



NORTH AMERICAN HIERARCHY PROTOCOL FOR PROTECTION OF WORKERS ON THE TOP OF TANKS

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Introduction

CTRMC is the Cargo Tank Risk Management Committee. Our group was formed by cargo tank industry leaders on March 17th, 2010 to enhance the safety of ‘workers on the top of tanks’. Our members represent several significant industry stakeholders; motor carriers, consignees, cargo tank manufacturers, shippers and wash rack operators.

We estimate over 250,000 cargo tank motor vehicles are in use across North America. The useful service life of this equipment can approach 30 years or more. Replacing equipment with designs to eliminate the need to climb tankers is a long term goal. However, due to the number of cargo tanks motor vehicles in use - and their life expectancy, this document focuses on reducing exposures with existing equipment and facilities.

This document is intended to identify recommended best practices for industry stakeholders to employ for reducing the exposure to falls from cargo tank motor vehicles. Reducing the exposure to falls involves;

- equipment design,
- maintenance/inspection,
- state-of-the art replacement ladders (when needed),
- loading and unloading facilities,
- use of the equipment and protocols for procedures,
- training and policy/procedures, and
- policy/ procedure enforcement.

Various governmental agencies may have jurisdiction over safety aspects of motor vehicles and facilities. This document is intended as a proactive means to address the industry’s goal of reducing exposure to falls at the range of facilities and situations where workers will climb onto cargo tank motor vehicles. Additional details on governmental jurisdiction can be found in the TTMA Recommended Practice No. 59.

This document is advisory and contains best practices. However, using this guide does not guarantee compliance with federal, state or local laws - and regulatory compliance remains the responsibility of parties using this guide.

Eliminating the need to climb onto, or work on the top of tanks, is the preferred method of reducing exposure to falls, and should be addressed prior to considering other control measures outlined in this document. CTRMC’s long term objective is to eliminate the need for workers to perform tasks on the top of tanks.

The top ten reasons workers ascend the top of transportation tanks were determined to be:

- 1) Assuring security
- 2) Checking equipment including
 - a. cleanouts
 - b. manhole
 - c. venting
- 3) Extracting samples
- 4) Loading or unloading product
- 5) Assessing liquid content levels
- 6) Initiating
 - a. air unloading
 - b. vapor recovery
- 7) Performing maintenance and routine inspections
- 8) Washing tank
- 9) Removing snow
- 10) Discharging heel

Definitions

Fall Protection System: A system designed to protect personnel from the risk of falls when working at heights of four feet, or greater.

Fall Prevention: A structural design to limit a fall to the same level (e.g., guardrails, aerial lifts with work platforms).

Fall Arrest System: The components of a Fall Arrest System include a full body harness; shock absorbing lanyard, or self-retractable lifeline; and locking snap hooks - all of which must meet Occupational Safety & Health Administration (OSHA) criteria. Anchor points must be approved for a static load of 5000 pounds, or engineered to meet a 2:1 safety factor.

Cargo Tank Motor Vehicle: A motor vehicle with one or more cargo tanks permanently attached to or forming an integral part of the motor vehicle.

Stakeholders: Interested cargo tank industry personnel and/or organizations described by one or more of the categories, below.

Workers: Employees and independent contractors for motor carriers, shippers, manufacturers, consignees, and other cargo tank industry functions.

Shippers: Businesses, organizations or individuals involved in the practice of hiring motor carriers to transport materials in cargo tank motor vehicles.

Cargo Tank Manufacturers: Businesses or organizations focused on the design and construction of cargo tank motor vehicles.

Equipment Maintenance Facilities: Businesses, organizations or individuals involved in the repair and/or continuing qualification of cargo tank motor vehicles.

Consignees: Businesses, organizations or individuals intended to receive materials from cargo tank motor vehicles.

Motor Carriers: For hire or private trucking firms operating in intrastate or interstate commerce.

Cleaning and Washing Facilities: Businesses with equipment to clean cargo tanks.

Industry Groups: American Chemistry Council (ACC), International Society of Beverage Technologists (ISBT), National Tank Truck Carriers (NTTC), Truck Trailer Manufacturers Association (TTMA)

Within the stakeholders various workers may access the top of tanks, and include:

- Drivers
- Wash rack workers
- Product loaders
- Product unloaders
- Maintenance workers
- Inspectors
- Management
- Intermodal transloaders

Impacted stakeholders may - or may not - have direct control over the employees, such as a driver picking up a load at a shipper. The goal of this document is overall exposure reduction, and not simply the transfer of the risk – or, activity - from one stakeholder – or, impacted employee - to another.

Stakeholder Responsibilities

Shippers

- Review methods to eliminate needs to access the top of tanks.
- Work with customer contacts to reduce needs for tank top samples.
- Provide safe access to the top of tanks, with protection from weather, whenever practicable.
- Ensure proper fall protection is available where tanks are loaded, unloaded and inspected.
- Ensure fall protection, and access to the top of tanks, is maintained in good condition.
- Ensure all employees are trained in task expectations.
- Conduct observations to enforce procedures.
- Document policies, procedures, training and compliance reviews.
- Provide training for impacted workers on using fall arrest systems.
- Include fall protection and fall arrest systems in facility design.
- Design and follow preventative maintenance programs for all devices and systems (e.g., fall arrest systems, stairs, walkways) that are part of the fall exposure reduction strategy.
- Adopt a safety based performance program to drive awareness for falls and consequences.
- Assure all workers performing work tasks are properly trained per federal, state and local regulations.
- Conduct root cause analyses for injuries and near misses.
- Participate in industry activities and committees, including CTRMC, addressing safety and fall related exposures and controls across the industry.

Cargo Tank Manufacturers

- Comply with TTMA Recommended Practice No. 59 (Tank Trailer Ladders and Walkways).
- Provide safety decals to warn stakeholders of risks associated with using the equipment.
- Understand, and design to, equipment operator's needs and intended use.
- Provide customer support for equipment operators in assessing adequacy of ladders and walkways on their tank trailers.
- Assure all workers performing work tasks are properly trained per federal, state and local regulations.
- Conduct root cause analyses for injuries and near misses.
- Participate in industry activities and committees, including CTRMC, addressing safety and fall related exposures and controls across the industry.

Consignees

- Adopt practices to reduce or eliminate tasks performed on the top of tanks.
- Provide stairs, platform and /or fall protection, when possible, if tasks on the top of tanks cannot be eliminated.
- Use the ladders and walkway provided on trailer as a last resort for access the top of tanks.
- Supply an area on premise – protected from the weather, when feasible - for drivers to check and secure their load in order to stay in DOT Compliance guidelines.
- Assure all workers performing work tasks are properly trained per federal, state and local regulations.
- Conduct root cause analyses for injuries and near misses.
- Participate in industry activities and committees, including CTRMC, addressing safety and fall related exposures and controls across the industry.

Motor Carriers

- Recognize a duty to ensure the safety of all employees faced with the possibility of working on the top of tanks.
- Assess risks associated with work functions requiring workers to be on the top of tanks.
- Eliminate, where practical, any job functions that require workers to be on the top of tanks.
- Establish policies addressing expectations of employees with regards to performing remaining tasks that require work on the top of tanks.
- Publish procedures that are aligned with the safest methods of working on the top of tanks that are in accordance with the hierarchy of control published in Appendix A.
- Train employees on these policies and procedures.
- Audit employees on their adherence to these policies and procedures.
- Cooperate with shippers, consignees, and equipment manufacturers to ultimately design systems and cargo tank motor vehicles that do not require any work to be performed on the top of tanks.
- Assure all workers performing work tasks are properly trained per federal, state and local regulations.
- Conduct root cause analyses for injuries and near misses.
- Participate in industry activities and committees, including CTRMC, addressing safety and fall related exposures and controls across the industry.

Equipment Maintenance Facilities

- Provide fall arrest equipment per CFR 29 for workers assessing the top of tanks.
- Provide a clean, well lit work environment.
- Reduce tank top access to locations where fall arrest systems are available when possible.
- Inspect every cargo tank motor vehicle ladder and walkway in accordance with TTMA Technical Bulletin No. 125 (CTRMC General Ladders and Tank Access Equipment Maintenance) - even when not requested by the tank owner.
- Notify and document tank owner of any unsafe condition found during ladder and walkway inspections.
- Document all ladder and walkway tank inspections.
- Offer replacement ladders in accordance with TTMA Technical Bulletin No. 125.
- Assure all workers performing work tasks are properly trained per federal, state and local regulations.
- Conduct root cause analyses for injuries and near misses.
- Participate in industry activities and committees, including CTRMC, addressing safety and fall related exposures and controls across the industry.

Cleaning/Washing Facilities

- Provide fall protection/arrest systems and equipment.
- Develop standard operating procedures and or work expectations to ensure employees and other workers understand their roles and responsibilities.
- Periodically audit fall protection programs and audit more frequently when near misses, or serious events occur.
- Establish processes to recognize compliance and non-compliance with operating procedures and work task expectations
- Assure all workers performing work tasks are properly trained per federal, state and local regulations.
- Conduct root cause analyses for injuries and near misses.
- Participate in industry activities and committees, including CTRMC, addressing safety and fall related exposures and controls across the industry.

Worker Responsibilities

Drivers

- Have proper dress for the job including PPE based on the tasks.
- Understanding customer site specific rules and procedures.
- Comply with customer site specific rules and procedures.
- Conduct equipment pre trip and routine inspections.
- Follow documented task expectations.
- Communicate with company management/shippers/consignees.
- Use fall arrest equipment when available and or required.
- Comply with motor carrier task expectations for using ladders and working on tanks.
- Report defective equipment.
- Place defective equipment out of service.
- Document inspections required as part of work tasks.
- Meet essential job functional capacity requirements.

Wash Rack Workers

- Comply with task expectations for access and working on the top of tanks.
- Use required fall protection when accessing tops of trailers.
- Identify and communicate safety issues or concerns.
- Be empowered not to commit any unsafe act regarding accessing the top of tanks.
- Report unsafe acts to the proper management.
- Use proper hand protection, work shoes/boots and other PPE per the job expectations.
- Understand and comply with site work rules and task expectations.

Product Loaders

- Comply with task expectations for access and working on the top of tanks.
- Use required fall protection when accessing tops of trailers.
- Identify and communicate safety issues or concerns.
- Be empowered not to commit any unsafe act regarding accessing the top of tanks.
- Report unsafe acts to the proper management.
- Use proper hand protection, work shoes/boots and other PPE per the job expectations.
- Understand and comply with site work rules and task expectations.

Product Un-loaders

- Comply with task expectations for access and working on the top of tanks.
- Use required fall protection when accessing tops of trailers.
- Identify and communicate safety issues or concerns.
- Be empowered not to commit any unsafe act regarding accessing the top of tanks.
- Report unsafe acts to the proper management.
- Use proper hand protection, work shoes/boots and other PPE per the job expectations.
- Understand and comply with site work rules and task expectations.

Maintenance Workers

- Comply with task expectations for access and working on the top of tanks.
- Use required fall protection when accessing tops of trailers.
- Identify and communicate safety issues or concerns.
- Be empowered not to commit any unsafe act regarding accessing the top of tanks.
- Report unsafe acts to the proper management.
- Use proper hand protection, work shoes/boots and other PPE per the job expectations.
- Understand and comply with site work rules and task expectations.

Inspectors

- Comply with task expectations for access and working on the top of tanks.
- Use required fall protection when accessing tops of trailers.
- Identify and communicate safety issues or concerns.
- Be empowered not to commit any unsafe act regarding accessing the top of tanks.
- Report unsafe acts to the proper management.
- Use proper hand protection, work shoes/boots and other PPE per the job expectations.
- Understand and comply with site work rules and task expectations.

Management

- Develop, implement, communicate and enforce work task expectations for tasks and operations under their authority.
- Document work task expectations and observations or measurements to verify compliance with work task expectations.
- Assure all workers performing work tasks are properly trained per federal, state and local regulations.
- Conduct root cause analyses for injuries and near misses.
- Participate in industry activities and committees address safety and fall related exposures and controls across the industry.

Intermodal Transloaders

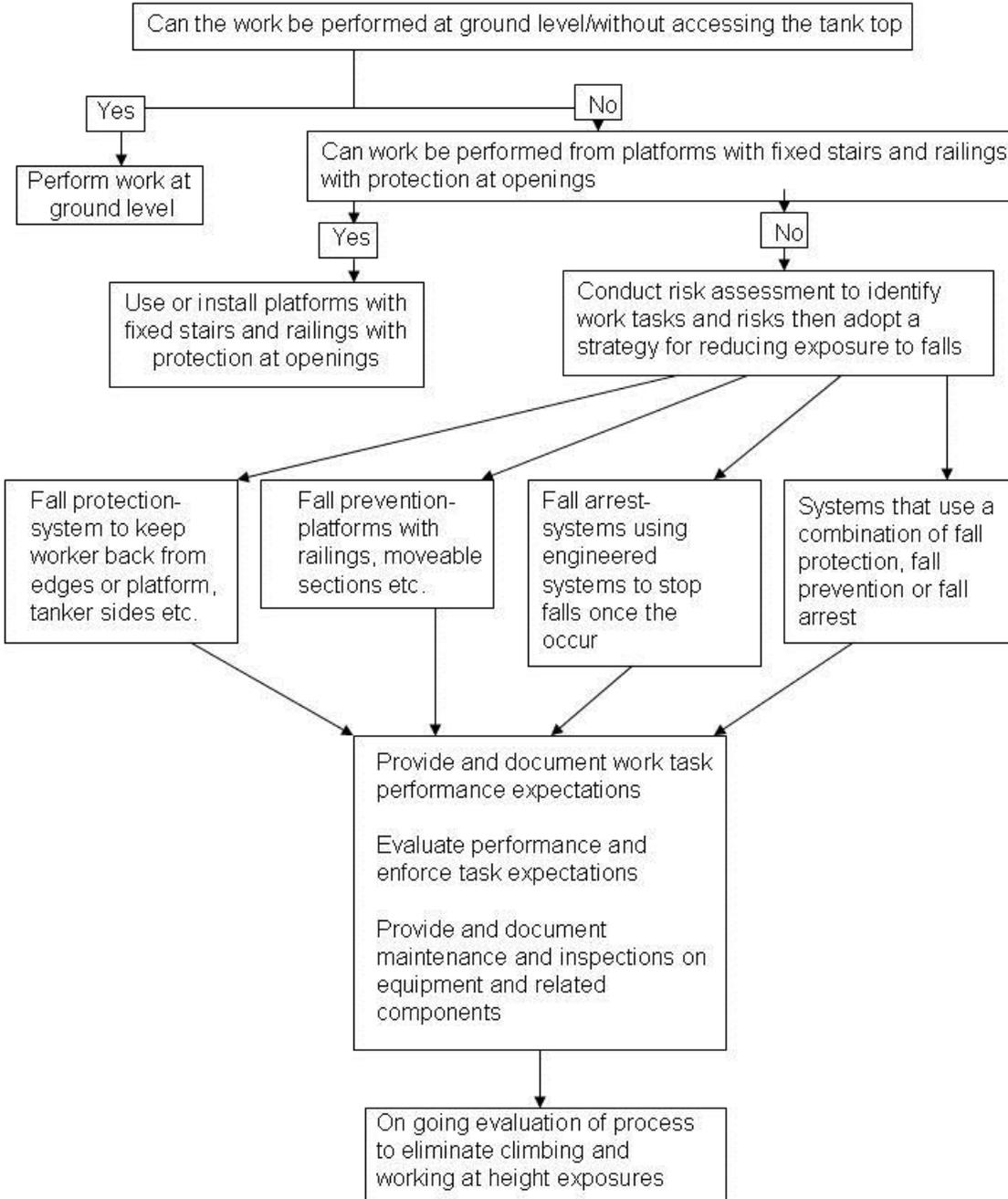
- Comply with task expectations for access and working on the top of tanks.
- Use required fall protection when accessing tops of trailers.
- Identify and communicate safety issues or concerns.
- Be empowered not to commit any unsafe act regarding accessing the top of tanks.
- Report unsafe acts to the proper management.
- Use proper hand protection, work shoes/boots and other PPE per the job expectations.
- Understand and comply with site work rules and task expectations.

Hierarchy of Controls

As previously stated, this document's goal is to reduce risk to all stakeholders, and not transfer the risk - or exposure - from one group to another. Stakeholder interaction may be required to assess risk and develop strategies to reduce tank top work task exposures. Each stakeholder should be involved in the assessment of risk to identify tasks performed on the top of tanks, and develop solutions based on the hierarchy of controls listed below.

Hierarchy of Control	Situations
Avoid tank top work tasks	Typically requires specific tank equipment to match loading/unloading/sample collection needs.
Railings fully surrounding work area with access by stairs	More practical at larger locations with frequent loading/unloading. Requires compatibility with tank equipment.
Moveable gantry style equipment with stair access that fully surrounds work area	Provides more flexibility for larger locations where a variety of equipment will be loaded/unloaded/washed etc.
Fully surrounding gantry system with special equipment to fit specific tank tops to provide protection based on unique tank features/exposures	Provides more flexibility for larger locations where a variety of equipment will be loaded/unloaded/washed etc. but has multiple access points/ports that are used infrequently
Cargo tanks with built in access systems and tank top walkway fall protection	Provides options for locations where deliveries are infrequent and other options with lower risk are not available
Fall arrest or restraint devices using harness and other fall arrest system components secured to tested anchor points used by workers trained and supervised in use of the system	For use where lower risk controls are not practical or available
Ladder access with no protection or other systems used by workers trained in work task methods	Should be avoided

Appendix A. Tanker Falls Flow Chart



CTRM 12.20.2010 Draft tanker falls flow chart

References and Resources

ANSI Z359 Fall Protection Code

<http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2fASSE+Z359+Fall+Protection+Code+Package+v3.0>

Cargo Tank Risk Management Committee

Materials include:

- Trailer Climbing Guide
- Food Grade Trailer Best Practices (for Loading and Unloading ...)

<http://www.cargotanksafety.org>

ITCO (International Tank Container Organization)

Prevention of Falls from Tank Containers

www.itco.be

OSHA Fall Protection

<http://www.osha.gov/SLTC/fallprotection/index.html>

ACC/Responsible Care

www.americanchemistry.com/s_responsiblecare/sec.asp?CID=1298&DID=4841

TTMA

<http://www.ttmanet.org/index.php/publications>

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Revision 2 of this document updated fonts and logos to current CTRMC standards and addressed grammatical issues.