Technical Review of Draft Factual Reports: M/V Riverside

Party Comments by email/letter dated: _____

NTSB Draft Factual Report for Tech. Review

Page	Line	Party Comments	NTSB – Disposition of Party Comments
3	9-11	The 100-psi (7 bar) Control Air System does not "initiate the engine start;" rather it controls the timing and direction (which piston) of the air from the 435-psi (30 bar) Pneumatic System. The air which is used to actually initiate the start of the engine, by pushing the pistons down, comes directly from the Air Bottle. - *Reference 1:* ME Maneuvering System Drawing (Arrow indicating the source of air for the 435-psi (30 bar) Pneumatic System).	Will modify to describe this.
3	27-29	The vessel was not slowed down earlier, due to initial miscommunication/disagreement between pilots onboard RIVERSIDE and NORDIC AQUARIUS. There was hardly an agreement between the vessels' Pilots; instead, there was disagreement between the Pilots of the NORDIC AQUARIUS the Pilots of RIVERSIDE, and there was disagreement between Pilot 1 and Pilot 2 on NORDIC AQUARIUS regarding the same, and NORDIC AQUARIUS Pilot 1 has a reputation for pulling out into the channel too late: - RIVERSIDE Pilots concerned with NORDIC AQUARIUS still being alongside, state that they are going to tell NORDIC AQUARIUS Pilots to wait in the turning basin for RIVERSIDE to get by. (RIVERSIDE VDR @ 12:30:20). - NORDIC AQUARIUS Pilots discuss with Master that RIVERSIDE is going to have to slow down (to prevent tidal surge), and that NORDIC	The sentence will be modified to include that the pilots on the Riverside were concerned about the departure of the Nordic Aquarius, but they did slow the Riverside to allow the other vessel to depart.

		AQUARIUS will either get ahead of or let RIVERSIDE go first. (NORDIC AQUARIUS VDR @ 12:34:48). - RIVERSIDE Pilots state that if NORDIC AQUARIUS is not off the dock now, then they don't see how NORIDC AQUARIUS will get out ahead of RIVERSIDE. RIVERSIE Pilots decide to call NORDIC AQUARIUS Pilots re the same. (NORDIC AQUARIUS VDR @ 12:37:56). - RIVERSIE Pilot 1 reports to the other RIVERSIDE Pilot 2 that he spoke to NORDIC AQUARIUS Pilot 1, and that "He's going to try and beat us . . . Says he's gonna double check when he gets his springs in." RIVERSIDE Pilot 2 responds, "Yea, he's . . . he's pretty notorious for pulling out in front of people." (RIVERSIDE VDR @ 12:39:45). Note: spring lines were still being pulled in on NORDIC AQUARIUS at 12:43 (NORDIC AQUARIUS VDR @ 12:42:59). - NORDIC AQUARIUS drops last line and makes Security call. (NORDIC AQUARIUS VDR @ 12:43:39) - RIVERSIDE Pilot 1 again states that NORDIC AQUARIUS Pilot 1 is "pretty notorious for cutting out in front of people though . . . he's done it to me multiple times." (RIVERSIDE VDR @ 12:44:05). - RIVERSIDE Pilot 2 tells 1 that it looks like NORDIC AQUARIUS has hardly moved, and	

		Pilot 2 replies, "No, I texted NORDIC AQUARIUS Pilot 2, told him they might have to send us a tug, to help us slow down, at the rate they're going." (RIVERSIDE VDR @ 12:47:32). - RIVERSIDE Pilot 1 tells Pilot 2 that "you can't get [the NORDIC AQUARIUS] off the dock and up to 6, 8 knots in fifteen minutes . . . NORDIC AQUARIUS Pilot 1] needs his ass handed to him for this one I think. This is horse shit . . . this is bullshit . . . we might have to borrow a tug." (RIVERSIDE VDR @ 12:49:33). - RIVERSIDE PILOT 1 spoke with NORDIC AQUARIUS Pilot 2, and stated to RIVERSIDE Pilot 2 that NORDIC AQUARIUS Pilot 2 "is all pissed with NORDIC AQUARIUS Pilot 1 – I told him, 'man, that's bullshit.'" (RIVERSIDE VDR @ 12:50:26). - RIVERSIDE Pilot 1 says, "It's bullshit, don't fucking do that. You've got three tugs, you're getting in the way of an outbound with no tugs." (RIVERSIDE VDR @ 12:52:29). - RIVERSIDE Pilot 1 says, "he's fucked up, he's not in the channel." I (RIVERSIDE VDR @ 12:53:53). - NORDIC AQUARIUS Pilot 2 (who is an actual full pilot, as Pilot 1 was not a full pilot on March 15, 2021), tells NORDIC AQUARIUS Pilot 2 that you shouldn't get in the channel right in front of someone, you should get the vessel turned in the basin and wait for them to go. Pilot 1	

		responds that RIVERSIDE Pilot 2 called him and told him that they were already slowing down for the vessel at the berth (wake/surge), then states "I guess not everyone is on the same frequency." NORDIC AQUARIUS Pilot 2 states "I guess not . . no, he said 15 minutes . . . I already told the Captain you were going to wait for [RIVERSIDE] . . . 15 minutes, you can hardly get this thing up to 7 to 8 knots." (NORDIC AQUARIUS VDR @ 12:54:45). - RIVERSIDE Pilot 1 says "NORDIC AQUARIUS PILOT 2 "is all mad and he don't get mad. He says he feels like an idiot [because NORDIC AQUARIUS PILOT 2] told the Captain, 'yea this is a slow maneuver well, you know, well let [RIVERSIDE] come on by, and we'll come out, and the next thing I know we're backing out and I'm like what the fuck are we doing?" (RIVERSIDE VDR @ 12:55:02). - NORDIC AQUARIUS Pilot 2 says "It's just, especially, if you want to . . . turn it in the basin, then make up your mind once you get it flipped around, then back into the channel purposefully . . . we're doing 1.3 and they're doing 9." (NORDIC AQUARIUS VDR @ 12:55:42). - RIVERSIDE Pilot 1 orders "Stop engine." (RIVERSIDE VDR @ 12:56:07). - NORDIC AQUARIUS Pilot 1 orders Full Ahead. (NORDIC AQUARIUS VDR @ 12:56:45).	

		- RIVERSIDE Pilot 1 orders Dead Slow Ahead and alarms begin to sound. (RIVERSIDE VDR @ 12:58:40). After the accident, the Aransas Corpus Christi Pilots created a new requirement for all vessels (of a certain size) transiting the Ingleside area, to have tug escorts. A copy of this new requirement is attached. The NORDIC AQUARIUS Pilots discuss the tug escort requirement, as the Aransas Corpus Christi Pilots, prior to March 15, 2021, were already considering adding the requirement as vessels often have a difficult time slowing down after the tun. (NORDIC AQUARIUS VDR @ 13:16-13:18). - *Reference 2:* RIVERSIDE's VDR Recording. - *Reference 3:* NORDIC AQUARIUS' VDR Recording. - *Reference 4:* Aransas Corpus Christi Escort Tug Requirements Dated March 16, 2021.	
6	3-8	An extensive handover was conducted with the Chief Engineer Lloyd Almeida, starting from before he arrived onboard. C/E Almeida even sent a request, through the office, to RIVERSIDE for copies of numerous records to review before joining. C/E Almeida's handover notes make no mention that "he did not feel comfortable sailing on the vessel due to the poor condition of the engine room." Thome Superintendent Jude Joseph spoke with him during the handover and the only area of concern he shared with him was his lack of familiarity with some of the Thome specific documentation as it was his first time sailing with Thome. Thome's J. Joseph told C/E Almeida	The C/E told investigators during his interview on events that surrounding the marine casualty with representatives for MODA and the vessel owner/operator that he did not feel comfortable sailing with the vessel in its current condition. Sentence will remain.

		that the Office would assist him getting up to speed on all the documentation requirements on the trip from Brazil. - *Reference 5:* C/E Lloyd Almeida's Handover Notes. (Additionally, C/E Almeida was recently deposed and provided detailed and lengthy testimony under oath on all of these issues, RIVERSIDE will make the transcript available to NTSB once received).	
6	10	When the RIVERSIDE changed over to LSMGO, the Chiller was not put into operation. As the engine crew troubleshot the M/E, there was indications that the fuel viscosity was low, they then realized the Chiller was not in operation, so they lined up the Chiller.	I will modify the sentence to include that the chiller was not initially utilized.
6	19	Only two valves were replaced.	Will change to 2 valves
6	18-21	With regard to the statement that "the engine still would not start in the astern mode," to clarify, the M/E was on, turning throughout on starting air, on March 12, 2021, but the issue was that the M/E could not pick up fuel at every start, which indicated there was some probable issue with the fuel system. The Technician the Office spoke to (OKTO Marine, ex-MAN, Mr. Cengiz Kutukcu) did not recommend that the C/E lift the limit cancel mode; instead he recommended that the fuel rack positions be increased in order to introduce more fuel, but the C/E decided to lift the limit cancel mode in order to introduce 10% more fuel (as he	As per the statement provided to investigators by the C/E the root cause of the engine malfunction was not found on 12MAR21. The reference to the lifting of the limit cancel mode will be modified to reflect the C/E not the technician.

		had experience doing the same and relayed same to Office afterwards). - Additionally, lifting the limit cancel mode, introducing more fuel into the system, did allow the M/E to function properly on March 12, 2021. - However, lifting the limit cancel mode had no effect on the M/E, on March 15, 2021. - *Reference 6:* M/E EOT/RPM Response for March 12, 2021. - *Reference 7:* M/E EOT/RPM Response for March 15, 2021.	
6	25	As discussed immediately above, the M/E was on and turning 20-30 RPM on March 12, 2021. *The cause on March 12th* is distinct from the cause on March 15, 2021, as the 435-psi (30 bar) Pneumatic System's operation was not a causative factor; rather the cause was related to the fuel system. None of the troubleshooting conducted on March 12, 2021, concerning the 435-psi (30 bar) Pneumatic System had any effect on the M/E's operation. The only troubleshooting that had an effect on the ME's operation was lining up the Chiller then introducing more fuel into the M/E. -	As per the statement provided to investigators by the C/E the root cause of the engine malfunction was not found on 12MAR21.
6	28-32	The Pilots and USCG were not notified of the March 12th M/E troubleshooting because it was rectified and tested numerous times satisfactorily.	The failure of the main engine on 12MAR21 while the vessel was in US waters is a violation of 46 CFR 4.05-1 and 33 CFR 164.61. In addition, the master did not pass to the pilots that the vessel's engine was not operating for approximately 5 hours prior to entering the port. Sentence will remain.

		A diesel technician was contacted to help troubleshoot and resolve the problem while the RIVERSIDE was drifting, as discussed above. The advice from the OKTO Marine Technician (introducing more fuel) ultimately rectified the problem.	
7	5-6	"As per the engine operating manual, fuel pumps should be overhauled at 1,000 hours." This is incorrect, as the overhaul cycle per the M/E Maintenance Manual for the Starting Air Distributor is every 12,000 hours, and the overhaul cycle per the M/E Maintenance Manual for the Fuel Pump is every 16,000 hours. - *Reference 8:* Relevant pages of M/E Maintenance Manual.	Sentence will be modified to reflect this.
7	10-12	Although the M/E Control Air Dryer was found with less Freon and not operating at its maximum capacity on March 15, 2021, this was not the cause of the M/E failure during the outbound voyage. - The M/E Control Air Dryer is not part of the M/E's original design. - The M/E Control Air Dryer was retrofitted in 2014, during drydock. - The M/E Control Air Dryer only dries the air in the 100-psi (7 bar) Control Air System. - The M/E Control Air Dryer does not dry the air in the 435-psi (30 bar) Pneumatic System.	This is detailing the findings and observations of the marine engine technicians and investigators during their evaluation of the engine systems.

		- The only method of mitigating moisture in the 435-psi (30 bar) Pneumatic System is by manually draining the system, which is part of the daily routine for the engine crew. - Manually draining of the 100-psi (7 bar) Control Air System was the only method for reducing moisture in the Control Air System until 2014, when Owners retrofitted the M/E Control Air Dryer, which further mitigates moisture in the low-pressure 100-psi (7 bar) Control Air System only. - There was no required scheduled maintenance or overhaul routines outstanding on March 15, 2021, for either the 100-psi (7 bar) Control Air System, or the 435-psi (30 bar) Pneumatic System. - The malfunction of Starting Air Actuator Valve No. 6 on March 15, 2021, which caused the M/E failure during her outbound transit, was most likely related to lapses in diligently following the draining routines for the 435-psi (30 bar) Pneumatic System; but was not related to any lack of Freon for the 100-psi (7 bar) Control Air System. - The air for the 435-psi (30 bar) Pneumatic System only comes from air bottles, and not the 100-psi (7 bar) Control Air System, which relies on the Freon in the Control Air Dryer.	

		- Reference 1: ME Maneuvering System Drawing (Arrow indicating the source of air for the 435-psi (30 bar) Pneumatic System).	
7	22-24	"The technicians found enough water in the scavenger air manifold to restrict the scavenger air flow." We are not privy to this opinion/finding, as it was not relayed by any technicians by way of oral or written report. However, if there had been condensation built up as mentioned, it cannot be attributed to the M/E failure on March 15, 2021, as this system is not related in any way to the starting air system of the M/E.	Sentence was removed.
7	25-28	The leakages reported in Starting Air Valve Nos. 5 and 6 were small and cannot be attributed to the M/E failure on March 15, 2021. MAN noted in its report that these leakages had no bearing on the safe operation of the M/E. - *Reference 9:* MAN Service Report, March 29, 2021.	This is detailing the findings and observations of the marine engine technicians and investigators during their evaluation of the engine systems.
8	15	The image in Figure 6 does not depict Starting Air Actuator Valve No. 6; rather it is a picture of the VIT servo cylinder. - *Reference 10:* Image of the Starting Air Actuator Valve No. 6.	Will correct.
	6-8	It is not clear what inspection is being referred to in the draft report (8,000 hrs).	Will modify to:

8		- Line 6 of the report indicates that the technician was "unsure if the vessel conducted the required maintenance detailed in the engine manual," which refers to his uncertainty (at the time) on whether or not Starting Air Actuator Valve No. 6 was due for overhaul. This was clarified prior to RIVERSIDE departing, that it had been overhauled in August 2019, and had only run around 7,000 hours since then, while the maker recommended overhauling interval is 12,000 hours. Thus, it was not due for overhaul. - *Reference 11:* STX Engine Co., Ltd. Report of M/E Service.	One of the engine technicians also told investigators that the cause of the number 6 actuator to fail was due to lack of maintenance and should be inspected every 8,000 running hours and overhauled based on observations. At the time of the casualty the actuator had around 7000 running hours on it since its last overhaul in August 2019.
		The M/E Failure on March 15, 2021 was caused by a stuck piston valve on Starting Air Distributor Actuator No. 6. The root cause of the stuck piston valve is a lapse in diligently conducting manual drainage of the 435-psi (30 bar) pneumatic system. No overhauls or other maintenance requirements were overdue at the time of the failure.	Comment is noted.