



# National Transportation Safety Board

Washington, D.C. 20594  
Office of Marine Safety

## Interview Summary – DCA15FM035

---

**Interview of:** ██████████, Staff Chief Engineer

**Date/Time:** September 10, 2015 from 1510 to 1607

**Location:** On board Carnival Liberty, St Thomas USVI

**Interviewed by:** ██████████ – NTSB Engineering, ██████████ MSD St Thomas — USCG IO, ██████████ – NTSB fire and explosions, ██████████ — Fowler Rodriguez, ██████████ ██████████ – NTSB IIC, ██████████ – USCG, ██████████ – USCG, ██████████ – Carnival Corporation

**Case:** Carnival Liberty engine room fire, September 7, 2015

---

- Has been Staff Chief Engineer since November 2013 on Carnival Liberty – he has only worked as Staff Chief on Carnival Liberty.
- Daily routines – meets with engine staff daily, checks with ECR regarding the status of the machinery, planned maintenance, checks e-mails, requisitions/orders, renders assistance other engine officers and also works with other positions on the ship.
- Each senior engineer is a team leader that has motormen reporting to them – for example if team D did the work on the injectors, it would be reported if there is a major problem discovered during maintenance; the team leaders report maintenance them to the Staff chief engineer
- Before the fire started, he was in his office sending e mails. At about 1125, CE said he was going to eat. staff chief didn't go with him and wanted to continue with his work.
- He was sending an e-mail to the fleet director when an e-mail alarm came in from DASPOS. It was for DG4 fire alarm - just DG 4.
- He knew no one was working around that engine so he jumped up and went to the ECR – when he got there he saw the hi-fog was already released.
- His first sight was the CCTV monitor and said “shit we are on fire.”
- He saw the funnel with black smoke in the camera.
- The CE then arrived shortly after.
- The Staff Chief closed the QCV FO inlet and outlet line for DG 4 and DG 5 and 6 QCV – he knew DG 5 and DG 6 were not running.
- He then went back to the ECR and said to the CE they should close the QCV for the feeder module for the boiler and the feeder module for engines 4, 5 and 6 – the chief said shut it down.
- Ventilation was stopped and the WTD's were closed.
- The staff chief said he was monitoring the hi fog and saw the pressure was low because the total flooding was activated forward and aft.
- The captain was always asking if the hi fog was running and the staff chief told the CE that it was running and all 4 pump units were activated.
- He stated that with the total flooding on forward and aft, the system was not able to meet the pressure.

- They replied to the captain that the Hi Fog system was running.
- He initially saw big flames on the CCTV; the flames went down with the hi fog on.
- He suggested to the CE to release the CO2.
- CE asked the captain who said affirmative.
- He opened the CO2 cabinet and got an audible alarm and visual alarm.
- He checked that everyone was out of the ECR – CE said everyone was out and activate CO2.
- He activated the first lever for the CO2 which prepared the line and the shutdown sequence for all dampers and fire doors.
- When everything was OK – he double checked if he could release which he was told it was OK to release which he did.
- He saw from the camera that the CO2 was working.
- After that, they knew the fire was contained – he asked the CE to ask the captain if they could stop the hi fog. In order to reset they have to stop the entire system before restarting again
- The captain said no and keep it running
- After about 1.5 hours, they asked again to reset the hi fog and the captain said it was OK.
- The staff chief stopped the system and reset it and then started it with total flooding in the aft only. The pressure began to increase.
- After that some time, they stopped the remainder of the system and kept it running on top of DG 4.
- As soon as they stopped the forward engine room total flooding, the system pressure went up to 100 bar.
- When the system was running just over DG 4, it was about 130 bar.
- During the fire, the staff chief said he should have gone to the staging area but he decided to stay there (in the ECR) to help.
- When the fire squad initially came to the ECR, he told them not to go down to the engine room because they released CO2.
- When he finally went to the staging area, he told the safety officer they released CO2.
- He remembered the squads entered the aft engine room around 1800.
- Before that, the fire squads went down to take temperatures on the bulkheads (in the areas adjacent to the aft engine room).
- Originally he was thinking it was a high pressure pipe that broke and started the fire – which is rare - but they later discovered the bolts on the pipe flange were loose.
- His first concern was to assist to get the fire down as quick as possible – it was good that they were in St Thomas.
- When asked what feeder modules he shut down – he said he shut down the module for DG's 4, 5 and 6 plus the boiler which was in the same space.
- When asked about total flooding in the forward engine room – he thinks it was because the guy saw smoke in the forward engine room on the camera as well.
- Unfortunately, the way the hi fog system is, to exclude one zone, you have to reset it all which is not good during the fire.

- They can close the manual valve on the rack but they are installed just for testing. The did the testing yesterday (September 6).
- When asked if everyone was aware that the reason of the fire was from the bolts backing out, he confirmed yes they were all aware.
- He has never seen such a thing before with this type of engine – he has seen on a different type of engine that the flange “was closed” but this engine “never”.
- Probably, it may be from the change of temperature with the fuel change over to MGO with a temp change from 130 to 125, to 40 to 60 degrees Celsius.
- Before arrival into port, they were on FO. In San Juan they were using MGO.
- When asked if there was a specific torque setting for these type of bolts, he answered no that there was no specific set. There is a general torque for M12 bolts (8.8) and it is 85 newton-meter.
- He also asked the Wartsilla guy and he never got an answer – he was told to look on paragraph 7 in the instruction book which he already knew.
- When asked if the torque was based on bolt size only, he said yes.
- When asked if there were any maintenance system in place for checking of torques on the fuel system – he said there is a re-tight/recheck on the bearings/cylinder head itself but on the fuel system – no.
- When asked about advisories or service bulletins that come from Wartsilla, he said the office would advise the ship of this. They have the Infoship system, which can also be used for this.
- Since he has been on board, the last Wartsilla bulletin was for the cylinder head tightening – increase tightening pressure to avoid gasket seal leaking – increase on set
- He has not seen any service bulletins regarding tightening of bolts on fuel pumps that he has seen.
- There was one bulletin for the fuel pumps but there was for a non-return valve inside for cavitation on the pump elements – regarding tightening, no.
- For the FO system - they had leakages between the covered joints (they are covered). They had to replace the O-rings with a new version. This was an advisory only. This was not the O-ring at the flange. Even with the best O-ring would have not stopped this leak.
- When asked about the Hi Fog running and who gave the command to activate total flooding, he said he didn't know. When he got there it was already running. Probably the guy pushed everything.
- The pressure on the hi fog was low. Everything was activated including the total flooding. The problem was they had to stop the whole system to restart it in the right location.
- Later on, when the fire was down, it was the staff chief that reset the system for operation in the aft engine room only.
- When asked about the DASPOS e-mail he got, he remembered the week before he had a test alarm when the safety officer was testing the system – when he got this alarm, he knew it was real.
- The staff chief was asked to clarify what CO2 room he was at – he stated he was at the CO2 activation station which is outside the ECR. The officer in charge of the CO2, went up to the CO2 room.

- The 2<sup>nd</sup> engineer and the 1<sup>st</sup> engineer were at the CO2 room. The 1<sup>st</sup> engineer was there for the ADG and the 2<sup>nd</sup> engineer was there for the CO2 room. They communicated by phone.
- The staff chief took a picture of the hi fog and the section valves to show the system was working and the valves were working just in case the captain wanted to later challenge if the system was working or not.
- When asked about not going to the staging area, he said the safety officer was informed of this. They have a new ERP which they have drilled on once. The first time was a drill and the second time was this event.
- With the new ERP, the staff chief must take the lead of the fire squad for engine spaces.
- The first ERP drill was about 20 days ago – not more than a month ago.
- With the old emergency plan, he was to assist the safety officer but did not go with the fire squad.
- When asked if he does standby for the arrival, the staff chief said he is not a part of the arrival.
- When asked how long DG 4 had been running, he said for sure it was running all night since departure San Juan.
- The staff chief passed by DG 4 only five minutes before. They had contractors on board doing flow meter installations and he was there to look. When he passed by he didn't notice any problems.
- When asked how the CO2 cabinet was opened, he said it was with a key.
- The first time he opened it, he got a failure – the 1<sup>st</sup> engineer told him the directional valve was half open.
- The 1<sup>st</sup> engineer took a breathing apparatus and went in the CO2 room and kicked the valve open – the big one.
- The 1<sup>st</sup> engineer does familiarization training for crew and contractors.
- They alternate the drills – one week outside the engine spaces and one week in engine spaces.
- The last engine room fire drill they had was more or less 20 days ago.
- When asked about the CO2 valve problem – the 1<sup>st</sup> engineer said it was half open/half closed – the staff chief wasn't there – the 1<sup>st</sup> engineer went in with a breathing apparatus and kicked the valve in the CO2 room.
- When asked if there were any indications for CO2 release for fire teams, he said there is a siren and flashing light – he said he heard the siren.
- When asked about the overhaul of DG 4 by the riding team in June – since the overhaul, has there been any problems? No.
- Since the overhaul, there has been no work on the fuel pumps.
- When the riding team was on board, they did the maintenance before he signed off in May. As far as he knew, the riding team was working on the engine only.
- When asked about a QCV being accidentally closed, the staff chief said, "what I pulled was 4, 5 and 6." He has no knowledge of the QCV for number 1 being closed.
- After the fire, he noticed there was water inside some card which gave a failure alarm – he checked the card and they started DG 1 and everything was working fine.
- The staff chief said the QCV for DG 1 was found closed. Who closed it, he had no idea.

**Glossary:**

ADG – auxiliary diesel generator  
CCTV – closed circuit television  
CE – chief engineer  
CO2 – carbon dioxide  
DG – diesel generator  
ECR – engine control room  
EOW – engineer of the watch  
ERP - emergency response plan  
FO – fuel oil  
LO – lube oil  
MGO – marine gas oil  
QCV – quick closing valve  
WTD – water tight door