



Government of South Australia
SafeWork SA

NATIONAL FALLS FROM HEIGHTS IN THE HEAVY VEHICLE SECTOR REPORT



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1 BACKGROUND

1.1 Overview

Falls from heights in all states and territories represent major contributions to workplace injury statistics and workers compensation claims, with 'falls from heights' from trucks representing a sizeable proportion of these claims.

Based on this information, the National Occupational Health and Safety Commission (NOHSC) identified the need for national Occupational Health and Safety strategies in this area. In November 2003, the Heads of Workplace Safety Authorities (HOWSA) agreed that it would be beneficial to develop a number of national compliance programs, which aligned to the National OHS Strategy. It was decided that the compliance program for the transport industry would focus on 'Falls From Heights in the Heavy Vehicle Sector'. The cornerstone of the program was to work with industry to achieve improved safety outcomes. WorkCover NSW was nominated as the Lead Agency and responsible for the coordination of the national response.

In order to coordinate the program, the National OHS Road Transport Coordination Group (NORTCG) was formed. This group met regularly to scope the program, agree on reporting formats, media releases and to develop a consistent approach across the jurisdictions including development of a falls checklist used by inspectors during field visits. These meetings also provided a forum for national industry associations to meet with several state OHS regulators from across Australia at the one forum.

The strategy for the program adopted a significant advisory element, which preceded the compliance/verification element. The four primary sectors focused on during the program were: car carriers, tankers, dry bulk haulage (pneumatic) and livestock transport. This program was coordinated to run jointly with participating states and territories.

Due to resource limitations at the time, the ACT and the Northern Territory delivered no specific targeted intervention program. However, they were briefed on the program and undertook to use the checklists developed for the program, as well as information packages, as part of their everyday compliance activities. Tasmania chose not to participate in the program.

This report details the methodology that underpinned the program, providing an overview of the advisory element and the compliance/verification element implemented by participant state agencies. It also provides an over view of compliance trends and examples of practical solutions implemented in each of the targeted sectors and in the appendix examples of practical solutions in other sectors.

1.2 Methodology

Advisory Element

The advisory element was a large component of the program and consisted of field days and presentations across Australia, along with media releases, a series of checklists and publications. The advisory element involved working with stakeholders to identify companies that had developed innovative products and solutions to eliminate or reduce falls from heights risks. These companies were invited to participate in solutions field days at which industry was invited to watch practical demonstrations and presentations of these products and solutions.

Wagga Wagga was the venue for the first field day jointly hosted by New South Wales and Victoria at which all participating states and territories were in attendance. The field day showcased several innovative design solutions developed within the livestock transport and car carrier industry, with demonstrations given throughout the day.

The events of this day were captured on photograph and video, which were used during further presentation and field days held by all jurisdictions as well as being provided to a number of industry associations.

In addition to field days and presentations, each state provided advice and assistance to Industry Associations and Unions. The states worked closely with these groups to promote the program to their respective members in providing advice and assistance.

The scope of the program also provided latitude for those states that identified a need to encourage or assist premises where trucks delivered to or picked up from to put safe systems in place for loading and unloading. As such, a number of jurisdictions also interacted with a number of these companies, including oil refineries and livestock sale yards.

Compliance/ Verification Element

The field visits were conducted in a coordinated manner across Australia by participating agencies to verify that companies had adequately addressed the risk of falls from heights. Car carriers were the initial focus of the program. Due to the similarity of hazards, some states chose to combine the field visits for tankers and bulk dry carriers.

NORTCG also recognised the implications this program would have on the rural sector and the significant cultural shift required. For this reason the livestock carriers were visited last. This provided the livestock sector with over 12 months of ongoing advice and assistance by the respective agencies in the lead up to field inspection and was seen as having the greatest potential to affect positive safety outcomes.

It was agreed that each state would complete the advisory elements in each industry sector prior to the compliance/verification elements. That the compliance/verification elements would be undertaken in a coordinated fashion with each jurisdiction identifying a number of operators in each sector in their state and undertake inspection visits utilising a two-tiered approach.

The first tier required the operator being contacted and advised of the program then to make arrangements for the inspection of one vehicle belonging to that fleet operator. If during inspection it was determined that the vehicle required improvement, the inspector provided advice and obtained commitments from employers on what needed to be done to bring that vehicle up to a safe standard and a time frame for the work to be completed.

This vehicle was then used as a prototype for the second tier of the approach. The second tier required the company to develop an action plan for their entire fleet with a schedule of work to bring the remainder of its fleet up to similar or better standards as the prototype. The time frames for this work were also negotiated with the employer and the schedule monitored by the inspector.

2 PROGRAM OBJECTIVES

The key objectives of this initiative were to:

- Gauge and secure compliance with the OHS legislation particularly as it applied to falls from heights from heavy vehicles in each state or territory.
- Create awareness of the legislative requirements for the elimination or control of the risks associated with the operations of heavy vehicles, in particular, the risk of falls from heights.
- Create awareness of the legislative requirements to address, where possible, risks at the design and manufacture phase of heavy vehicle trailers.
- Increase the capacity of the heavy vehicle industry to implement and maintain appropriate safe systems of work.

3 SECTOR REPORTS

3.1 Car Carriers

Car carriers were the first sector undertaken in the compliance/verification element. Inspectors visited a number of car carriers to verify that the operators had falls controls in place.

During the inspections the Inspectors identified a relationship between the risks of 'falls from height' to the number of cars the trailer was designed to carry. The risk of falls from heights was greatest while operating from the upper decks and the deck above the driver's cabin. The working heights measured from the ground level to the point where drivers were accessing was approximately 3 metres.

Access and egress was also identified as an issue, with some car carriers having risks relating to access and egress. Some drivers were required to hold structural parts of the carrier to reach higher decks. Generally fixed ladders fitted to the vehicle did not have adequate hand hold mechanisms to assist with safely embarking on the platform of the deck (See fig 1 below).



Fig 1. Trailer not fitted with fall protection.



Fig 2. Trailer fitted with fall protection. Handrail provides some flexibility to allow for car doors to be pushed open.



Fig 3. Curved mudguard used as step platform for tying down vehicle above cab, also no handhold. Presented high risk.



Fig 4. Trailer fitted with fall protection, access ladder has extended handhold.

The Wagga Wagga field day, held as part of the advisory element also provided an opportunity for a consortium of car carrier operators to demonstrate an innovative solution to eliminating falls from heights in their industry. Their system involved a shipping container design to raise vehicles using hoists (See Fig 5 below). The vehicles were enclosed six in a cartainer with vehicles loaded one on top of another.



Fig 5. Vehicle ramps are hydraulically operated to eliminate manual handling risks



Fig 6. Cartainer can also be transported by rail.

Note. The NORTCG agreed that Western Australia and Victoria would be the contact point for the consortium to provide atmospheric monitoring and risk assessments.

3.2.1 Key findings/issues

- Site visits identified access and egress during loading and unloading cars on trucks and trailers as a major hazard as it contributed towards falls from heights and falls at the same level. In addition poor systems for securing vehicles loaded above drivers cab.
- Drivers were required to stand on areas that were unprotected from the risk of falls while carrying out tasks associated with restraining or securing cars to the trailer or truck.
- Operators need to take into consideration access and egress to cars being transported when implementing control measures.
- Anecdotal evidence from drivers and observations of inspectors indicated a lack of adequate loading and unloading areas at a number of car dealers.
- Traffic management at car sale yards while unloading vehicles was also identified as an issue.
- Manual handling of the trailers loading/unloading ramps was identified as an issue.
- Issues to be considered for the introduction of cartainers are the consideration of the working environment during the loading and unloading of the cars, especially the thermal and atmospheric environment as well as the inspection and maintenance of the vehicle hoist.

One of the outcomes of the commitments from companies to upgrade their entire fleets to address falls hazard is that 90 per cent of all new cars and 40 per cent of all used cars transported in Australia will be by car carriers fitted with adequate fall protection measures.

3.2 Tankers

Tankers were the next sector rolled out as part of the program. Typical types of tankers inspected during the program included water tankers, grease waste tankers, septic waste tankers, petroleum product tankers and elevated temperature tankers.

During the inspections operators were encouraged to put in place control measures that negated the need to access the top of the tanker.

It was observed that approximately 98 per cent of the tanker vehicle companies visited had systems in place with regards to falls from heights. At all of the sites visited, an inspection was conducted on at least one-tanker vehicle belonging to the operator and ensuring that this vehicle was up to a safe standard. The operators and the inspectors then negotiated a time frame to bring the entire fleet up to the same or better standard.

In the majority of cases involving road tankers, it was found they were designed to be unloaded from ground level (see Fig 9 below). Metering devices installed also negated the need for the driver to access the top of the tanker to take a dip reading as in the past.

Where access to the top of the tanker vehicle was required, primarily for venting, cleaning and the loading of elevated temperature products, fall protection devices such as hand rails (see Fig 7,8 and 10 below), Restraint systems (see Fig 13 –16 below) and Platforms, Gantries and Fall Arrest Systems fitted at controllers premises were provided.



Fig 7. Pop up handrails and non-slip walk platform handrails and non-slip walk platform.



Fig 8. Retro fitted side handrail to existing tank.



Fig 9. Tanker fitted with metering devices and unloading hoses



Fig 10. Pop up handrails showing ladder and actuator

At the conclusion of the program, operators with over a thousand tanker vehicles have been inspected and are fitted with fall protection.

3.3.1 Key findings/issues

- Site visits to controller premises where products were loaded identified compatibility issues between infrastructure at some sites and pneumatically raised handrail system attached to liquid vehicle tanker trailers. The infrastructure, such loading equipment, prevented the pneumatically operated handrail system from being raised, therefore providing no fall protection for the driver when accessing the top of the liquid road tanker. This required the controller of the premises to install a platform/gantry or safety line systems.

- A lack of systematic inspection procedures for fall arrest systems was also identified. Particularly for the anchorage points, webbing and stitching of the harness.
- Older liquid tankers had issues with regards to accessibility to emergency stop buttons not being ergonomically located. The emergency stop button was situated either behind or above where the hose couplings connected to the vehicle tanker loading or unloading controls making it difficult to access if loading or unloading had to suddenly stop.
- Pneumatically operated handrails on tops of tankers can suddenly lower without warning when the prime mover is detached from the trailer or if air pressure drops. This can be overcome with an interlock for the handrails when in the raised position.

Additional outcomes of this program include:

- Oil depots fitting scaffolding and gantries at loading points;
- Electronic in-ground fuel tank metering devices fitted at service stations that negate the need for the service station attendant to see a dip done at the top of the tanker to confirm the amount of fuel delivered. This also has the benefit of negating the need to dip the under-ground tanks, which also posed a hit by moving vehicle hazard.
- Farms that have installed ground level filling points for the above ground elevated fuel storage tanks. This is a flow on from tanker drivers saying they will no longer climb the ladder to take the hose up.

3.3 Dry Bulk (pneumatic)

The dry bulk sector was the third component of the program, although in some states was conducted in conjunction with the tankers program. The dry bulk program focused on tankers carrying dry bulk materials such as sugar, grain, flour, cement and fly ash and was run in accordance with the operating protocols of the tanker sector program.



Fig 11. Gantry used in situations where hand rails could not be raised



Fig 12. Platform lowered.



Fig 13. Person connecting to TRAM system.



Fig 14. Person using TRAM system.



Fig 15. Close up of the arm attachment of the TRAM system



Fig 16. Close up of the arm attachment of the TRAM system

3.4.1 Key findings/issues

It was observed that the majority site loading facilities and the majority of pneumatic bulk vehicle contractors had systems in place regarding falls from heights.

In all cases it was found that the bulk dry pneumatic tankers were designed to be loaded from the top of the tankers and discharge/unloaded from the outlets that were accessible at ground level.

Where access to the top of the tanker vehicle was required to open and close hatches during the loading of goods, fall protection devices were provided. This included:

- the Booth Handrail System
- the Total Restraint Access Module
- fall arrest Systems
- stairways
- platforms and gantry's.

It is anticipated that by the conclusion of the program the majority of dry bulk pneumatic tanker vehicles will be fitted with fall arrest devices where needed, and sites where loading is carried out will have adequate fall protection devices in place.

3.4 Livestock

Similar to the other components of the program, livestock focused on a two-tiered approach.

At the sites visited, an inspection was carried out on at least one livestock carrier vehicle owned by the operator. Many of the operators visited were owner-drivers operating small businesses. As such, the program had a strong advisory element. The information provided to the livestock vehicle operators focused on creating an awareness of the legislative requirements relating to 'falls from heights' and creating an awareness of practical solutions.

Most operators visited during the program had put in place systems of work so that the vehicle operator was able to load and unload livestock either from ground level outside the transporter, or from wholly within the trailer. The operators rely upon the internal gates of the vehicles as barrier protection against livestock and used internal ramps to access different levels of the transporters (see Fig 24).

Other operators installed fall protection systems that allow operators to attach to the side of trailers using harness systems that travel along a rail fitted to the top of the transporter (See Fig 18,19 and 20). This system allows operator to reach over the top of the transporter from outside the vehicle during loading and unloading and has the advantage of removing the operator from the risk of contact with livestock.

During the program a number of livestock transporters were observed as having centre catwalks fitted to the top of the units (See Fig 17). None of the centre catwalks observed were fitted with fall protection controls. Additionally, due to the variable nature of locations in which livestock is loaded and unloaded, there is the potential of coming into contact with overhead power lines while working from the top of livestock transporters. Warning signs should be installed on the vehicles alerting persons to this risk of accessing the tops of trailers and ladders removed.

Whilst initial compliance levels were low, it is anticipated that compliance levels will increase sharply as a result of this program. Transport Associations in various states have been assisted in the developed of guidance material on falls prevention for their members.



Fig 17. Centre catwalk fitted poses a high falls risk and high risk of contacting power lines.

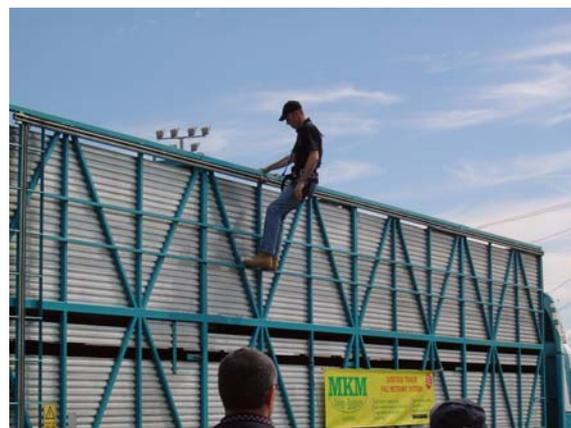


Fig 18. Static type safety line connected to tracked rail along side and top of trailer.



Fig 19. Inertia reel lanyard connected to safety line running along the top of the trailer.



Fig 20. Abseil style safety line with harness connected to climbing rope connected to slide rail at top of trailer.



Fig 21. Walk way with handrails that slides out from under floor on multi deck trailer. Under development to reduce manual handling issues.



Fig 22. Walk way that folds onto the side of the trailer. Under development.



Fig 23. Sliding segregation gate opens to provide driver protection from animals

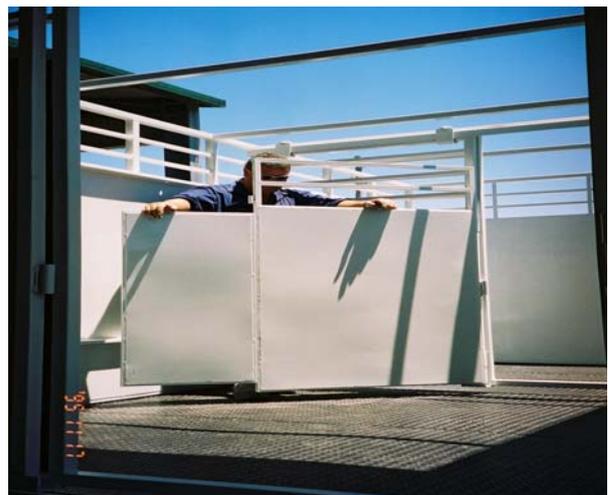


Fig 24. Sliding segregation gate showing drivers position when loading and unloading.

3.5.1 Key findings/issues

- Livestock transport field days drew higher than expected attendance figures this demonstrated an interest from industry to work with legislators.
- The procedures used during loading and unloading of livestock trailers vary from region to region and appear to be dependant on several variables. Those variables include the temperament, breed and species of the livestock and the type of truck and trailer being used.
- Many livestock transport companies have devised systems of work that eliminated working at height. Companies have implemented procedures where loading and unloading is done from either ground level or from within the stock container (see Fig 24).
- Some livestock transport companies and trailer manufacturers have begun installing fall protection harness systems onto the sides of livestock trailers (see Fig 18,19 & 20). . These harnesses allow operators to remain protected from the risk of falling while working at height on the side of trailers. When retro fitted these can add to the width of the trailer. Several Road Transport Regulators have issued over width exemption to allow these devices to be fitted.
- Some livestock trailers were fitted with a top centre catwalk (see Fig 17). These catwalks were not fitted with fall prevention controls. Due to the height of the trailers and the locations where they are loaded, there may be an additional risk of operators coming into contact with overhead power lines. Warning signs should be installed on the vehicles alerting persons to this risk of accessing the tops of trailers and ladders removed.
- Due to the variety and location of premises where livestock is loaded and unloaded, transport companies should not rely on the premises for the provision of fall protection controls fitted too loading ramps.
- A significant component of the livestock transportation industry appears to consist of small operators and owner-drivers with few employees.
- Many employers appeared to rely on the skill and experience of employees during loading and unloading of livestock rather than more adequate control measures for falls prevention.
- There is a need to ensure that all links in the supply chain, especially at pickup and delivery points at farms, sale yards, export wharfs and meat works are considered when organising livestock transport.

Additional outcomes of this program include:

- The Australian Livestock Transporter Association has been proactive in the development of guidance material that includes safe systems for eliminating or reducing falls risk.

- Inspectors interacted with a number of livestock sale yards to improve safety standards in relation to falls (see Fig 25).
- A number of farms have improved or installed loading ramps with falls protection (see Fig 26).



Fig 25. Raised walk platform at sale yard fitted with handrails



Fig 26. Walk way fitted to the side of loading ramp. While an improvement, one side of the platform has potential for persons falling.

4 COMPLIANCE

In addition to presentations, field days and seminars attended inspectors visited 528 workplaces across the states. While the majority of issues were resolved with advice and assistance a number of notices were issued where there was a significant risk to health and safety. The following are representative of the types of notices issued:

- Access/Egress
- Falls from heights
- Management systems
- Personal Protective Equipment (PPE)
- Policies and procedures
- Risk assessment/identification
- Training

For individual compliance results, please refer to individual states.

5 PROGRAM OUTCOMES

Participating agencies acknowledge that the level of industry awareness of the risk of injury from falls from heights as an occupational hazard had significantly increased as a result of the program. Also increased, were their industry knowledge and their ability to develop and/or assist industry to apply OHS solutions. It

is anticipated that the success of the program and actions taken by stakeholders, will decrease the likelihood of falls from heights from truck injuries and the subsequent cost to the community.

The consistent approach, timing and use of check sheets by inspectors in all states, resulted in positive comments being received from industry about the 'level playing field', and that they 'knew where they stood'. The consistent approach also decreased the possibility of one state becoming a dumping ground for vehicles from other states and territories.

Due to the methodology of working with companies in providing advice and assistance, as well as requiring schedules of work for entire fleets its not possible to nominated the total number of vehicles rectified as a result of this program as much of this work is on going. The report also does not take into account the number of vehicles owned by subcontractors that were brought up to standard following requirements from the primary carriers they contracted to.

A flow on effect has also come from controllers of premises, who were captured as part of the program, now requiring vehicles coming onto their sites to be fitted with falls prevention systems. A market has also developed and suppliers of falls systems are actively engaging transport companies to promote the control mechanisms available. In addition, a number of trailer manufacturers were contacted during the program and are now fitting falls prevention systems to new vehicles.

Due to the above factors, the true extent of the impact of the program cannot be definitively shown. However, there are a number of indicators that reflect positive performance. For example, in the car carrier sector at least 90 per cent of all new vehicles and 40 per cent of all used vehicles are being transported by vehicles fitted with falls systems, or by containers in which the hazard has been eliminated. These figures are taken from the four major carriers only and do not include vehicles operated by the dozens of smaller operators visited.

The overall success of the program may not be fully know until falls injury statistics are compared over the coming years. Even this will not capture the effects the program has had outside the transport sector, where companies have put in place falls prevention systems as a result of interaction during the program.

6 NATIONAL PROGRAM CONCLUSIONS

The following are the national conclusions of the program:

- The scope of the program allowed for a flexibility, which contributed to the success of the program, as it allowed it to expand into areas outside of it's original intent as a transport program. This did however impact on the time frame the program could be completed in.
- States and territories had varied levels of resources.
- The consistency developed across Australia with the use of a standard checklist and inspector briefings was a strong point of the program. It assisted industry in complying and sent a clear

message to national operators that falls was an issue that was under considerable scrutiny and one that demanded their full attention.

- NORTCG meetings were crucial to the smooth running and success of the program and formed part of the communication strategy for the program. These meetings were also used to discuss emerging issues and actions to take in relation to common poor performers in each state. National companies addressed a number of these meetings, in order to flag with the respective regulators, the direction that their company was taking.
- NORTCG received positive feedback from industry, particularly about the 'level playing field'.

7 APPENDIX

This section provides an over view of compliance trends and examples of practical solutions implemented in other sectors of the heavy truck industry. The photographs featured in this report are for general illustrative purposes only. They are not to be relied upon, for the purposes of compliance with any legislation, code or guide. For clarification on what constitutes compliance, please refer to the relevant laws that govern your own state or territory.



Fig 27. Safety line system. Persons required to work on the trays of trucks attach to the safety line by lanyard and safety harness.



Fig 28. Safety line system. Persons required to work on the trays of trucks attach to the safety line by lanyard and safety harness.



Fig 29. Safety line system. Persons required to work on the trays of trucks attach to the safety line by lanyard and safety harness.



Fig 30. Safety line system. Persons required to work on the trays of trucks attach to the safety line by lanyard and safety harness.



Fig 31. Mobile scaffold placed by side tray. The lanyard prevents the drive falling of the far side of the tray.



Fig 32. Mobile scaffold placed by side tray. The lanyard prevents the drive falling of the far side of the tray.



Fig 33. Safety net attached to side of tray. More suitable when driver is placing packing etc. Not suitable standing on top of high load.



Fig 34. . Safety net attached to side of tray. More suitable when driver is positioning load etc. Not suitable standing on top of high load.



Fig 35. Portable side fence position against tray



Fig 36. Fixed scaffold provides protection for employee securing load.



Fig 37. Example of portable scaffold.



Fig 38. Example of portable scaffold.



Fig 39. Example of portable scaffold.



Fig 40. Handrail system used designed to be placed on top of containers



Fig 41. Fold away steps with handrail, allows drive safer access to tray.



Fig 41. Tarp spreader attached to forklift negates the need for persons to get on top of the load. Any attachment to a forklift must be in accordance with manufacturers specifications.



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