QUEENSLAND COURTS

CORONERS COURT OF QUEENSLAND

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of PJR**
TITLE OF COURT:	Coroners Court
JURISDICTION:	BRISBANE
DATE:	5 April 2024
FILE NO(s):	2022/1665
FINDINGS OF:	Ainslie Kirkegaard, Coroner
CATCHWORDS:	CORONERS: Work-related death; forklift; unloading shipping containers; semi-trailer axle stacking configuration; loose load; unstable movement; entrapment; safe work procedure

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Background

1. PJR was a 68-year-old man who died at his workplace on 11 April 2022.

2. His death was reported to the coroner because he died while unloading semi-trailer axles from a shipping container at his workplace.

PJR's employment

3. PJR had been employed at his workplace for 14 years. The business imports amongst other things, heavy vehicle components including semi-trailer axles from a manufacturing plant in China. The business receives the axles in shipping containers that arrive at port and are transported by truck to PJR's workplace.

4. PJR had a variety of roles within the business including processing orders, dispatch, unloading of containers, Occupational Health and Safety Officer, First Aid Officer, and maintaining and ordering office supplies.

5. He held a current high risk work licence to operate forklifts. At the time of his death, the unloading of shipping containers was predominantly the responsibility of one employee and was a one-person job. PJR was qualified to undertake this job and had performed this role for about eight or nine years before it was taken over by another employee for several years. PJR would perform the role when the other employee was absent. That employee had left the business two weeks prior to PJR's death, so PJR resumed the role on a full-time basis.

6. In his capacity as Occupational Health and Safety Officer, PJR had written a procedure document - *Operations Bulletin – Unloading Axles from Containers* - outlining the steps to follow for unloading axles from a shipping container. The procedure document had been in place for several years.

The incident on 11 April 2022

7. Two blue shipping containers loaded with 14 sets of semi-trailer axles (56 pieces) had been delivered to the business on Friday 8 April 2022. The axles weighed 343kg each and were packed in sets of two, three or five. The container was stacked floor to ceiling with trailer axles. When shipping containers arrive, the employees endeavoured to get the contents unloaded within a week. One of blue shipping containers was placed in the forecourt of the business nearest the front entry roller gate, to the right of the driveway looking from the street.

8. There were five employees including PJR on site on 11 April 2022. PJR had the most experience unloading shipping containers.

9. The plan that day was for PJR to unload the containers while two other employees dispatched customer orders. Employee 1 was 'picking and packing' and Employee 2 was making up king pin assemblies. Employee 2 and PJR discussed where the axles to be unloaded would be placed.

10. PJR was last seen by a work colleague driving a Caterpillar forklift in the forecourt sometime between 11:15am – 11:30am.

11. At around 11:45am, employee 2 realised he hadn't seen PJR or heard the forklift for a while. Employee 1 went out to the forecourt to look for PJR. He saw the forklift at the front of the shipping container with the engine running. He could not see PJR, so he called out and looked further around the forecourt. On closer inspection, he saw PJR inside the shipping container, tucked around the door, pinned to the side wall. An axle was pressed against his torso. He was unresponsive and purple. Employee 1 immediately ran back into the office to alert his colleagues to the situation. Another employee phoned 000. Employee 2 went outside to the shipping container, turned off the forklift engine and saw PJR.

12. Employee 2 stood out on the footpath to flag down the ambulance. A Queensland Fire & Emergency Service crew arrived first at 12:02pm and he directed them into the forecourt. Police and

paramedics arrived at 12:11pm. Employee 2 assisted by driving another forklift into position to help stablise the scene. PJR was confirmed deceased.

13. Officers from the QPS Forensic Crash Unit attended the scene and commenced a forensic crash investigation. Workplace Health and Safety Queensland inspectors also attended and inspected the scene and relevant plant.

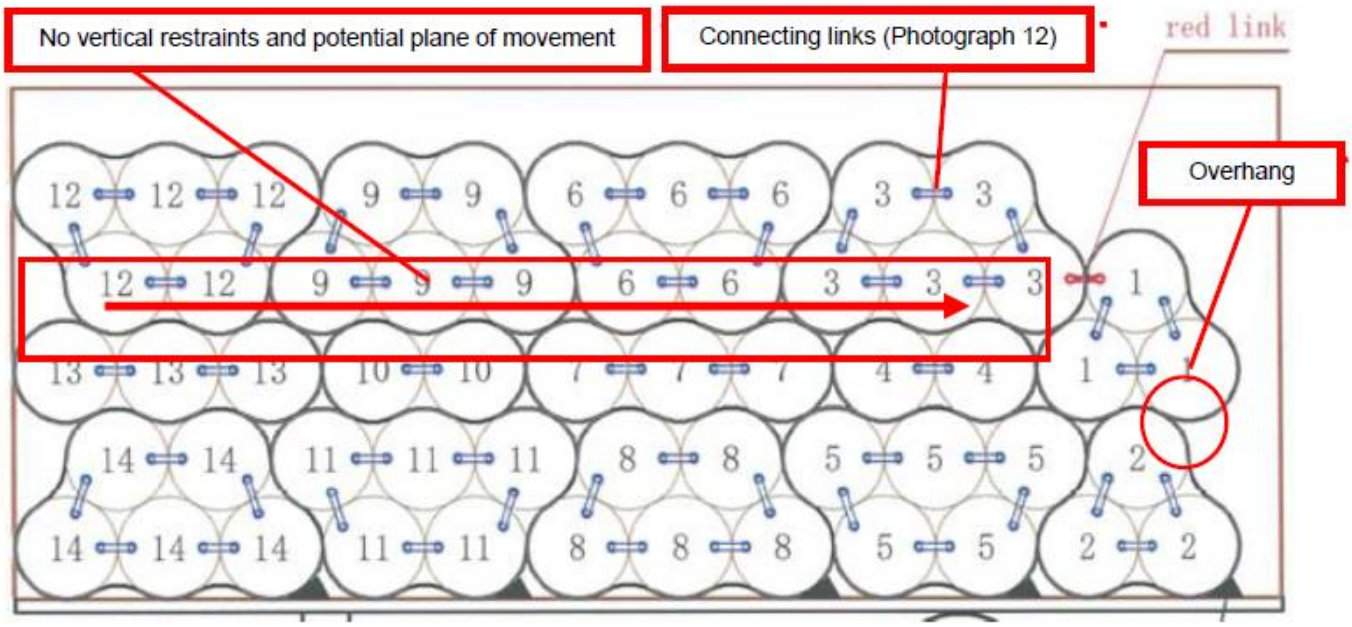
Scene examination

14. The Caterpillar forklift PJR had been using was located at the entrance of the shipping container. The engine was off, and the tines were flat on the ground with the left side tine poking under the container. The forklift had not been moved from its position since Employee 1 found PJR.

15. The right-hand door of the blue shipping container was fully open while the left-hand door was partially open. The right-hand door of an adjacent shipping container containing axles was partially open and its left-hand door was closed. Tools used to open the shipping containers were found nearby.

16. PJR was found pinned and trapped between fallen axles and the door hinge area between the side wall and a left-hand door of the shipping container. The axles were pressed up against his left face, left neck, left and central chest and his abdomen. His head was tilted to the right and appeared congested (purple). The axles entrapping him were grouped together in a pack of three, weighing approximately one tonne.

17. An unloading diagram of how the axles were stacked was found on the floor within the incident container. This diagram came with the container and showed the configuration of the stacking and a numbering system to assist in the unloading process. The axles were bundled in different configurations (eight sets of five linked top and bottom, two sets of two linked in the centre and four sets of three of which two sets were in the centre and two were at the front near the door of the container. The two sets of three linked at the front of the container were arranged in a pyramid formation, the bottom of the top pyramid was placed on the top of the bottom pyramid and was connected to the adjacent set by four red alloy links connected to drum studs on each side of the axles. The red links were looped over the drum studs and a wheel nut placed over.



18. There were two red links on the floor on the right-hand side of the container just behind the fallen axle 3-pack. These links were used to connect the axle 3-pack to another axle pack and hold the axle 3-pack within the container and stop them from falling. Due to its position, the axle 3-pack would have been the last bundle to be packed, and the red links were likely attached to the relevant axle packs at completion of loading the shipping container holding the last stowed axle pack to another axle pack.

19. To create a pack, the axles were held together with similar connecting links which are black in colour. According to the unloading diagram of the stacked axles it was only the last axle pack to be stowed which was attached to another pack. Each other pack was held in position due to the stacking process. Once the red links are removed the last stowed pack is free to move.

20. Two more red links were found still hanging from an axle bolt. This particular axle was still in position within the container; it was not the fallen axle. There was no wheel nut found screwed to the end of the relevant bolt, but a nut was found on the floor in the general vicinity below the axle on the left-hand side of the container.

21. Examination of the fallen axle 3-pack noted red-orange paint transfer on a bolt attached to one of the axles, consistent with the red links. For this bolt, it was noted the nut attached to the end had only been screwed on approximately half-way into the nut. The nuts attached to the other bolts were screwed on further onto the bolts. This bolt was on the right-hand side of the axle as positioned within the container, suggesting the red links located on the right-hand side floor of the container had been attached to this bolt.

22. Examination of the bolt with the two red links which were still in place, hanging from the bolt, noted there was the same colour paint transfer on the bolt.

23. Examination of the nut located on the floor underneath the axle noted the same colour paint around the inside edges of the nut.

24. The location of these observations at the scene indicated the nut on the right-hand side of the fallen axle 3-pack had been removed, then the two red links were removed from the bolt and dropped to the floor of the shipping container. The nut was screwed back on the bolt. PJR then moved to the left-hand side of the container, unscrewed the nut which had been attached to the bolt with the two red links. This nut dropped to the floor, but the two red links were not removed.

25. There were white nylon straps in the shipping container which appeared to have been cut as the sections of the straps that had separated appeared to have smooth defined edges, not as if they had been stretched and pulled under force. Bolt cutters were found leaning against the second container.

26. Within the container were small ‘chocks’ located on the floor at the base of the front axle. These chocks were nailed into the floor. They were found to be flimsy in construction and offered no real support to keeping the axles in position. When examining the chocks in the second container it was found one of them wasn’t properly attached to the floor and could easily be pulled out.

27. Measurement of the lateral and longitudinal gradient of the shipping container determined it was relatively level.

Autopsy examination

28. External examination including CT scan noted features consistent with traumatic asphyxia (prominent petechial haemorrhages on the eyelids, torso, right arm and right leg indicating abnormal blood flow due to compression, together with compression-type injuries on the left chest, left arm and left back of torso). Internal examination revealed bilateral rib fractures (more prominent on the left) and a left sided pneumothorax. There was some left sided scalp haemorrhage but no significant head injury. There was also mild coronary atherosclerosis and fatty liver. Biochemical analysis detected no acute abnormalities. Toxicological analysis detected non-toxic levels of antidepressant, antihypertensive, diabetes, anti-inflammatory analgesic and anticoagulation medications. No alcohol or other drugs were detected.

29. Having regard to these findings and the circumstances in which PJR was found, the pathologist determined the cause of death to be traumatic asphyxia as a consequence of entrapment between shipping container wall and semi-trailer axles. The pathologist explained there was evidence of significant compression of the torso by the semi-trailer axles which entrapped and compressed PJR against the wall of the shipping container.

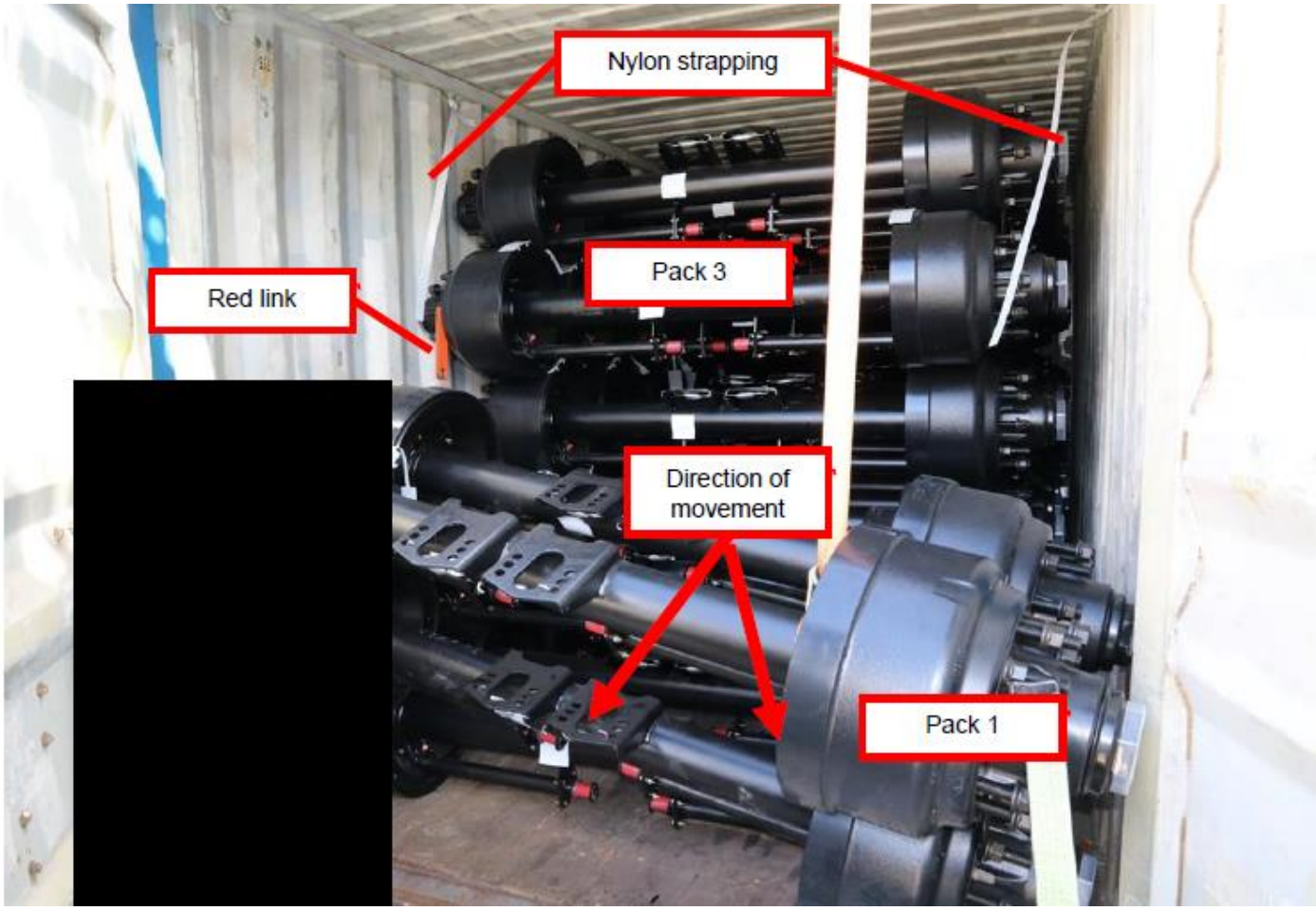
Forensic crash and workplace health & safety investigation outcomes

30. The business and its employees cooperated fully with both investigations.

31. There were no witnesses to the incident as PJR was working alone.

32. There were no on-site CCTV cameras and none of the surrounding businesses had footage of the incident. However, footage was obtained from business premises on the northern side of the workplace. These premises had been vacant for a month but its CCTV cameras looking towards workplace were still operational. The available footage focussed on the front carpark area of the business premises but captured a very small portion of the business' forecourt visible through a gap between the building structure on the other business premises and a brown shipping container in the forecourt. Movement by PJR and the forklift can be seen through this gap on the CCTV footage. PJR is easily identifiable by his snow-white hair.

33. Review of the CCTV footage shows regular movement by PJR and the forklift past the gap from around 10:41am until 11:21am. At 11:21am, PJR is seen on foot appearing from the right beside the brown shipping container and then moving out of sight back towards the right behind the container. This is the last time PJR is seen on the footage. Employee 1 is seen walking from left to right across the gap just before 11:47am and then running back across the gap from right to left soon afterwards. Employee 2 is seen running from left to right across the gap at 11:48am. With reference to this footage, there is a 26-minute period between PJR last being seen on the footage to when he was found by Employee 1.



34. Scene examination determined the following sequence of events:

- PJR parked the forklift in front of the shipping container then opened each of the doors. It is not clear why the left-hand door was not fully opened prior to PJR positioning the forklift.
- He then cut the diagonal white strapping while the forklift was parked outside the container.
- He removed the red links from the righthand side of pack 1 and 3 and placed them on the floor of the container.
- He then moved to the left-hand side of the container and unscrewed the nut on one of the bolts allowing the red links to be taken off.
- The incident occurred while he was in the process of the removing the left-hand side red links (which were found still hanging on pack 3). A wheel nut from pack 1 was found on the floor of the container and a wheel nut from pack 3 was found on an adjacent wheel stud.
- It appeared that pack 1 rolled or slipped forward on pack 2, pinning PJR against the left-hand side door of the container.
- Pack 2 did not display any movement inside the container post incident. The floor chocks positioned in front of pack 2 were still in place and not deformed.

35. The workplace health & safety investigation identified axle pack 1 becoming unstable and rolling over pack 2 and/or slipping forward towards the doors (unstable movement) as the hazard requiring management in this scenario. The likelihood of the risk of pack 1 becoming unstable was potentially increased by the removal of the red links on both sides of pack 1. This risk manifested when pack 1 was not supported during removal of or shortly after removal of the red links. The investigation determined the task of removing the temporary restraints is a haphazard activity, requiring specific steps to be taken to ensure the stability of the axle pack. There was no other way of removing the temporary restraints without the worker being in the fall shadow of the axle pack.

36. The forensic crash investigation determined that PJR did not follow the instructions of the *Unloading Axles from Containers* procedure document. Step 5 of the procedure instructed the forklift to "*...be brought to the front of the container and placed to take the first three axles out of the container [as shown in a photo] ensuring the forklift is butted up as close as possible to the axles holding them in position. The forklift is then to be placed in neutral, have park brake applied and then be turned off. At this point position yourself as shown allowing you to reach and unbolt the first red tie down point, this process is to be repeated for the opposite side. Note: at all times keep your body from being in between the forklift and axles and at no point stand on the fork tines.*"

37. Step 6 instructed "*once both red tie downs have been unbolted, re check that forklift is still in position and is carrying the load of the axles. Once again position yourself as above and remove the red axles tie downs [as shown in photo] (repeat for both sides). Once complete the three axles will be ready for unloading with the forklift*."

38. In effect, these measures were designed to take the weight of the load and ensure it does not move during the process of loosening and removing the red links.

39. There were no formal written documents able to be provided to demonstrate PJR having been specifically trained in unloading axles from containers though evidence was provided showing he had been trained and supervised in this task by a previous employee. It was noted PJR had been unloading axles from containers since 2005.

40. Consideration was given to other factors that may have contributed to the incident included:

    a. *Packs 1 and/or 3 may have shifted during transit* – it was observed that the axles were not prevented from sideways movement within the shipping container, potentially allowing pack 1 to not be centered with packs 2 or 3. It was not able to be determined whether pack 3 had moved forwards towards the doors thereby increasing the overhang of pack 1 and increasing its instability when PJR was removing the red links.

    b. *Inadequate packing of the axle packs* – it was observed the majority of the axle packs including pack 3 had shifted towards the left-hand side of the container. The container wall was corrugated, creating additional space. No packing material was installed to the walls of the container to prevent side movement of the axles. To remove all risk of the product moving during transit would require more packing or individual packaging and therefore reduce the cost effectiveness of the load being moved. Ideally if cost was not an issue, each axle could be

contained in a simple wooden case or container. This could prevent any movement of the axle and allow workers during the loading and unloading stage of the container not to be exposed to a falling axle and the product would be protected from damage. Additionally, another option would be some form of “chock or packing” between the hub caps of the axles and the walls of the container to control the possible sideways movement during transit.

c. *Absent stud nuts on the inside thread of the wheel nuts where red links were positioned* – it was observed that wheel studs were positioned on the outside of the red links. Paint wear had occurred on the hub of the front axle in pack 3 which may indicate movement of the red links along the wheel stud due to the wheel nut not being tight against the hub or the ability of the red links to move along the wheel stud up to the wheel nut in multiple planes. The red links were the only restraint device preventing movement of pack 1. It was identified that the method of securing the red link on pack 3 (one wheel nut only) may have allowed movement of the red link along the wheel stud thereby allowing movement of pack 1, potentially causing the hubs of axle packs 1, 2 and 3 to be offset and not centred. This ability for axle pack 1 to move may affect its centre of gravity and lead to the red links becoming loose or tight depending on the movement which may affect the stability of axle pack 1. In contrast the black links between individual axles within a pack had the wheel nut tighten off the wheel stub up against the hub, not allowing for movement of the links along the wheel stud or subsequently the individual axles in the pack.

d. *Decline in angle of hub stand where container was positioned* – there was a 0.8-degree decline in the lateral grade across the door of the container and a 1.3-degree decline in the longitudinal grade along the length of the front door. The left hand-door was impeded by the forklift tines which fowled the door, preventing it from opening all the way and causing a pinch point when axle pack 1 moved uncontrollably. It was suggested that, had the container door been fully opened and secured against movement, PJR may have been able to remove himself from the possibility of any falling axles. Ideally the container should be placed on level ground and with full swing clearance for the doors and the ability to secure them out of the way.

e. *High gloss paint coating on axles increased the slip potential* – whether the paint coating affected the coefficient of friction between axle packs 1 and 3 and led to the uncontrolled movement of pack 1 was undetermined.

f. *Inadequate safe work procedure for unloading axles from containers* – expert review of the then current procedure document and training materials identified a number of areas requiring greater clarity including an explicit requirement that only trained workers are permitted to unload a container; to use the forklift, chains or straps on the container doors to control a loose load; to have the container doors opened fully and secured; to position the forklift as a means of controlling the load in case it moves and provide information about where the forklift tines were to be positioned or inserted into the axle packs. It was identified that the requirement for workers to turn the forklift off when the tines are positioned may lead to hydraulic creep and cause any suspended load to become unstable and move uncontrollably.

41. Expert opinion identified that unloading axles from containers should be undertaken by two people for at least the opening of the doors, the removal of the red link and the removal of packs 1 and 2. It was recognised that using the forklift to support a load without an operator on the forklift is a contradiction of the safe use of a forklift that requires an operator to be on a forklift when a load is supported.

42. It was noted that with the forklift in the suggested position against the axles, their minimal distance (approximately 550 to 600 mm space) either side of the forklift back rest may have made it difficult for PJR to access the space and it was possible he may have chosen not to have the forklift against the axles so he could more easily access the axles and the red links.

Action taken by the business following PJR's death

43. I am advised that the company subsequently amended its safe work procedures, issued a safety alert and provided specific training and instruction for a spotter involved in the activity of unloading axles from containers.

Findings required by s.45

Identity of the deceased – [deidentified]

How he died – PJR died from traumatic asphyxia when he became entrapped by a pack of three semi-trailer axles that moved forward uncontrollably while he was in the process of unloading axles from a shipping container at his workplace. PJR was very experienced in this task, having performed it at the company since 2005. He was working alone when the incident occurred. For reasons not known, he had not positioned the forklift tines to support the axle pack as required in the then current safe work procedure while he was removing the temporary restraints from the axle packs. The position in which he had left the forklift tines impeded the full opening of the left-hand side door of the shipping container, creating a pinch point when the axle pack moved uncontrollably. It is not known exactly what caused the axle pack to move when it did. The business subsequently amended its safe work procedures to ensure the safe work procedures for unloading axles from containers require the activity to be undertaken with a spotter and to provide greater clarity and safety to workers undertaking the task. This was supplemented with specific training.

Place of death – [deidentified]

Date of death – 11/04/2022

Cause of death – 1(a) Traumatic asphyxia

1(b) Entrapment between shipping container wall and semi-trailer axels

I close the investigation.

Ainslie Kirkegaard
Coroner

5 April 2024