean.	Concur. This section has been rewritten in a section entitled, "Calculating Overhead Clearance". The sentence reads as follows: "Overhead clearance is found by calculating the bridge's vertical clearance in relation to the nearest river gage and subtracting the vessel's air draft."
Page/Line	**NOAA COMMENTS**	
1	The current geographic coordinate placed the location significantly south of the bridge. The new coordinate places the location at the bridge. (Strike through of Lat/Long, incl. revised as: 30.097753N, 90.913567W	Concur. The lat long has been revised to reflect the accurate location in degrees, minutes, and seconds.
Page/Line	**LADOTD COMMENTS (See last section for additional comments provided after the due date)**	
7/21-22	Subsequent inspections and strength calculations of the damaged bridge areas found that the section struck by the crane should have collapsed, but because of unintended secondary load redistributions ~~how the supporting steel was bent~~, catastrophic failure was avoided.	This sentence now reads, " Subsequent inspections and strength calculations of the damaged bridge areas found that the section struck by the crane could have collapsed, but because of

		secondary load redistributions, catastrophic failure was avoided.
Page/Line	**COOPER CONSOLIDATED COMMENTS**	
2/13	Insert clarification: ",,, the managing director of stevedoring…"	Concur. Edited accordingly.
2/18	Insert: "The calculations made by Cooper included use of the accurate measurements for the MR ERVIN. Additionally, Cooper did not make any calculations for the alternate West span because it was understood by Cooper that its cranes were always moved through the main channel span."	Reworded as follows: "…the managing director of stevedoring and maintenance for Cooper Consolidated obtained the current river state at Donaldsonville, Louisiana, and calculated the minimum vertical clearance of the bridge to be "151 or 152 feet," and, using the crane barge's air draft and the minimum vertical clearance, he concluded that the barge had sufficient overhead clearance to transit through the bridge's main channel span."
3/17	Strike: "As the Kristin Alexis approached the stern of Mr Ervin…" Replace with: "At some point, as the KRISTIN ALEXIS was tying up to the MR ERVIN and departing the Convent Marine Terminal dock…"	This has been removed from the report.
3/20	After sentence ending with "… and dark": Strike: "The shoreside crew refused to move the bucket and…" Replace with: "As discussed below, there were various conversations that took place regarding this grab bucket. Though unclear as to when specifically the decision was made, the decision was ultimately made by the on-call Cooper supervisor not to move any buckets aboard the MR ERVIN, and the Cooper shoreside crew later stated…	This section has been re-worked and the suggested text included throughout this portion of the report.
4/4	Strike: "The company's managing director…" Insert clarification: "The company's Executive Director testified at the hearing that he…"	Concur. Edited accordingly.
4/8	After the sentence ending with "… over it.": Insert: "During these conversations, Cooper employees were unsure what bucket the Captain was asking to have removed."	This suggested insertion was not incorporated.; however, a lot of information pertaining to the grab-bucket has been removed from the report. Hopefully

		that will alleviate any concerns regarding the communication around the bucket.
4/13	After the sentence ending with "… partially free.": Insert: "According to the Captain, it then started to move on its own. According to Cooper's supervisor, the MR ERVIN did not shift at the dock. Nonetheless, the Captain stated that uncontrolled movement …"	This section has been removed from the report (as it was causing more confusion than adding substance to the report.)
4/35	After the sentence ending with "… main channel span." OR Page 8, Line 19, after the sentence ending with "… vessel being towed.": Insert: "The Captain and Pilot also completed a voyage risk assessment with the oncoming deckhands resulting in the voyage being in the amber level (caution) on a Green/Amber/Red scale. The voyage risk assessment obligated the crewmembers on the KRISTIN ALEXIS to notify the Port Captain if the color coding "is not within the Green (Low Risk) section." Despite designating the move of the MR ERVIN as an 'Amber' risk event, neither the Captain nor the Pilot contacted Marquette's Port Captain. The Port Captain testified that he always instructed his Captains to go through the main channel span with crane barges. The Pilot testified that, had the Port Captain been called, he believes the Port Captain would have told him to take the main navigation channel under the Sunshine Bridge. The Captain also testified that, had the Port Captain been called, it was very likely that the Port Captain would have reminded him to take the main navigation channel under the Sunshine Bridge."	Concur. This is important information and has been added, though not word for word, to the report in the "Additional Information" section.
5/2	After the sentence ending with "… about 0030.": Insert: "The Captain never told the Pilot to hold up or wait for the Cooper employees to return to the MR ERVIN. Instead, the Captain simply told the Pilot to keep going upriver."	Noted. Additional details regarding the captain/pilot handover were included in the report.
5/6	After the sentence ending with "… 130 feet.": Insert: "Neither the Captain nor the Pilot ever asked or checked on the	Concur. The majority of this information has been included in the final report.

	vertical height of the MR ERVIN on October 12th. No one from Cooper Consolidated was ever called regarding the height of the MR ERVIN, even though this information was readily available. The Executive Director of Cooper Consolidated testified that this information could have been easily provided had it been requested, and that prior requests for air draft information had been made and that information was always provided. Neither the Captain nor the Pilot ever checked the river stage level or confirmed that the MR ERVIN had enough clearance to be pushed under the alternate West span of the Sunshine Bridge on October 12th."	
5/19	After the sentence ending with "… radar view.": Insert: "The Pilot testified that towing a crane barge always presents restricted visibility but that he was comfortable taking the controls and that he felt he could safely navigate the MR ERVIN. The Captain also testified that he felt he could safely navigate the MR ERVIN. This was why neither exercised their Stop Work Authority."	Concur. This information has been included in the report.
6/7	After the sentence ending with "… main channel span.": Insert: "The Pilot testified that, by placing the lookouts at the head of the MR ERVIN, he felt that he was able to safely navigate and proceed upriver and pass under the Sunshine Bridge."	Concur. Added.
6/13	After the sentence ending with "… aboard the towboat.": Insert: "This entire portion of the Mississippi River was in the area of the Coast Guard Vessel Traffic Service, and the Sunshine Bridge marked a check-in location for up bound vessels to call in and report their position before entering the 81-mile point traffic management area. Personnel from VTS testified that vessels routinely call and request information regarding bridge clearance and river stage levels, and that this information is routinely provided by VTS. VTS does not just provide the information either; it vets that information to confirm its accuracy. Had the KRISTIN ALEXIS called and informed VTS that it was heading	Added portion of this insertion into the report on Calculating Overhead Clearance.

	northbound, pushing a crane barge with 130 foot "air draft," VTS would not have recommended that the KRISTIN ALEXIS take the alternate West span."	
6/22	After the sentence ending with "… the Nedra K.": Insert: "The Pilot stated that, despite the starboard to starboard passing arrangement, it was possible that he could have coordinated a port to port passing arrangement. The Pilot also stated that he could have held up, allowed the NEDRA K to pass through the main channel span and then taken the KRISTIN ALEXIS and MR ERVIN through the main channel span."	Noted. The pilot stated that he was comfortable in his decision to pass stbd to stbd. He did not imply that he 'could not' use the main channel. The report states that he had options but decided to continue through the west span because he was not concerned about clearance.
Page 33, Line 2	After the sentencing ending with "… the bridge span.": Insert: "The Pilot admitted that, despite the bucket being a concern at the beginning of the voyage, it was not the reason that he hit the Sunshine Bridge. The Pilot also admitted that not knowing the air draft was the reason for hitting the Sunshine Bridge. While the bucket may have restricted visibility horizontally, it had nothing to do with the strike 133.03 feet above. The Captain also admitted that the bucket had nothing to do with making the calculation necessary to determine whether there was sufficient air draft to maneuver under the alternate West span."	Portions of this suggested insertion have been added to the report; however, a lot of information pertaining to the grab-bucket has been removed from the report and will, hopefully alleviate any concerns regarding the communication/concerns around the bucket.
7/19-20	Strike: "Mr. Whitey" Insert: "CAPT. WHITEY"	Concur. Edited Accordingly.
Page/Line	**MARQUETTE COMMENTS**	
General Comment	We thought there were several critical, and uncontroverted, points made during the hearing that were worthy of inclusion in the factual report. For example, both the MTC captain and pilot testified that MTC had several policies/procedures, with which they were familiar prior to the accident, that were intended to prevent an accident such as the Sunshine Bridge allision, and had they followed those	Thank you for this general comment. We have taken this into consideration in the revision of the report.

	policies/procedures the accident likely would not have occurred. They both also testified they had been taught and knew how to calculate the vertical clearance (air gap) of the bridge, but failed to make the calculation on the day of the incident despite MTC policies/procedures requiring them to do so. The captain and pilot also testified that they should have called their port captain, as was required by MTC policies/procedures, and that had they made that call the accident likely would not have happened. As you will see, we included citations to the hearing transcripts and/or exhibit numbers that support our proposed additions.	
1/3	…when the crane ~~deck~~ struck the truss compression member of the Sunshine Bridge while passing under the alternate/west channel span…	Changes have been made to this sentence and additional engineering details described further in the report.
2nd para in Accident Events	The captain, who had been working a regular schedule on board the vessel for 11 months…The original language created the inference he had been living on the boat for 11 months, which is not accurate. The original language created the inference he (the captain) had been living on the boat for 11 months, which is not accurate.	Concur. Edited accordingly.
	Paragraph listing parties to the investigation: We are not aware of PII designation for the LA DOTD or NOAA.	Noted.
3/7-8	He told investigators that he chose to offset the towboat to the port side of the stern because it was the area where he normally tied up to this and other similar crane barges for improved visibility. He also explained he could not tie up on the starboard side due to handrails on the stern of the barge. (Smith PP 68-69)	Added "for improved visibility".
3/20-21	The captain voiced his concerns to numerous Cooper shoreside personnel, asking them to move the bucket because he could not see over it. The Cooper Dispatcher told the Captain that he was working to get a crew out to move the bucket. (Nelson pp. 13 & 14; Smith pp. 28 & 128	This section has been revised and this is included in the report.

3-4/34	While the conversations continued with the crane operator and Cooper shoreside personnel, the captain maneuvered the tow off the dock and proceeded upriver in darkness toward the Sunshine Bridge, about 6 miles away. Neither the captain nor the pilot ever suggested to investigators that they had any intention of stopping or turning around while these conversations were taking place. Despite a MTC port captain being available 24-hours per day, the captain and pilot told investigators they never contacted the port captain to report concerns with the bucket, restricted visibility or the bridge transit. Smith p. 107; Picquet p. 97 The captain told investigators he was familiar with MTC's bridge transit policy and voyage planning policy which required the crew to notify the MTC dispatcher of any unusual or unsafe condition such as the crane bucket obstructing visibility. Smith p. 134-135 and 142. He also acknowledged he should have called the MTC port captain when he observed the bucket on the barge's port bow. Smith p. 33-34. The captain did not notify the port captain or anyone else at MTC about his concerns with the bucket Smith p. 128-129 and 141-142.or his restricted visibility. He explained to investigators that the port captain probably would have sent a second towboat to the barge to assist if he had requested one. Smith p. 134.	Suggested verbiage has been added, in various sections, to the report.
4/13-19	About the same time the tow started upriver (2350), the *Kristin Alexis* pilot entered the wheelhouse to prepare for relieving the captain and assuming the 0000–0600 watch.[1] Although the watch exchange normally occurred around midnight, the captain stated he did not want to change at that time because he wanted to make sure the *Kristin Alexis* was clear of three southbound tows ahead before the watch change. During this time, the pilot completed certain mandatory tasks, including a safety meeting involving a safety huddle, a job safety brief, and a voyage risk assessment with the oncoming deckhands. The voyage risk assessment fell in the amber level (caution) on a	Concur. First three sentences have been included in the report, though not word for word. Last sentence noted, but not included in the report, as they did not consider making this phone call.

	Green/Amber/Red scale. MTC policy, as specifically noted on the voyage risk assessment form, required the MTC port captain to be notified any time a job safety briefing resulted in anything other than a "green" risk level. Smith p. 118. The port captain's telephone number was saved in both the captain and pilot's phones and was also posted next to the wheelhouse phone. Smith pp. 119-120; Picquet p. 99.	
4/23-33	Both the captain and the pilot stated that they discussed the crane barge and the placement of the grab bucket but did not discuss the air draft of the crane, the voyage plan, the bridge transit, what channel to take, or the clearance under the Sunshine Bridge despite MTC policies, including the bridge transit policy, which required them to do so. Prior to the incident, the captain knew that his vessel and tow needed to be lower than the bridge in order to safely make the transit. Smith p. 142. He knew the river stage on the day of the incident and knew that it was high river. Smith p. 87. However, he did not calculate the air gap on the Sunshine Bridge. Smith p. 38. The captain told investigators he had been trained to calculate vertical clearance Smith pp. 56-58 and had maneuvered other crane barges under the Sunshine Bridge prior to the incident Smith pp. 60 and 86. He also testified that he always took the center span, never the alternate span. Smith p. 86. However, on the night of the incident, the captain did not discuss the bridge transit with the pilot during watch change because he was distracted by the bucket. Smith pp. 24-25 and 127. Nor did the men discuss the MR ERVIN's dimensions or air draft Picquet p. 25. despite MTC's watch change policy which requires those matters to be discussed, and despite the fact that they were normally discussed at watch change. Picquet pp. 19-20. The captain also told investigators that he did not know if the pilot had ever transited with a crane barge under the Sunshine Bridge, which had two spans (a west and main), but he expected that the pilot would choose the main channel span.	Concur that this is important information. Suggested content has been added in various sections of the report, though, in some cases, not word for word.
Pg 4	Add new paragraph:	Noted, but not included in the report.

	The pilot underwent a routine, required assessment in 2014, documented in his Towing Officer's Assessment Record. Exhibit 37; Picquet pp. 31-33 The document memorializes a U.S. Coast Guard certified designated examiner observing the pilot perform numerous tasks, including but not limited to (1) "identify physical characteristics of vessel and tow," (2) "allow for draft and clearances in navigation of vessel," (3) "use required charts and publications," and (4) "maneuver through bridge." Exhibit 37 pp. 2-4; Picquet 31-33. The designated examiner told investigators he specifically taught the pilot how to calculate the "vertical clearance" (air gap) of a bridge. Langford p. 17. The pilot also underwent training at McGriff's Marine Training, Inc. in 2015 where he was instructed and tested on calculating air draft and checking vertical clearances. Exhibit 37 p. 11; Vizier p. 14	
5/11	The captain said that about the same time the *Kristin Alexis* tow met and transited past the three southbound tows, which was about 0009, the Cooper Consolidated dispatch telephoned to tell him that they would be moving the grab-bucket to improve his view. The captain and the pilot discussed this expected move and completed their watch exchange about 0030. After the captain left the wheelhouse, no further discussion took place between the towboat personnel and Cooper personnel about moving the grab-bucket. The captain assumed Cooper Consolidated personnel were going to arrive and move the bucket prior to any bridge transit. Smith pp. 25 and 27-29. However, he and the pilot did not discuss what the pilot should do if Cooper Consolidated's personnel did not arrive to move the bucket prior to the transit of the Sunshine Bridge. Smith p. 34. The captain admitted that they should have called MTC's port captain when the Cooper Consolidated personnel did not arrive to move the bucket. Smith p. 34. The captain and pilot both told investigators they knew they were required by MTC to exercise their stop work responsibility if they had any questions or concerns about safety. Smith pp. 26-27, 139-140; Picquet p. 29; Exhibit 26.	Agree with concept of this addition. Portions of this have been included in he report; however, a lot of information pertaining to the grab-bucket has been removed, which will likely alleviate any concerns regarding the communication around the bucket. The stop work authority concept and 'assumed' airdraft is discussed in the report.

	Also, on watch with the pilot were a senior deckhand/mate and another deckhand. The pilot stated he did not know the crane barge's air draft but, like the captain, believed it was about 130 feet. The pilot told investigators he should have asked for the air draft on the crane. Picquet p. 20.	
6/6-7	The captain and the pilot told investigators that in addition to Rose Point and the NOAA navigational chart, they were using the US Coast Pilot, a Coast Guard Local Notice to Mariners, and the Coast Guard Light List on the accident voyage.[2] Another reference to the bridge elevation was the US Army Corps of Engineers (USACE) Map Book. However, the pilot stated that he had never seen the bridge elevation drawing in the Map Book, and the captain said he was unsure if this was aboard the towboat. The MTC port captain told investigators the USACE Map Book was on board the towboat, which was also confirmed during investigator's inspection of the vessel. Mabile p. 49	Concur. This has been added to the report.
6	New para before…"as the KA tow proceeded upriver, the pilot discussed his plan for passing beneath the Sunshine Bridge with the mate and deckhand. The pilot told investigators he knew the formula for calculating bridge clearance, had been trained to do it, and he checked the bridge height on the paper chart and Rose Point, but he did not know the river stage at the time of the Incident and therefore did not take it into consideration. Picquet pp. 32, 36, 54 and 55. He also did not know the air draft of the MR ERVIN as he approached the bridge. Picquet p. 21.	Under 'Calculating Overhead Clearance' section, added the following sentence: "The pilot stated that he knew how to calculate overhead clearance but 'didn't know the river stage at the time'." The report also notes that he did not know the air draft of the Mr. Ervin.

7/9	When the bow of the crane barge was about 40–50 feet from the bridge, the pilot told the mate and the deckhand that "everything looked good" and directed them to return to the wheelhouse. As they headed aft toward the wheelhouse, the top of the crane's A-frame struck the underside support chords of the Sunshine Bridge and lodged itself there. The crane hit the underside of the bridge about 260 feet to the west of the center (green light). Marquette's Senior Vice President immediately called 911 Garsaud p. 19 to report possible damage to the bridge.	Though this is a factual statement, we did not find good reason to include it in the report.
8	Additional Information Section-add 2 new paragraph: The captain and pilot both told investigators they were aware of the MTC bridge transit policy and knew how to calculate the air gap/vertical clearance of the bridge, but failed to do so at the time of the incident. Smith pp. 56-58 ;Picquet pp. 32, 36, 54 and 55; Smith P. 142; Picquet P. 93. The Marquette SMS in force at the time of the incident contained a number of policies and procedures specifically designed to prevent air draft accidents. Those policies and procedures were made available to and read by the relief captain and pilot Picquet pp. 29-30 and 91-92. Picquet pp. 28 and 66. Picquet p. 61. Picquet p. 97-99. Smith p. 120. prior to the incident, including Captain/Pilot Authority and Responsibilities, Navigation Procedures, Voyage Planning, Bridge Transit, Change of Watch Policy, and Stop Work Responsibility. The pilot told investigators that the incident could have been avoided had those policies been followed. Picquet pp. 28 and 66. For example, had he performed the bridge clearance calculation he would have exercised his stop work responsibility and either not taken the watch or pushed into the bank instead of transiting the bridge. Picquet p. 61. He also told investigators he should have called MTC's	First suggested edit is currently in the report. Concur. Marquette SMS section is described in more detail in updated revision of report, including voyage planning, bridge transit, and stop work. Last suggested edit (starting at "for example") is noted and, to extent, agreed upon; however, any discussions about what the pilot could have done differently is analytical in nature and not included in the factual section of the report.

	port captain, with whom he had a good relationship. Picquet p. 97-99.After the incident, at 0200, the captain called the port captain and reached him right away. Smith p. 120. According to the pilot, the "situation probably wouldn't have happened" had he called the port captain prior to transiting the bridge. Picquet p. 66.	
Page/Line	**LADOTD COMMENTS**	
General Comment	On December 1, 2018, the repairs to the Sunshine Bridge had advanced to permit single lane, two-way traffic on the upstream lanes of the bridge. This traffic configuration continued until March 2019 when the repairs were complete and the downstream lanes were completely reopened to traffic. The upstream lanes retained the single lane configuration as work continued on the Phase 3 project which had already started prior to this incident.	This information was added to the report.
1/Preface	Waterway information-suggest changing "18.4" to "18.37 at Donaldsonville"	Concur. Edited accordingly.
9/23-24	Regarding "…the section struck by the crane should have collapsed, but because of how the supporting steel was bent, catastrophic failure was avoided" Replace with: "the section struck by the crane could have collapsed, but because of secondary load redistributions, catastrophic failure was avoided."	Concur. Edited accordingly.
9/12-13	Regarding "The chart depicted the Sunshine Bridge and listed the vertical clearance across the entire length of the bridge as 133 feet." Replace with: "The chart depicted the Sunshine Bridge which notes a vertical clearance of 133 feet and a horizontal clearance of 750 feet.	Concur. Edited accordingly.
9/25	Regarding "The mariner was to add the river height (from the Donaldsonville Gage) to the vertical clearance to calculate the vertical clearance." Replace with: "The guidance provided in the elevation drawing indicated that the mariner was to subtract the Donaldsonville Gage stage from 171 feet	Revised and added content suggested. See 4th comment on pg 1 of this document regarding Calculating Overhead Clearance.

	for the 750 foot wide Main channel span, or subtract the Donaldsonville Gage from 147 feet for the 725 feet wide West span to determine the minimum vertical clearances."	
9/26	Suggest removing the word "However"	Removed.
9/25	Regarding "Appendix B of the manual includes the graphic depicted below," Replace with : "Appendix B of the manual includes a graphic similar to the US Army Corps graphic depicted below,"	Sentence now reads" Appendix B of the manual included the same graphic depiction of the Sunshine Bridge as shown in the Corps of Engineers map book (see Figure 6).
10/11-15	"With a gage of 18.37 on the accident day, the calculated clearance for the main span was 52.63 feet and 128.63 feet for the alternate west span on the day of the accident. Based on a crane height of 135.0 feet, there was an air draft of about 17.5 feet beneath the main span, but Mr Ervin was more than 7 feet taller than the clearance beneath the west span." Replace with: "With a gage of 18.37 feet at the time of the accident, the calculated minimum clearance for the main channel and west spans using the USACE drawing was 152.63 feet and 128.63 feet respectively. Based on a crane height of 135.75 feet, the calculated air gap at the point of minimum vertical clearance in the main channel span was 16.88 feet which indicates ample vertical clearance, and the calculated air gap at the point of minimum vertical clearance in the west span was (-)7.12 feet which indicates insufficient vertical clearance. The steep bridge grade in the west span offers an increasing vertical clearance towards the center of the Mississippi River. At the point of impact, the survey based vertical clearance was 133.03 feet, which indicates an actual estimated air gap for the Mr Ervin of (-)2.72 feet." (footnote Sunshine Bridge Clearance Investigation (Amended) issued by Russell J Coco Jr. P.E. with Forte and Tablada, Inc. on May 20, 2019.	Noted. This paragraph has been completely revised and information from the Forte and Tablada report has been incorporated.