

# Appendix H – Ammonia purge timeline

## Overview

The images and timeline graphs below show an ammonia purge operation that took place during May 25<sup>th</sup> to May 26<sup>th</sup>, 2022, at the site of the incident. On May 25<sup>th</sup>, 2022, the day before the fatal incident, ammonia was encountered while cutting a pipe connected to the P24 refrigeration system. After encountering ammonia, it was decided that the ammonia should be removed by the process of purging. Purging, in this instance, is the act of intentionally removing ammonia from the system by dissolving it in water. A barrel was filled with a constant supply of water from a hose connected to a tap while another hose was connected to purge the ammonia within the P24 receiver. The valve to the receiver was cracked to allow the ammonia to flow into the water. The ammonia and water purge mixture was allowed to spill over the edge of the barrel to the outside parking area. The background photos are from onsite security video footage.

## Conclusions

While the flooding shown in the photo was not from the vessel involved in the fatal incident, the purge timeline is shown here to better understand the processes used to deal with amounts of ammonia during the overall dismantling process. The timeline of this process is shown below in images A-E with milestones indicated in the legends on the lower right of the images. Based on the timeline of the purge operation, the statements of those on site during the duration of the purge operation, and the rise and fall of the water and ammonia flood levels in the parking lot, the purging likely occurred for approximately 16.5 hours (12-15, 17-19:30, and 19:30-6:30am).

## Key statements

A rigger stated: *“I was cutting this pipe that was still pressurized and when I hit it, I got a face full of gas that knocked me on my head, but it took my breath away and it hurt my eyes.”*

The buyer stated, *“One of the riggers cut into a hot gas line with a Sawzall and got some ammonia. It was from the receiver in the back room, it ran the P24’s. I was at the hardware store, when I walked back, they were standing outside wondering what to do and that’s when I went inside and was able to isolate it and close that off.”*

The buyer and broker commenced a purge operation.

The buyer stated, *“The broker and I went to buy that fitting to go from the ¾” line, there’s a tee after the valve. We’d taken a hose and we were putting into a water can, a 50 gallon drum, and we were actually just slowly, very slowly letting it run into the water. You constantly run water 10 to 1 as far as the ratio minimum, diffusing the ammonia. I cracked it and I stood over the top of that valve. I was watching, making sure that there was water flowing into and out of the drum. I was also making sure the amount of liquid coming out of the hose was sufficient.”*

The buyer was not on site after May 25, 2022 and accounted for 3-4 hours of purging on the P24 system.

The buyer stated, *"I would say it purged for 3-4 hours. I left to go in my hotel room as I was leaving early in the morning and so we left about 4:00 [pm, May 25th]"*.

A rigger stated, *"the buyer left Wednesday evening [May 25<sup>th</sup>] and was meant to get onto a plane."*

A rigger mentioned how the building had a strong ammonia smell on May 26, 2022 first thing in the morning which had to be addressed.

The rigger stated, *"Thursday morning [May 26, 2022], we got there at 6:45, the boys went to open the roller door and it was such a potent smell in the building. [The broker] and [buyer] cracked that one valve open; it was kept bleeding overnight outside to try and completely get rid of all this stuff, but it was toxic in that building. We couldn't get in, when they had opened that room, it just filled in the room more than anything. The broker went in and closed that valve again and we had to sit outside for an hour before we could even go in to do any work because it was such a strong smell still in that building and we couldn't get in there, hurting our lungs and eyes."*

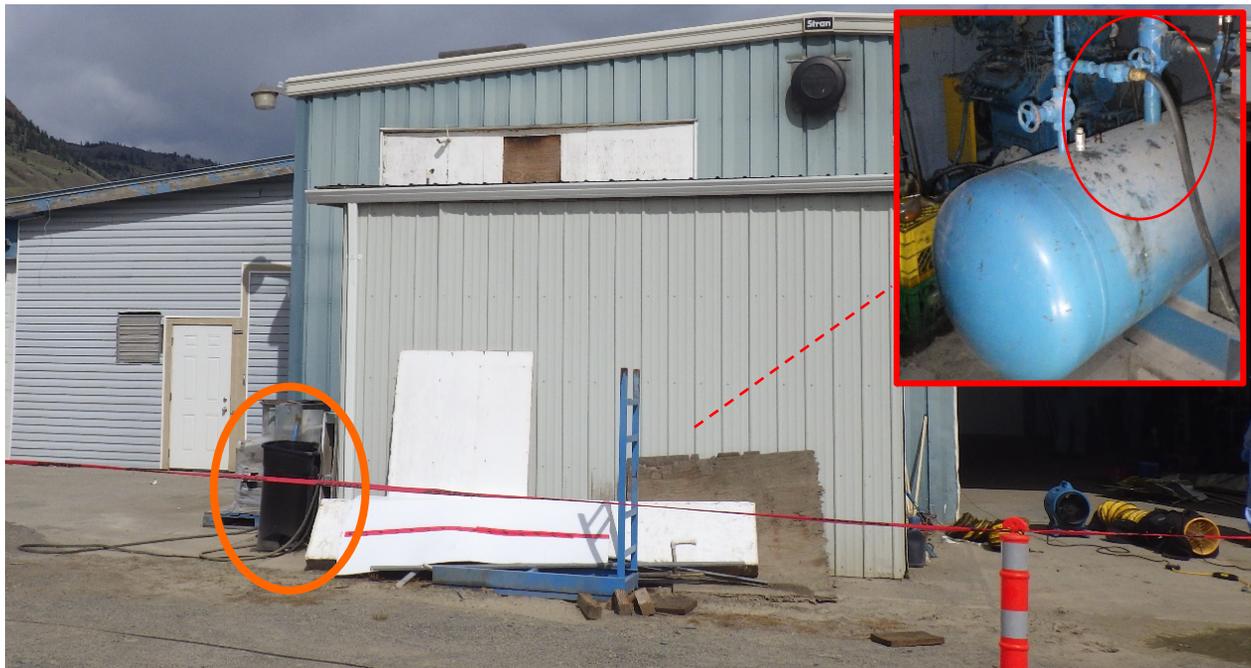


Image 1 (Purging equipment & setup) – Purge vessel and hoses that were in place prior to the incident. The purging barrel (orange oval) was fed by one hose connected to a water tap inside, while the other hose had ammonia flowing through it from a valved pipe (red oval) on the high-pressure ammonia receiver (in the red square) associated with two P24 ice making machines.

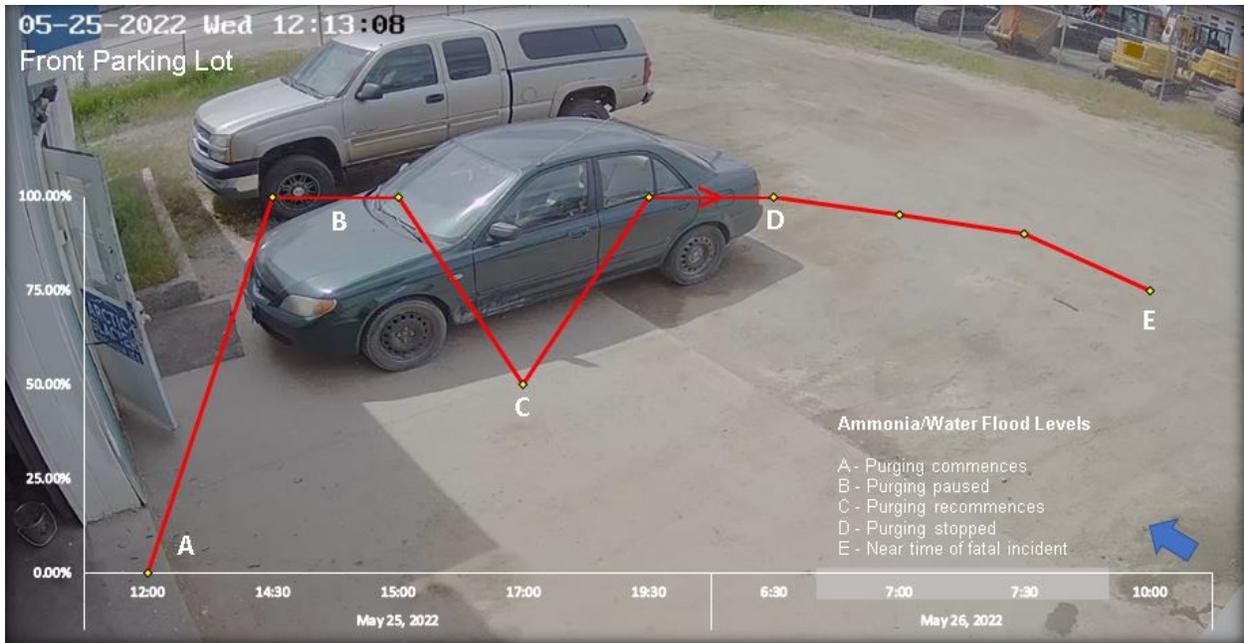


Image A – Purging commences in the front parking lot; blue arrow shows water/ ammonia mixture starting to form.

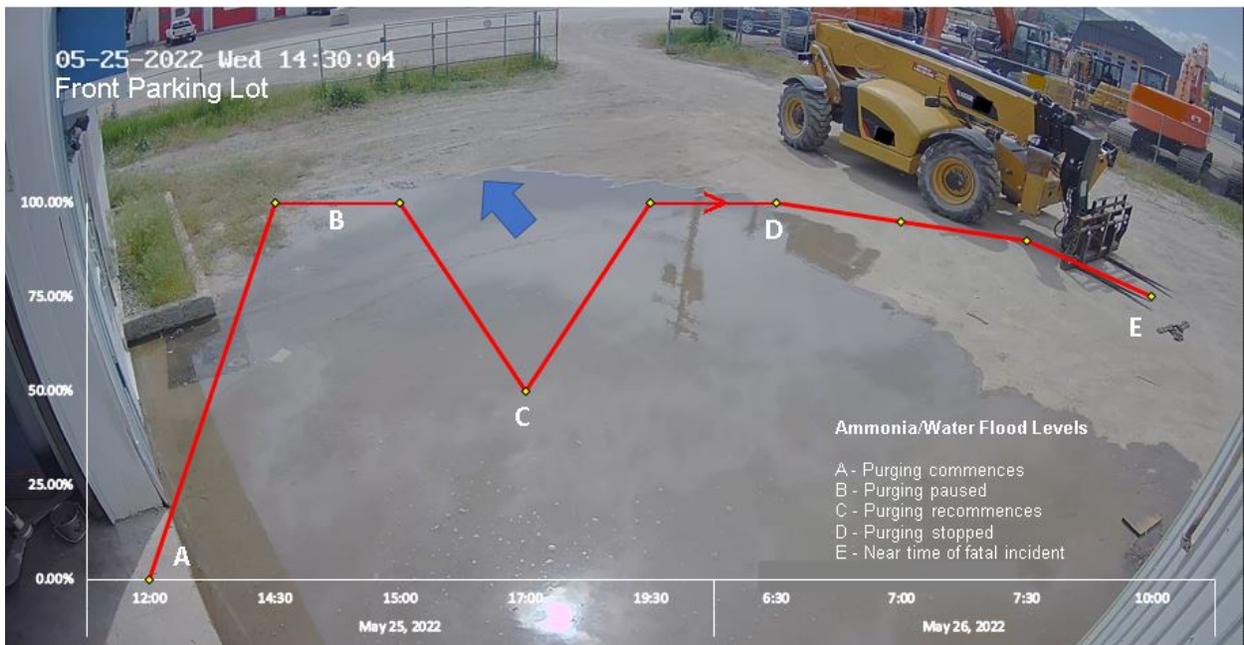


Image B – Purging is paused and the parking lot is at a high level of flooding.



Image B-C – Southside trench is dug by Arctic Glacier employee using a shovel and the flooding begins to recede as the water ammonia mixture moves to the south.

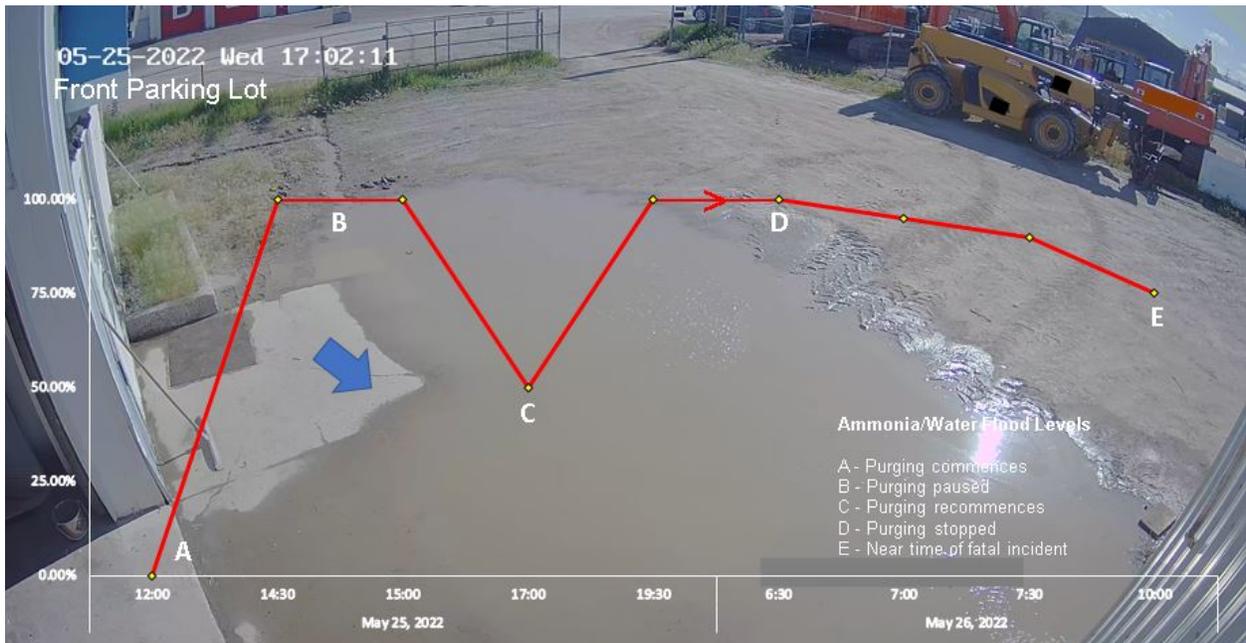


Image C – Amount of parking lot flooding has receded by 50% and the purging recommences.

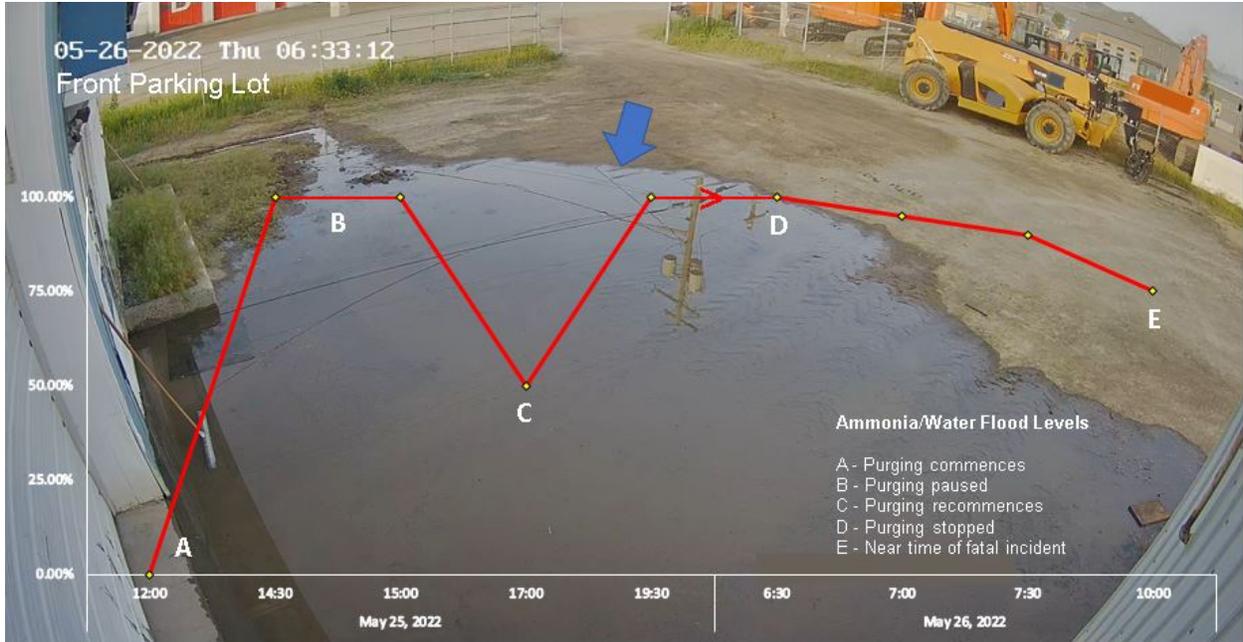


Image D – Purging is stopped and the water begins to recede.

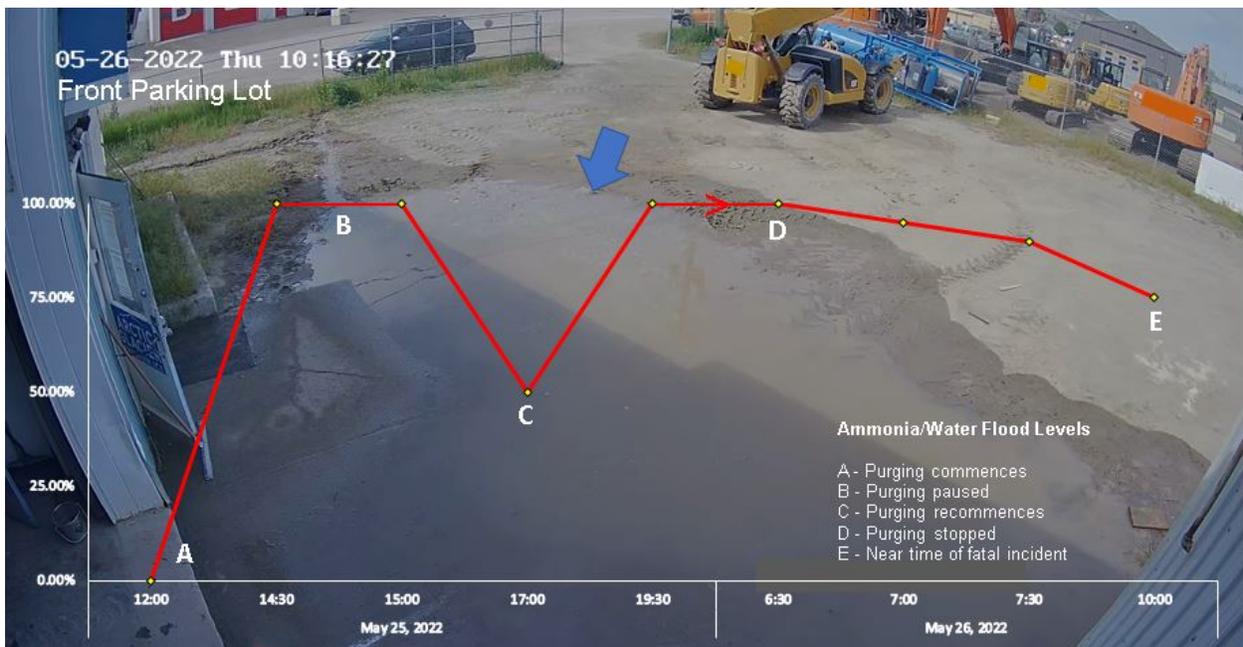


Image E – Parking lot flooding partially recedes near the time of the fatal incident.