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Cube Instruction Manual

All written and visual data contained in this document reflects the latest product information available at the time of publication.

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INTRODUCTION

Congratulations on purchasing Australia's most up to date and versatile fuel storage system. In order to obtain the most from your purchase please read this manual thoroughly before installing or using your **TRANSTANK** Cube. For warranty details, see Appendix A3.

Transtank is an Australian owned manufacturer and marketer of portable, self contained, hydrocarbons storage and dispensing equipment.

In general, the Transtank is designed around ISO dimensional requirements for fitment into shipping containers. Portability is the key design feature of Transtank equipment and it can be easily and economically transported by rail, road or sea.

The design of the Transtank Cube includes 'self bunding' and the tank can be situated onsite, within nominated separation distances, without the need for an external bund to be constructed. This feature also allows a Transtank Cube to be readily relocated if required, without the need to construct any additional bunding.

For the most up to date information regarding Transtank products please refer to our web site www.transtank.com

Standards

Transtank Cubes are designed to meet the following standards. These standards should continue to be used in the ongoing operation, maintenance and any changes or additions:

UL142 / ULC 142 Steel Aboveground Tanks for Flammable and Combustible Liquids

UL142 / ULC142 (Canadian approval) covers the design and testing requirements for above ground tanks for the storage of flammable and combustible liquids. Nominated Transtank equipment has been designed and independently tested / verified by Underwriters Laboratories to comply with this standard. See Appendix A4 for a copy of our approval letter to this standard.

It should be noted that the testing process is a continual ongoing requirement to retain approval to this standard.

AS1692 Steel tanks for flammable and combustible liquids

AS1692 covers the design requirements for tanks used for the storage of flammable and combustible liquids. Transtank Cubes are designed to meet or exceed these requirements. See Appendix A1 for a certificate of compliance.

LEGISLATION

Each State and Territory Government has enacted legislation aimed at protecting the health and safety of employees in the workplace. The Acts and Regulations effectively require an employer to provide employees with a safe place of work.

The legislation imposes obligations on both employer and employee. The information in this section of the Operating & Maintenance Manual is aimed at assisting Management and their staff to meet their Occupational Health and Safety obligations, but it is not exhaustive and compliance with the requirements set out here cannot ensure compliance with the law.

The administrative requirements of the Acts and Regulations vary significantly across the jurisdictions and management must be aware of, and comply with local requirements.

EMPLOYER'S OBLIGATIONS

Essentially, an employer of staff is obliged to:

- Provide a safe place of work for employees
- Identify hazards, assess risks, decide on and implement control measures and monitor the effectiveness of these control measures
- Train employees in the operations that they are required to perform in the execution of their duties
- Provide safety equipment appropriate to the performance of the task
- Take into account the employees training and ability when allocating tasks
- Put in place procedures to ensure all tasks are undertaken in a manner which does not place an employee's safety at risk
- Maintain records that demonstrate these obligations have been met

EMPLOYEE'S OBLIGATIONS

In turn, employees and contractors are obliged to:

- Correctly use and maintain the safety equipment provided
- Abide by published work procedures and practices
- Report to the employer any hazards identified in the course of their duties
- Comply with statutory regulations, such as Road Traffic Regulations and the Dangerous Goods Regulations

SAFETY, HEALTH AND ENVIRONMENT POLICY

Most sites have written Health, Safety and Environment policies in place, which are to be followed at all times.

In the absence of any site policy, as a minimum, legislative requirements should be followed at all times.

TRAINING

Bulk Storage Facilities Training

Each employee shall be trained in such duties as have been individually assigned to that person. The training of employees shall include the following as appropriate:

- (a) Layout and Operation of the facilities
- (b) Maintenance procedures
- (c) Procedures to be followed in the event of an incident (spillage, accident or fire)
- (d) Location of fire fighting equipment

- (e) Basic principles of fire-fighting, and the use of fire extinguishers and fire-fighting equipment
- (f) Statutory regulations relevant to employees' tasks
- (g) Awareness of the properties, characteristics and hazards of any materials kept or handled and materials to be brought on-site
- (h) Correct use of any personnel protective equipment provided
- (i) Area housekeeping
- (j) Safety rules of the installation, including any restrictions on movement, access or activities

Training - Emergency Response Personnel

Persons having been assigned emergency duties shall be given specific training in those duties. Such duties may include, among other things –

- (a) Fire-fighting
- (b) Spillage control, clean-up and decontamination
- (c) Evacuation control, and
- (d) First aid

Drills should be conducted at regular intervals to ensure that assigned persons have adequate opportunity to become familiar with their tasks. Local emergency services should be involved in joint exercises wherever possible.

UNSAFE PLANT AND EQUIPMENT

Unsafe or faulty plant and equipment is to be withdrawn from operation immediately the situation is identified in such a way that inadvertent operation is not possible. Such withdrawal from operation may be by way of electrical isolation of the driving motor by locking off and tagging the relevant circuit breaker, by closing, locking and tagging isolating valves, or by providing a physical barrier to prevent access.

Whichever method is used, it must be positive and require a number of definite, considered actions to bypass the isolation. Isolation of faulty plant or equipment may be withdrawn only when the fault has been rectified and the item of plant or equipment accepted as safe by the operational supervisor of the relevant area. Nobody shall be directed or expected to operate unsafe plant or equipment.

MATERIAL SAFETY DATA SHEETS

A Material Safety Data Sheet (MSDS) must be available for all products used on-site which sets out all information affecting safe handling of the product, including product characteristics, health hazards, recommended protective equipment, etc.

PERSONAL SAFETY

Petroleum products ie: solvents, petrol, diesel etc. should not be used for cleaning hands or any part of the body. If splashed with product, wash thoroughly with soap and warm water (if available) or use hose on site to wash body. Before removing product soaked clothing, drench clothing thoroughly by using hose on site. Never wear fuel soaked clothing in a building or vehicle.

Always stand clear of vents or hatches during tank filling operations to avoid inhaling fumes.

Staff must wear the appropriate PPE ie: protective footwear, safety glasses, hard-hat and gloves where appropriate.

Only trained staff operating with a Work Permit and Confined Space Entry Permit with specific operating conditions may enter a confined space.

PERSONAL PROTECTIVE EQUIPMENT

As a minimum, staff working within the Restricted Area of a bulk fuel or lubricants storage facility should wear protective footwear and appropriate anti-static clothing.

When handling bulk or packed product, suitable gloves and eye protection should be worn. Gloves, which may absorb spilled hydrocarbon product into the material of the gloves, are not suitable. Staff working outdoors should be provided with, and wear, hats and sunscreen where appropriate for sun protection. When handling bulk product into or out of vehicles or filling drums, protective safety glasses or a face shield must be worn to protect against product splashes. Personal Protective Equipment must comply with the relevant Australian Standard and be maintained in good condition.

All vehicles carrying Dangerous Goods are to be equipped with personal protective equipment specified by the ADG Code.

The following standards should apply to personal protective equipment:

- (a) Protective clothing complying with AS 2919, AS 3765.1 or AS 3765.2, and suitable for use with the specific liquids being handled.
- (b) Eye protection, selected in accordance with AS/NZS 1337.

- (c) Protective gloves complying with the relevant parts of the AS/NZS 2161 series of Standards.
- (d) Safety helmets complying with AS/NZS 1801 and selected in accordance with AS/NZS 1800.
- (e) Safety footwear complying with AS/NZS 2210 (series).
- (f) Respirators having appropriate filters, and self-contained breathing apparatus (SCBA) complying with AS/NZS 1716 and selected, used and maintained in accordance with AS/NZS 1715.

NOTE: MSDS may provide further information on suitable personal protective equipment.

FIRST AID

At least one person in each installation should be qualified in Workplace First Aid in accordance with legal requirements, irrespective of the number of staff set as a legal threshold. A First Aid kit to meet the legal requirements should also be available.

INCIDENT/ACCIDENT REPORTING

All accidents and incidents should be reported. Product spillage (Loss of Containment) in excess of 5 litres should also be reported, even if contained within spill containment areas.

Refer Site Procedures.

WORK PERMITS

Except for routine, non-hazardous work, any work within the restricted area should be authorized by means of a work permit.

A work permit shall include statements of the following:

- (a) The nature and extent of the work.
- (b) Any conditions to be observed.
- (c) Any personal protective equipment to be used.
- (d) The period for which the permit is valid.
- (e) Any necessary regular checking to ensure that the safety requirements and conditions remain in force, e.g. atmospheric monitoring.
- (f) Any necessary procedures and precautions in returning the area to normal service.
- (g) Any fire-fighting equipment required to be at hand.

A work permit may identify, within the restricted area, an open area in which major maintenance or construction work can be performed without further permission. Such an area shall be determined in relation to any storages and plant so that the unrestricted use of ignition sources does not create a hazard. The physical limits of such an area shall be clearly marked.

Considerable care is still required in a safe area, as some articles might contain residues or might be hazardous in themselves, regardless of their location. Examples of such articles are used tanks, pipes and containers.

Preparation of work site

The relevant site area and plant shall be prepared in a way that reduces the potential for fire, explosion, or exposure of persons to a hazardous substance.

Precautionary measures shall include the following, as appropriate:

- (a) Identification of both the equipment to be worked on and other affected equipment.
- (b) Depressurisation and disconnection of such equipment.
- (c) Isolation and locking-off of the equipment from other equipment.
- (d) Purging of the equipment.
- (e) Where the work to be carried out may impact upon hazardous substances, the removal of those substances from the immediate vicinity.
- (f) Sealing-off of sewers.
- (g) Provision of appropriate fire-protection equipment.
- (h) Testing of the work environment for flammable or hazardous vapours and oxygen content.

Completion of work and commissioning

When the work is complete, and before the plant is returned to service, a check must be made to ensure that:

- (a) the work has, in fact, been completed;
- (b) any temporary arrangements (e.g. bypass lines, blank flanges) have been removed;
- (c) all personnel and equipment are accounted for;
- (d) the work permit has been cancelled or signed-off as being completed; and
- (e) all related equipment and facilities, including bunds, scrubbing systems (where relevant) and fire systems are operational and have been inspected and tested appropriately.

HOT WORK

No “Hot Work” shall be undertaken within a restricted area unless:

- (a) a work permit has first been obtained; and
- (b) any flammable or hazardous residues or vapours have been removed.

The requirements of the AS 1674 series shall be observed in relation to any hot work undertaken.

Hot Work involves the use of any equipment or activity which may produce an ignition source.

Some examples of Hot Work are:

- Welding, either electric or gas
- Grinding of metal or other material
- Drilling
- Gas cutting
- Use of electrical equipment (including battery operated equipment) not approved for use in a Restricted Area
- Cutting or drilling of concrete
- Smoking

CONFINED SPACE ENTRY

The Transtank equipment includes manholes for internal inspection and cleaning as/when required. The space inside the tanks is a confined space.

Only trained staff operating with a Work Permit and Confined Space Entry Permit with specific operating conditions may enter a confined space. The requirements of AS2865 should also be applied.

CLASSIFICATION OF PETROLEUM PRODUCTS

Petroleum products are classified by their flashpoint as follows:

Flammable Liquids

- PG II Flashpoint < 23 deg C eg: petrol, avgas, solvents
- PG III Flashpoint 23-61 deg C eg: kerosene, jet fuel

Combustible Liquids

- Class C1 Flashpoint 61-150 deg C eg diesel, most fuel oils
- Class C2 Flashpoint >150 deg C eg most lubricating oils

AS1940, the main standard governing fuel and lubricant installations has more stringent requirements for flammable liquids than combustible liquids. Under the ADG Code, Flammable liquids are classified as “**Dangerous Goods**” while combustible liquids are not.

Diesel and lubricating oils are classified as combustible liquids.

Flashpoint

Flashpoint is the temperature at which the product will produce vapour in sufficient quantities to be ignited by an ignition source – see typical product classifications above. It should not be confused with the auto-ignition temperature.

Auto-ignition Temperature

Auto-ignition temperature is the temperature at which the product will auto-ignite given suitable levels of oxygen (without the need for a separate source of

ignition). Typically the auto-ignition temperature for petroleum products is 220 deg C or greater.

PRODUCT HANDLING HAZARDS

In handling of petroleum products, staff may be exposed to a number of potential hazards such as:

Fire Inevitably, some flammable vapour is generated in day-to-day depot operations and can be a fuel source for a fire.

Exposure to Product Vapour As well as providing a fuel source for a fire, high exposures to product vapour may have an adverse effect on human health.

Exposure to Liquid Product Liquid Hydrocarbons can adversely affect skin by its drying action, which can also lead to dermatitis. Product splashed into the eyes can cause damage if not flushed immediately.

Static Electricity Static electricity can be a source of ignition for flammable vapours with resultant fires. (It is unlikely that sufficient static electricity is generated in product movement for it to be a direct hazard to human health as the result of an electrical discharge through the body).

The first three of these hazards are minimised by storing and handling the product in sealed systems as far as practically possible, and, where the product is exposed to the atmosphere in normal operations, by taking appropriate precautions. Fire prevention principles and precautions are detailed in Section 6 of this Manual, while precautions to minimise the risks of exposure to vapour or liquid, and information on static electricity, follow in this section.

Accidental spillage of product can present unusual exposure to these hazards, and spillage prevention is covered separately.

VAPOUR EXPOSURE

Every effort should be made to minimise exposure to hydrocarbon product vapour by taking a few sensible precautions:

- Don't stand near tank vents while tanks are being filled
- When dipping a tank, stand back from the dip point
- Never use petrol to clean parts or equipment

EXPOSURE TO LIQUID PRODUCT

As with vapour exposure, exposure to liquid hydrocarbon product can be minimised by taking common sense precautions:

- Always wear protective PVC gloves when handling product in bulk or in packages
- Don't use gloves made from absorbent material, which can hold product in contact with the skin
- Always wear safety glasses, with side protection, or a full-face shield when handling bulk product, eg. when dipping a tank
- Make sure hoses are in good condition, with no leaks and the seals are in place before using them.
- Take every precaution to avoid product spillage
- Clean up product spillage immediately and wear appropriate protective clothing, gloves, etc. while doing so
- Check equipment for leaks on a regular basis, report any found and tag the faulty equipment out of service immediately

- Do not leave product in open containers such as buckets or pails

STATIC ELECTRICITY

Control of Static Electricity

Static electricity is the cause of a significant number of fires/explosions where petroleum products are handled incorrectly.

Static electricity is generated whenever two dissimilar materials move against each other, including when petroleum products flow through pipework and hoses. Static charges accumulate on both the moving liquid and on the pipe or container. The magnitude of the charge depends on the electrical conductivity of the product and the container, and the ability to dissipate the charge to the earth. If the product is relatively conductive and the earthing system can dissipate the static charge as fast or faster than it can be generated, insufficient charge will accumulate to provide an ignition source. All product lines and tanks are provided with electrical bonding and connections to earth stakes to dissipate electrical charges.

Some hydrocarbon fuels handled, such as Petrol, are sufficiently conductive that a static charge does not accumulate, while ***Diesel and others in the middle distillate range readily accumulate static charges in their natural condition.*** The conductivity of the middle distillates can be improved by the addition of certain additives and thus overcome the static accumulation problem. While most products will have been treated in this manner, it is impossible to guarantee all products have been treated and the effectiveness of treatment decays over time. It is also much reduced by contaminants such as dirt/water. Hence, all fuels must be treated as though they will generate and accumulate static electrical charges when transferred.

For an electrical charge to flow or tend to flow between two objects, the two objects must be at different electrical potentials, ie. they hold different charges or, in simple terms, they are at different voltages. If the two objects are at the same potential, no charge will flow and no spark can occur between the two objects even if they are at very high potential or voltage.

This simple principle is used in the petroleum industry to prevent static electricity causing unwanted sparks in areas where flammable vapours may be present. When all the metallic parts of a system are electrically bonded, or connected, together they will all be at the same potential so no spark can occur between them. The whole bonded system is then connected to earth to dissipate any charge that accumulates, so that if an unconnected body, such as a driver, approaches the system, no spark will jump from the bonded system to the unconnected body.

Product flowing through filters, pumps, and valves or around bends in the pipeline will generate larger static charges than when it is flowing through a straight pipe. Similarly, where there are more dissimilar materials in the flow, as when water or dirt contaminates the product, higher charges will be generated. In this latter situation, the product flow rate must be reduced to equate to a product velocity through the pipe of less than 1m/s.

In addition to the static electricity generated by product movement, static generated by friction between any two dissimilar materials may be encountered and can accumulate enough to cause a spark capable of igniting a flammable vapour mixture.

- Never remove clothing in the Restricted Area. Different fabrics rubbing together can cause sparks. Always thoroughly wet any contaminated clothing before removal.

- Always connect static bonding cables with bare hands to ensure your body is at the same potential as the cable, vehicle, pipeline, etc.
- Never load product when an electrical storm is in the area. Lightning is a natural discharge of static electricity.

Continuity Testing

Continuity tests shall be carried out at intervals not exceeding 6 months to ensure that earthing and bonding is effective and that the resistance does not exceed 1M ohm.

VALVE OPERATION

A number of different types of valves will be found in product handling facilities, all of which have different characteristics needing a variety of operating techniques.

Gate Valves: Usually the most common type of valve found as an isolating valve in both main and branch product lines and on tank connections. When opening a gate valve, turn the hand-wheel anti-clockwise until it stops, then turn it back clockwise one quarter of a turn to leave the valve “free”. To close a gate valve, turn the hand-wheel clockwise until it stops and leave it in that position to leave the valve “firm”. When closing a gate valve, do not turn the hand-wheel back to leave the valve “free”. The open or closed status of a gate valve, as used in the petroleum industry, is indicated by the position of the valve stem. If the valve stem is protruding from the centre of the hand-wheel, the valve is open, and if it is flush or almost flush with the boss of the hand-wheel, the valve is closed.

Ball Valves: Ball valves are a quick acting type of valve usually actuated by a lever handle which lies along the axis of the pipe to show the valve is open and

across the pipe to indicate the valve is closed. Ball valves are used in similar locations to gate valves (see above). Ball valves must be opened and closed slowly (over 2 to 5 seconds) to avoid a sudden pressure build up, or “surge”, which can damage equipment. Sudden closure of a ball valve causing this pressure build up may be accompanied by a dull “thump” or “bang” from the pipeline.

Thermal Pressure Relief Systems: Thermal pressure relief systems are provided in the product pipelines to prevent unacceptably high pressures occurring in the lines as a result of thermal expansion of the product. Expressed simply, if a pipeline full of product, closed by valves at each end, is heated by the sun, the product will expand more than the pipework and if there is nowhere for the extra volume to go, the pressure in the pipeline will rise to very high levels. The thermal pressure relief system allows the extra volume to bleed into a section of pipeline at lower pressure, preventing excessive pressure build up and avoiding possible equipment damage.

PRODUCT SAMPLING AND DRAINING

From time to time it is necessary to draw samples, or drain tanks or pipelines. Always take samples or collect drainings in metal containers with a static bonding connection to the pipe or tank. The bonding connection is made before any product flows and must remain until after all flow ceases. When taking samples or collecting drainings:

- Never use plastic or plastic lined containers, or metal containers, which have been lacquered on the inside to prevent corrosion as these materials also prevent dissipation of static electricity charges.
- Do not use food containers, eg. soft drink bottles, glass jars, etc. If a food container is reused after containing product, there is a risk of contamination of the food.

MANAGEMENT OF LEAKS AND SPILLS

General

Every endeavour should be made to prevent leaks or spills, and to control them if they do occur. Clean-up action should be taken immediately. Most product spillage in operations occurs while product is being transferred from one tank or container to another or during vehicle filling. To minimise the risk of spillage:

- Before starting to transfer product, check the receiving tank or container has sufficient free space (ullage) to take the volume of the proposed transfer. Dip the tank or read the tank gauging system where one is fitted and calculate the ullage.
- **NEVER** fill any tank above the Safe Fill Level.

When spills do occur, they should be cleaned up immediately.

The following are areas where spills may occur:

- Tanker Unloading Area
- Vehicle Filling Area

Samples or diesel from water draining should be poured directly into an oily waste collection container, NOT poured down an oily water drain.

Clean-up Materials and Equipment

In order to deal with leaks and spills, clean-up equipment and absorbent materials should be readily available.

The following is a typical list of such materials and equipment:

- a) Adequate quantities of absorbent material, e.g. sand, fuller's earth or suitable proprietary substances.
- b) A sufficient number of resealable waste-recovery containers, e.g. drums, made of materials compatible with the substances being kept and appropriately marked as being for emergency use only.
- c) Portable pumps and decanting equipment.
NOTE: Petrol-powered or non-flame proofed electric pumps are unsuitable for use with flammable liquids.
- d) Shovels.
- e) Yard brooms.
- f) Drain covers.

Cleaned-up material shall be disposed of in accordance with statutory requirements.

NOTE: It is unlikely that such wastes could be disposed of with general refuse destined for landfills.

Actions for dealing with Leaks and Spills

At every occurrence of a leak or spill, an immediate assessment needs to be made as to what action is to be taken.

If the spill is less than one litre, clean up the spill with absorbent material and/or hose down the area to an appropriate oily water drain/spill collection system (if installed)

DO NOT HOSE DOWN TO STORMWATER.

If the spill is more than one litre and depending on the size of the spill, consider implementation of the site emergency plan and notifying the emergency services.

Emergency services should be notified when—

- (a) the liquids have spread, or have the potential to spread, beyond the boundary of the installation;
- (b) it is beyond the resources of the occupiers to clean up the spill or leak effectively and safely;
- (c) the protective equipment is inadequate for dealing with the situation;
- (d) staff are not experienced in dealing with the situation; or
- (e) staff and the public are, or could potentially be, placed at risk.

In any case:

1. Stop any activities and the operation of any pumps or motors. Press pump and/or emergency stop. Warn all persons away from the area.
2. Advise site supervisor immediately.
3. Close all valves.
4. Place the fire extinguishers within easy reach, in case of fire.
5. Guard against product flowing outside the spill area and contain any product flow using a spill kit or any other means available (such as sand and earth). If within the tank equipment bund, ensure the bund drain valve is closed.
6. If the spill has spread towards the switchboard area, turn off the main power supply and evacuate the immediate area.
7. Ensure there are no naked flames, smoking or hazardous activity (eg. welding) taking place in the vicinity. Take care not to spread the liquid even more.
8. Clean up spill.
9. Any contaminated clothing must be removed. Never remove clothing in the Restricted Area as different fabrics rubbing together can cause sparks. Always thoroughly wet any contaminated clothing before removal.

RECORDS - STOCK RECONCILIATION

Inventory records of fuel received, stored and dispensed, must be maintained and should be reconciled weekly to identify any theft or losses which may have an adverse environmental impact. Where any discrepancy in records indicates that losses are occurring, they should be thoroughly investigated to determine the cause of any losses.

FIRE PREVENTION POLICY

It is preferable to expend resources in taking precautions to minimise the risk of a fire, than to risk people and assets in attempting to combat an established outbreak. Consequently, maximum effort should be focused on fire prevention.

FIRE THEORY

Fire occurs when three conditions occur at the same time and place. The situation is often represented by a triangle with the three sides depicting the three essential conditions. The three conditions are:

- **Fuel:** Sufficient fuel must be present in the correct mixture with air (oxygen) to form a flammable mixture.
- **Air (Oxygen):** Sufficient air must be available to form a flammable mixture with the fuel.
- **Heat:** Heat or an ignition source with sufficient energy to ignite the flammable mixture.

Fire will occur if all the above three conditions occur at the same time, for example, if a flammable vapour mixture is exposed to a spark or flame. The avoidance of at least one of the three factors occurring at the same time and place is the basic principle of **Fire Prevention**

If a fire is burning and one of the above factors is removed, the fire will go out, as when a gas fire is extinguished by turning off the valve to remove the fuel supply. This is the principle applied to **Fire Protection**. The chemical reaction to the fuel burning becomes a fourth factor in the continuation of a fire, so that interruption of the chemical reaction can also result in extinguishment.

FIRE PREVENTION PRACTICE

The aim of fire prevention is to prevent flammable vapour, heat and air occurring in the same place at the same time by controlling the three factors.

The control of **Air (Oxygen)** is usually impractical in the context of operations as it is only possible to reduce the oxygen content below the level at which combustion is supported in a confined space. Unfortunately, if the oxygen content is reduced to this level in a confined space, it is also insufficient to support life. The presence of air in these circumstances has to be accepted and every effort focussed on controlling the other factors.

The **Fuel** source is controlled by storing and handling the product in sealed containers, pipes and hoses to prevent, as far as practically possible, the exposure of a liquid product surface to the atmosphere and the consequent emission of vapour. Where it is not practical to avoid emission of vapour from a liquid surface, such as when loading bulk product into vehicles, every effort is made to separate the vapour from possible ignition sources.

Control of Heat or **Ignition** sources is achieved by restricting the use of heat (spark) producing equipment or activities within the premises or near possible vapour sources. Restricting the access of people, vehicles and equipment controls the entry of possible ignition sources into the facility.

IGNITION SOURCES

To prevent fires, it is necessary to control ignition sources within the fuel facility or near a flammable vapour source.

Matches cigarette lighters or other means of ignition must not be taken into the facility or used within 8 metres of a vapour source in another area.

No electrical equipment, such as torches, radios, cameras, calculators, mobile 'phones, pagers, or similar items shall be taken into a Restricted Area unless approved by the Site Manager as acceptably safe for the area.

Hot Work, i.e. Use of any equipment or activity which may produce an ignition source, is not permitted within a Restricted Area, unless the appropriate Safe Work Permits and Work Clearances have been issued by qualified Officers.

Some examples of Hot Work are:

- Welding, either electric or gas
- Grinding of metal or other material
- Drilling
- Gas cutting
- Use of electrical equipment (including battery operated equipment) not approved for use in a Restricted Area
- Cutting or drilling of concrete
- Smoking

Other potential sources of ignition include static electricity, vehicles, vehicle air conditioning systems, two way radios, mobile telephones, friction sparks from dropping steel tools on concrete, and sparks from aluminium striking rusty steel or iron.

The following precautions should be taken to control possible ignition sources.

Static Electricity

- Always bond to bare metal
- Always use bonding wires where fitted
- When sampling or water draining, use metal containers with earthing wire attached

Earthing

- To reduce the risk of ignition from static build-up, all equipment and pipework is earthed. Earth connections should be checked regularly

Vehicles

- ALWAYS switch off engines before refuelling
- Switch off all auxiliary equipment, eg. radios, CB, wipers, air conditioning, indicator lights, lights etc.

Pumps & Motors

- Check bearings, motor bearings and seals to ensure they are not overheating
- Check seals for leaks
- Do not over-grease bearings
- Check electrical cables and terminal box to ensure that all screws are fully engaged and cables are not loose

Electrical Equipment

- Prevent water ingress into switches, junction boxes, etc. by ensuring that seals and glands are complete
- Check all covers and ensure that all screws are fully engaged, fitted correctly and that there are no illegal entries

Motor Driven Equipment

- Do not allow auxiliary motors, eg. motor mowers, generators, pumps, to be used inside the facility unless their use is authorised and approved

Sundry

- Remove all accumulated rubbish, oily rags etc., which can be a source of spontaneous ignition

- Battery operated drills and non-approved torches are ignition sources

VAPOUR SOURCES

Flammable vapour is emitted from the surface of a flammable liquid exposed to the atmosphere or from a container that contains vapour from previous use and is then refilled. Regular sources of vapour include:

- Tank vents, particularly when the tank is being filled or on above ground tanks when the tank is heated under the influence of the sun.
- Any open container of product, including an open interceptor pit.
- A tanker discharge point when the hose is being connected or disconnected.
- Any product leak or spillage from a pipeline, tank or other container.
- Oily water drainage system collection or junction pits.

RESTRICTED AREA

A Restricted Area is one where the general public or employees are not permitted free, unsupervised access. In this facility, the tank farm area should be considered a Restricted Area. The facility operator is required to control and supervise access to the Restricted Area by employees, contractors and visitors.

HAZARDOUS AREA

A Hazardous Area is defined as one in which a flammable atmosphere may occur or may be expected to occur under either normal or abnormal operating conditions. AS2430.3.3 "Classification of Hazardous Areas" describes the various criteria governing Hazardous Areas.

As diesel is a combustible product as distinct from a flammable product, diesel storage and handling areas are not classified as hazardous areas under AS2430.3.3 "Classification of Hazardous Areas". However, common sense

indicates that diesel storage and handling facilities should still be treated with caution and respect.

FIRE PROTECTION

The intent is for facility staff to have sufficient fire fighting equipment and training in the use of that equipment to extinguish an initial outbreak of fire. Facility staff are not expected to operate as fire fighters. At no time should facility staff place themselves at any personal risk in attempting to combat a fire within the facility operation, or in attempting to save life or property in such a situation.

FIRE PROTECTION PRACTICE

As outlined in the section on Fire Theory, the principle of Fire Protection is to separate the three essential factors required for combustion, ie. Fuel, Air or Oxygen and Heat.

The most common fire control medium, water, extinguishes a fire by cooling the fuel below the temperature at which combustion is supported. However, water alone is generally ineffective on petroleum fires.

The most effective extinguishers for flammable and combustible liquid fires are foam and dry chemical powder, both of which extinguish fires by separating the fuel from the oxygen (air) supply. Foam, being mainly water (more than 94% by mass), has the added advantage of cooling the fire environment, which could prevent re-ignition as the foam dissipates with time. Dry chemical powder provides rapid knockdown, but, as it does not cool the fire environment, re-ignition can occur.

PORTABLE FIRE EXTINGUISHERS

Portable fire extinguishers are available in a range of sizes and charged with a variety of extinguishing agents suitable for fires involving different combustible materials. The extinguishing agent with which an extinguisher is filled determines its application and is identified by the colour of the extinguisher body. The most common types of fire extinguisher, colour coding and applications are shown below.

<u>Extinguisher Type</u>	<u>Colour Coding</u>	<u>Application</u>
Water	All Red	Wood, paper and other carbonaceous material. See Notes 1 and 2
Foam (A.F.F.F. – See Note 3)	All Blue or Red with a Blue Band	Flammable liquids and carbonaceous material See Note 2
Dry Chemical Powder	Red with White band	Flammable liquids. Fires involving electricity
Carbon di-oxide (CO ²)	Red with Black band	Flammable liquids Electrical equipment fires

- Note: 1. Not to be used on fires involving flammable or combustible liquids
 2. Not to be used on fires involving electrical equipment.
 3. A.F.F.F. or **Aqueous Film Forming Foam** is a synthetic fire fighting foam concentrate which is highly effective on flammable or combustible liquid fires or spills.

of periodic checks are to operate the fire hydrants to ensure they can be opened and closed easily and close off properly, and, where installed, to run a fire pump each week, confirming it operates correctly.

The fixed fire detection and protection systems must be maintained in accordance with the manufacturer's instructions.

GENERAL INFORMATION

Transtank equipment is of a double walled, self-bunded construction (so do not require a separate spill containment bund), designed in accordance with the ISO dimensional requirements for fitment into shipping containers for ease of transport and handling. Portability is the key design feature of Transtank equipment.

The main features are :

- Cubes are designed and manufactured in compliance with UL142 / ULC142 Steel Above Ground Tanks for Flammable and Combustible Liquids, AS 1692 Tanks for Flammable and Combustible Liquids and AS 1940 The Storage and Handling of Flammable and Combustible Liquids.
- The cubes are made up of an internal fuel storage tank (rectangular design), this internal tank is surrounded by an external tank (or skin) providing the “self bunded” functionality of the design.
- The cubes are designed to be used predominately in outdoors applications.
- Roll Over Venting is fitted to the inner tank (50mm dia) in accordance with the requirements of UL142 / ULC142 and AS 1940.
- Provision has been made for relief of any pressure in the interstitial space during any possible line engulfment conditions.
- The cube fill point is located on the top of the cube. There is a fill pipe riser which runs up to above the maximum liquid level. This arrangement ensures no splash filling. A containment sump is provided for any overflow at the fill point.
- Two dipsticks are provided with each cube, one for dipping the main (product) compartment, the other is provided to monitor the interstitial space between the inner and outer wall for leakage.

INSTALLATION REQUIREMENTS

State/Local Government Requirements

Some states require a licence or registration to store and/or sell fuel. Please ensure to check with your state and local authority.

Environmental Protection Authority Requirements

In some states the Environmental Protection Authority may require licensing and/or approval of bulk fuel or lubricants storages, and may require the installation of water run off protection devices. Please check with your individual state EPA office for specific requirements.

Refer Appendix E for a summary of statutory requirements and contacts.

Compliance to AS1940

AS1940– the storage and handling of flammable and combustible liquids is the Australian standard covering the design, operation and maintenance of flammable and combustible liquid storages.

Any installation must conform to state/local government requirements which take precedence.

However, where state/local government requirements are lacking or unclear, AS1940 should be used to define installation requirements. Note in particular separation and clearance requirements contained in sections 5.7.6 and tables 5.3 and 5.4 of AS1940-2004.

An up-to-date copy of AS1940 should be kept on-site at all times and referred to regularly in addition to any recommendations in this manual.

Several other Australian Standards are referenced in AS1940 and are applicable for bulk fuel/lubricants installations. A summary of related Australian standards is listed below:

AS1020	The control of undesirable static electricity
AS1692	Tanks for flammable and combustible liquids
AS1851	Maintenance of fire protection equipment
AS2865	Safe working in a confined space.
AS2683	Hoses and hose assemblies for petroleum products
AS3000	SAA Wiring Rules

Australian Standards are available from Standards Australia
www.saiglobal.com

Lifting and Unloading

Cubes are supplied with crane lifting lugs located at the top of the unit, plus forklift pockets underneath. Either of the above can be used for unloading or moving the tanks. Lifting lugs are rated with a WLL of 6500Kg.

IMPORTANT NOTES:

- The cube lifting attachments have been designed to be used when the tank is **FULL**.
- Only competent persons with suitable lifting equipment should be used to carry out any cube unloading or lifting.

Approximate EMPTY tank weights are listed below.

Tank Size	Weight (kg)
TC1	705
TC2	1190
TC4	1830





Siting of the Cube

All fuel and lubricant storage installations are required to be located and installed in accordance with local regulations and should comply with the requirements of AS1940 “The storage and handling of flammable and combustible liquids.”

The cubes must be installed on a flat level area. The site must have adequate bearing capacity for the weight of the cubes and associated equipment.

Cube Foundation Slab

It is important that the tank be placed on a level, stable base.

Installing Cube Vents (Optional Extra if requested)

The vent should be screwed into the 50nb BSP female housing, located on top of the tank, marked ‘VENT’. Thread tape or other suitable thread sealant should be used when mounting the air vent to the tank unit. A filter can be fitted to the

vent pipe to assist with the prevention of ingress of dust into the main containment area, therefore preventing the possible contamination of product stored.

Cube Protection

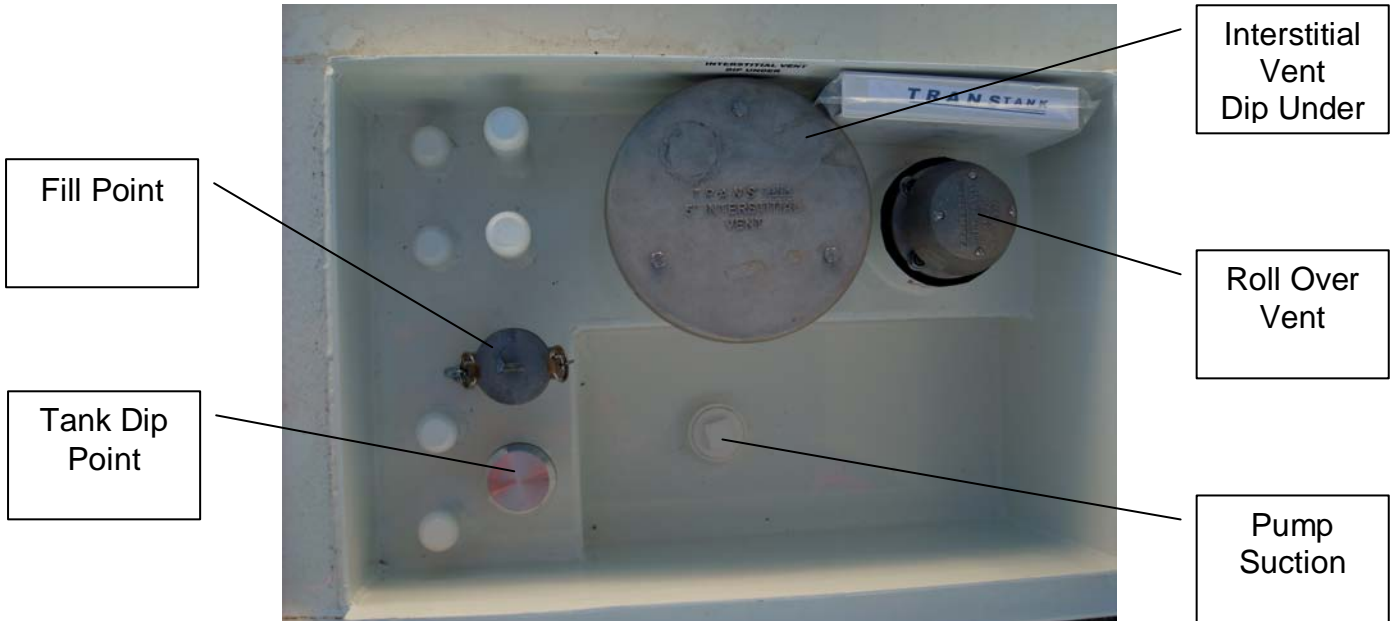
The installed cube must be protected from vehicular collision by adequate barriers or bollards.

ELECTRICAL

The cube should be connected to the site electrical system (when required) by a suitably qualified electrician using only adequately rated components to individual State requirement and in accordance with AS3000 and AS1940.

If the product receipt or loadout is planned to occur at night, a suitable lighting system should be installed.

Note: There are 2 styles of spill boxes

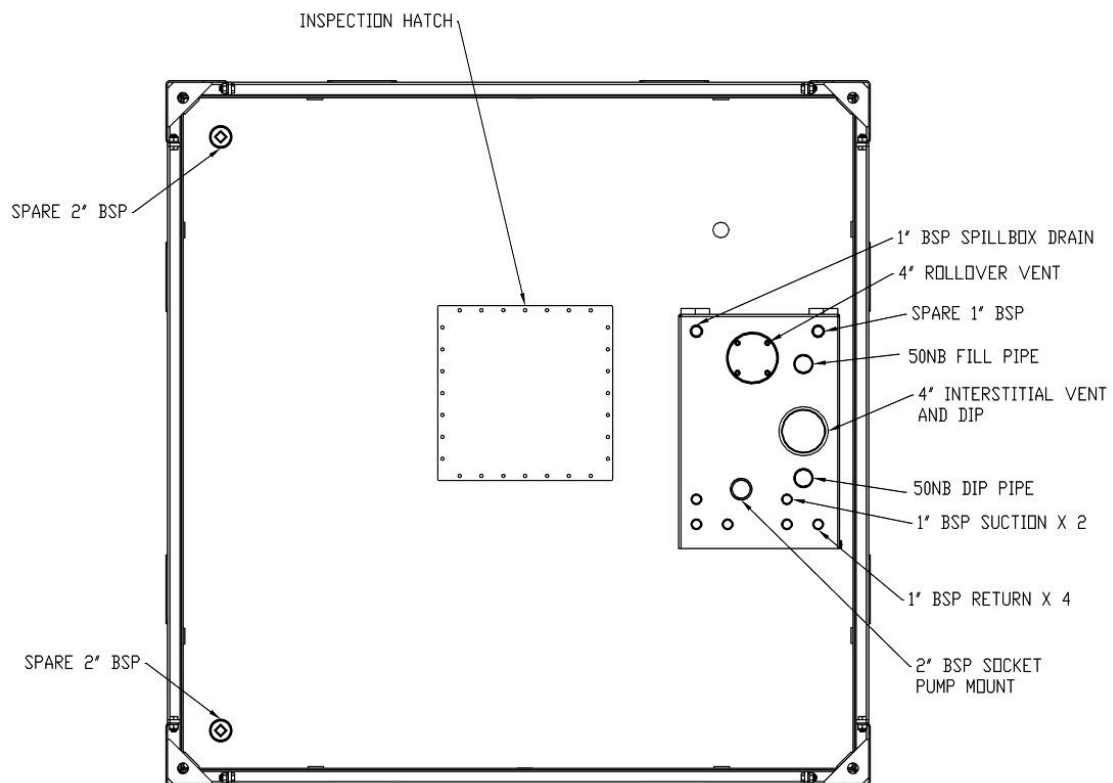


CUBE FITTINGS

Transtank Cubes typically come with the following fittings:

On the top of the tank

- Cube Inlet/Fill connection
- Cube Outlet connection
- Normal Vent
- Emergency Vent
- Dip fitting with dip stick (for product)
- Dip fitting with dip stick (for interstitial space – leak detection)
- Top Inspection Hatch (Confined Space Entry)



Cube Inlet or Fill

The standard Transtank Cube fill fitting is a 2" (50nb) male camlock fitting located at the top of the cube, inside the spill box. (Note that some cubes may be configured differently to suit customer requirements). Two styles of spill boxes shown below with matching decals.





Cube Outlet:

The cube outlet consists of 2 x 2" (50nb) fittings located on the top of the Cube, inside the spill box on the left hand side. (Note that some cubes may be configured differently to suit customer requirements).

Various pumping arrangements are available depending on customer requirements.

The cube suction pipe is positioned to draw product from close to the bottom of the tank, but are designed to leave a quantity of "unpumpable" product in the tank to prevent small amounts of sediment/water from being discharged from the normal outlet. Thus, when no further product can be pumped out of the tank, some product will still remain.

Dipsticks

A dipstick is located beneath the cap at the top front of the tank. This dipstick is graduated for the capacity of the cube and shows the maximum safe fill level. The maximum safe fill level should never be exceeded.

Note: Dipsticks give a good indication of cube contents but are normally supplied as a "standard" dipstick for a particular cube size. ie: They are NOT specifically calibrated to each individual cube, and minor variances may occur as a result of cube manufacturing tolerances.

A second dip fitting and dip stick is provided for checking for product in the interstitial space.

For Dipping Procedure, refer Appendix C1

Monitoring of Interstitial Space

Transtank units have an interstitial space between the inner and outer tank wall. The interstitial space is the 'gap' between the Transtank primary and secondary containment 'skins' and is the units' inherent protection against leaks from the inner tank. Should the contents of the primary containment leak into the secondary containment space, the Transtank will no longer be considered a self-bunded tank, and rectification will be required to restore the integrity of the tank.

The interstitial state is monitored by using a dipstick to check for any sign of product.

If product is detected, it is likely that a leak has occurred in the internal tank and should be investigated immediately. Contact Transtank for further information.

To prevent over-pressurisation of the interstitial space in a fire or from other causes, a relief valve is provided. It is important that the relief valve never be disabled or removed.

TANK INTERNALS

NOTE: While the tanks are fitted with an inspection hatch, the inside of the tank is considered a **CONFINED SPACE**. Under no circumstances should any person enter the tank without appropriate permits, isolations and training.

Confined space entry shown below. Also shown is safety vent on Flammable tanks.



PRODUCT PIPEWORK

Product pipework is generally of welded and flanged steel construction plus some screwed pipework. Pipeline protective coatings and contents markers need to be checked periodically.

THERMAL RELIEF SYSTEMS

Petroleum products expand at a greater rate than steel and when subjected to rises in temperature. Where a section of line is “locked in” with a valve at each end and the temperature rises, the product expands and the pressure in the line increases rapidly. Thermal relief systems are installed to relieve any pressure rise in “locked in” sections of pipework. Without a relief system installed around at least one of the valves closing off the line, the high pressures generated can cause the failure of flange gaskets, seals, fittings, etc. Consequently, it is important not to allow sections of pipeline to become “locked in” between valves during tank farm operations.

A thermal relief system consists of a bypass loop of pipework around an isolating or non-return valve in the main line. The bypass loop is fitted with one or more isolating valves and a pressure relief valve. **The isolating valves in the loop should always be open**, unless there is a product leak in the relief valve, when they may be closed and the main line valve around which the loop is fitted must be cracked open. Never close the bypass isolating valves and the main line valves in such a way that there is no relief for thermal expansion of the product.

GENERAL

The following requirements apply to the whole of the fuel facility.

- Only authorised people to use the facility.
- No Smoking – No ignition sources
- No cutting, burning or welding
- Only one vehicle to be refuelled at a time
- No vehicles to reverse

For Product Receipt Procedures, refer Appendix C

For Vehicle Refuelling Procedures, refer Appendix D

PIPEWORK SYSTEMS INSPECTION & TESTING

Regular inspection and testing of pipework is required to ensure its integrity.

With the products being handled (diesel and lubricants), internal corrosion should be minimal. However, general external pipework inspections should be carried out monthly to inspect for leaks, particularly from joints, seals valves and fittings.

Periodic pressure testing of lines should not be necessary if regular external inspections are carried out.

Any underground sections of line need to be tested at least annually.

CUBE INSPECTION SCHEDULE

Part of Cube	Minimum standard type of inspection	Purpose	Maximum intervals between inspections
Cube Externals	Visual	To ensure no visual evidence of abnormal stress, leaking, or other malfunctions	Monthly
Cube shell and internals	Visual plus Non destructive testing as required *	To prove the integrity of the tank,	10 years
Cube supports	Physical	To ensure no visual evidence of abnormal corrosion or stresses	Yearly
Cube Valves	Visual	To ensure that fittings are free of leaks and operating correctly.	Monthly
	Remove and full test		10 years
Cube Vents	Visual	To ensure that fittings are free of leaks or blockages and operating correctly.	Monthly
	Remove and full test		10 years
Other fittings	Visual	To ensure that fittings are sound and operating normally	Quarterly
Foundations	Physical	To ensure foundation has not subsided and put tank at risk	Yearly
Welds, surface corrosion & paintwork	Visual	To ensure no visual evidence of abnormal stress, deterioration, leaking, or other malfunctions	Monthly

* The frequency of testing may need to be varied according to the type of service, and non-destructive examination may be waived if visual inspection indicates that such testing is not necessary.

Notes:

1. Visual inspection refers to a visual examination of the tank parts while physical inspection refers to visual inspection and appropriate tests to confirm the function and condition of the parts and identify any weakness, deterioration or faults.

10.3 INSPECTION SCHEDULE

V = Visual Inspection P = Physical Check L = Lubricate R = Replace

Updated 2/4/06

Item	Tag No	Daily	Weekly	Monthly	6 Mthly	12 Mthly	Other	Reference/Comments
General								
Housekeeping		V			P			Check facility, remove any rubbish
Emergency Stops					P			Test operation
Portable Fire Extinguishers/Hosereels			V		P	P		V=check equipment is in place and unused. P - refer section 4
Site Lighting			V					Check
Notices & Signs					V			Check
Tanks								
Tank Vents & Fittings, Pipelines			V		P		10 yrs	V=visual check for leaks/damage. P = thorough check, bolt tightness, paint deterioration.
Hi Alarms				V		P		V=press alarm test P=remove probes from tank (leave connected) and physically check operation by submersing end in water. Replace Battery
Interstitial Space			P					Physically dip for product/water.
Water Drain Tanks			P					Physically check for water, remove water if found.
Tank & Pipework Earthing						P		V = visually check OK. P = test continuity as per AS1940 9.18.2, 9.18.3 AS1020
Walkways and Ladders						P		
Tank Equipment Bund (end of tank)			V					Check bund drain valve closed, remove/pump out any spilled product or water.

V = Visual Inspection P = Physical Check L = Lubricate R = Replace

Updated 2/4/06

Item	Tag No	Daily	Weekly	Monthly	6 Mthly	12 Mthly	Other	Reference/Comments
Tanker Unloading Facilities								
Tanker Unloading Pipework/Valves/Fittings			V			P		V=visual check for leaks/damage. P = thorough check, bolt tightness, paint deterioration.
Tanker Unloading Pump Filter (where provided)						P		Check, clean as necessary
Tanker Unloading Pump (where provided)			V			P		Check for leaks.
Tanker Discharge Hoses (where provided)			V					Check for leaks, damage, deterioration.
					P			Test for continuity in accordance with AS2683 - must be less than 1M ohm
						P		Hydrostatic pressure test - refer hose data plate.
Tanker Static Earthing Cable & Clamp (where provided)			V		P			V = visually check OK. P = test continuity as per AS1940 9.18.2, 9.18.3 AS1020
Vehicle Refuelling Facilities								
Vehicle Refuelling Pump(s)			V			P		Check for leaks
					P			Check motor/coupling/belts where applicable.
Loadout Hoses & Nozzles		V				P		Check for leaks, damage, deterioration.
Loadout Pipework, Valves, Fittings			V			P		V=visual check for leaks/damage. P = thorough check, bolt tightness, paint deterioration.
Filter/Strainers						P		Check, clean as necessary
Meter Calibration						P		Check, and adjust as necessary
Loadout Slab Sump/Drain		V						Check for spilt product, silt build-up, blockage
						P		Check coupling condition, alignment.

**APPENDIX A1 – CERTIFICATE OF COMPLIANCE - AS1692-1989
STEEL TANKS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS**

We hereby certify that the Transtank range of Self Bunded Hydrocarbons Storage Equipment is designed and manufactured in accordance with the requirements as specified in AS1692-1989.

Name:

Jason Powter

Office Held

Group Operations Manager

**APPENDIX A2 – CERTIFICATE OF COMPLIANCE – AS1940-2004
THE STORAGE AND HANDLING OF FLAMMABLE AND COMBUSTIBLE
LIQUIDS**

We hereby certify that the Transtank range of Self Bunded Hydrocarbons Storage Equipment is designed and manufactured in accordance with the requirements as specified in AS1940 -2004.

Name:

Jason Powter

Office Held

Group Operations Manager

APPENDIX A3 – TRANSTANK WARRANTY DETAILS

1.	<p>Transtank Pty Ltd (hereinafter called Transtank) warrants that each new and unused item of equipment (hereinafter called the Product) is of good workmanship and is free from mechanical defects, provided that:</p> <ul style="list-style-type: none"> • The Product is installed and operated in accordance with the printed instructions of Transtank. • The Product is used under normal operating conditions for which it is designed. • The Product is not subject to misuse, negligence or accident. • The Product receives proper care, lubrication, protection and maintenance under the supervision of suitably qualified personnel.
2.	<p>This warranty expires 12 months after shipment by Transtank to the first user.</p>
3.	<p>This warranty does not apply to:</p> <ul style="list-style-type: none"> • Fluids • Filters • Fuses • Bulbs • And other consumable or normally wearing type items unless found to be defective prior to use.
4.	<p>Transtank does not warrant the following components:</p> <ul style="list-style-type: none"> • Engines (Gasoline or Diesel) • Compressors (Air or Freon) • Storage Batteries • Engine Starters • Generators • Alternators • Regulators • Governors • Transmissions

	<ul style="list-style-type: none"> • Any other major component having its own inherent warranty. <p>Many of the foregoing components are warranted directly by the manufacturer and are serviced by a worldwide network of distributors and others authorised to handle claims for component manufacturers. A first user's claim should be presented directly to such an authorized component service outlet.</p> <p>In the event any component manufacturer has warranted its component to Transtank and will not deal directly with a first user, then Transtank will cooperate with the first user in the presentation of a claim to such manufacturer.</p> <p>Under no circumstances does Transtank assume any liability for any warranty claim against or warranty work done by, or on behalf, of any manufacturer of the foregoing components.</p>
5.	<p>This warranty is extended by Transtank only to the purchaser of new Products from Transtank or one of its authorised distributors. The products purchased under this warranty are intended for use exclusively by the buyer and its employees and by no other persons and, therefore, there shall be no third party beneficiary to this warranty.</p>
6.	<p>A claim of defects in any Product covered by this warranty must be in writing and is subject to Transtank factory inspection and judgment. Transtank's liability is limited to repair only. Transtank will replace the defective product, F.O.B. factory, once the purchaser, at its expense, has returned the defective product to Transtank's nominated shipping place.</p> <p>Replacement and exchange parts will be warranted for the remainder of the original warranty, or for a period of ninety days, whichever is the greater.</p>
7.	<p>Under no circumstances whatsoever shall Transtank and its authorised distributors be liable for any special or consequential damages, whether</p>

	based on goodwill, lost resale profits, work stoppage, impairment of other goods or otherwise, and whether arising out of breach of any express or implied warranty, breach of contract, negligence or otherwise, except only as may be required by applicable law.
8.	Continued use of Product (s) after discovery of a defect voids all warranties.
9.	Expect as authorised in writing, this warranty does not cover any equipment that has been altered by any party other than Transtank.
10.	There are no warranties which extend beyond the description of the face hereof. Transtank makes no warranties, express or implied, of merchant ability or fitness for a particular purpose.
11.	Transtank neither assumes nor authorises any person for Transtank any liability in connection with the Products sold, and there are no oral agreements or warranties collateral to of affecting this written warranty.
12.	The laws of the State of Victoria, Australia hereunder shall govern this warranty and all undertakings of Transtank.

Warning

At all times, safety must be considered an important factor in the installation, servicing and operation of the product. Skilled and technically qualified personnel should always be employed for such tasks.

APPENDIX A4 – TRANSTANK UL142 / ULC142 LETTER OF APPROVAL

TRANSTANK

ABN 76 094 864 963
 Ph: +61 (0) 7 3205 4436
 Fax: +61 (0) 7 3205 4471
 Web Site: www.transtank.com

Certificate of Compliance

Project:	UL142 and ULC-S601 compliance for Cube series TC1,TC2 and TC4	Prepared:	Bernard Dubois
		Date:	15/10/08
		Pages	2

Scope

TRANSTank submitted the new TC1, TC2 and TC4 cubes for evaluation in accordance with UL 142, ULC-S601 Steel Aboveground Tanks for Flammable and Combustible Liquids.

GENERAL:

The Model TC1 was determined to be representative of the Models TC2 (same as TC1 except half the width) and TC4 (same as TC1 except half the width and half the length).

The test results reported relate only to the items tested.

The following tests were conducted in accordance with UL142 and ULC-S601 Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, UL Ninth Edition and ULC fourth edition dated December 28, 2006 with revisions through and including December 15, 2007.

1. Test	UL 142-2007 Section
• Leakage Test	39
• Hydrostatic Strength Test	40
• Static Load/Top Load Test	41
• Lift Lug Strength Test	44A
2. Test	ULC-S601-07 Section
• Proof of design test	7-1
• Vent equivalency test	7-2
• Hydrostatic test	7-3
• Handling Test	7-4
• Pressure leak test	7-5
• Drop test	7-6
• Rough usage/Stability test	7-7
• Static load test	7-8
• Production leak test	8-1

TRANSTANK

- *Underwriter Laboratories.*

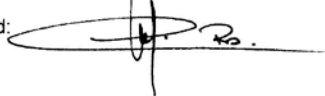
Test carried out by Mr. Wayne Doversberger, UL Inspector, Illinois, USA

The results of the above tests were reviewed and found to comply with the applicable requirements of UL142, Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, Ninth Edition dated December 28, 2006 with revisions through and including December 15, 2007 and ULC-S601-07 standard for shop fabricated steel above ground tanks for flammable and combustible liquids, with revisions through and including December 2007.

Verified by:

Bernard Dubois BE (Mech)
Engineering & Product Development Manager
Transtank Pty Ltd

Signed:



Date: 16th October 2008

Witness: Nicholas Groothoff Dip.Mech
Design Draftsperson
Transtank Pty Ltd

Signed:



Date: 16th October 2008

APPENDIX B1 – CUBE DIPPING PROCEDURE

Cube dipping is essential for stock control and reconciliation, product transfers and loss control including early recognition of possible leakage.

Personal Protective Equipment for handling bulk product, ie. safety footwear, eye protection and PVC gloves is to be worn while dipping tanks.

To obtain comparable dips for stock recording purposes, it is important the dips are taken using a consistent procedure.

Dipping Procedure:

- Open the dip cap from the upwind side and raise the dipstick to a height where the product level can be seen.
- Note the approximate level of the product.
- Wipe down the dipstick with an absorbent rag.
- Return the dipstick to the tank, lowering it rapidly to a point 50-100mm from the bottom and then slowly until the stick gently touches the bottom of the tank.
- Pause with the stick in contact with the bottom of the tank and raise it quickly to where the liquid level can be read.
- Record the reading.
- Repeat the above twice more, to obtain 3 readings.
- Take the average of the three readings as the dip for the Cube.
- Return the dipstick to the cube.
- Refit or close the dip cap.

APPENDIX B2 – Cube Water Checking Procedure

Checking for Water

Checks for water should be made weekly and should be checked via the dip stick (during a normal dipping procedure). To do so:

1. Remove the dipstick and apply a small amount of water finding paste onto the bottom front face of the dipstick. Smear the paste evenly over the lower 100-150mm of the dipstick.
2. Insert the dipstick ensuring it touches the bottom of the cube, then remove it and check to see if the paste has changed colour from green to vivid purple. (This indicates the presence of water in the bottom of the tank)
3. If more than 10mm of the paste has changed colour, perform a water drain on the tank to remove the water.

Removal of Water

Water can be removed from cubes via the dip fitting.

Water removal from cubes requires the use of Personal Protective Equipment similar to bulk product handling, i.e. safety footwear, eye protection and PVC gloves.

1. Use a metal drain bucket, with earthing lead and clamp attached.
2. Remove cap from the water drain point.
3. Insert manual (non powered) “Thief Pump” and attach drain bucket earthing lead to the pump.
4. Place bucket under the pump outlet and operate pump. Continue pumping until no water is found.

5. Record the fact that the cubes have been inspected and drained, and record the quantity drained.
6. Dispose of drained product into site approved oil waste disposal system.

DO NOT POUR DRAININGS DOWN ANY DRAIN

APPENDIX C – Product Receipt Using Truck Mounted Unloading Pump

Receiving Product ex Bulk Delivery Vehicle

Generally an oil company delivery vehicle will carry out bulk deliveries with an appropriately trained and qualified driver. The product will be unloaded using the delivery truck's own pumps.

Normal traffic should keep clear of the tanker whilst it is unloading, allowing the tanker to exit in a forward direction in an emergency without obstruction.

The tank(s) contents must be manually "dipped" to confirm there is adequate ullage for the tanker to safely discharge into the facilities.

Discharge Procedure – Bulk Delivery

While hoses are connected, the driver should not leave the vehicle unattended at any time. The driver must remain in a position where he has full control over all hoses, valves and controls.

1. Park in such a position that product can be discharged without moving the vehicle. The engine should be stopped and the parking brake engaged.
2. Note the location of Emergency Stops and Fire Extinguishers.
3. Dip each the receiving tank to ensure sufficient ullage for the amount of product being delivered. Record the tank number and dips on the delivery media and formulate a written discharge plan to match tanker compartment with planned receiving tank. If there are any concerns about delivery details, contact site supervisor before discharge begins.

4. Select the receiving tank by opening the manual tank isolation valve at the selected tank. Close all other manual tank isolating valves at the other tanks.
5. Connect the bonding/earthing cable prior to any further activity.
6. Raise the locking bar over the vehicle tank outlet connections.
7. Connect the product discharge hose(s) to the correct vehicle outlet and the Transtank fill connection.
8. Open the vehicle internal valve. Open the tanker manifold valve and check the sight-glass to confirm that the product colour is correct.
9. Make sure there are no leaks from any connections.
10. Open the Transtank fill point isolation valve(s).
11. Start truck pump, proceed to discharge.

Post Discharge Procedure – Bulk Delivery

13. When the discharge is complete, clear and close the tanker manifold valves, close the Transtank hose isolation valve(s) and stop the truck pump. Visually check that the vehicle compartments are empty.
14. Ensure both internal and external valves on the vehicle are closed.
15. Disconnect product hose(s) from the facility and re-install camlock caps. Take care to avoid spillage.
16. Securely close all vehicle fill caps. Lower the locking bar over the vehicle tank outlet connections.
17. Complete paperwork for delivery.

Product Spill During Discharge

1. If product is spilled, discharging activities and the operation of pumps and motors must cease immediately. Press pump and/or emergency stop. Warn all persons away from the area.
2. Close all valves. If less than 1 litre, hose the area down before continuing the discharge. If more than 1 litre, proceed as below.
3. Advise site/facility supervisor immediately.
4. Place the fire extinguishers within easy reach, in case of fire.
5. Guard against product flowing outside the discharge area and contain any product flow using a spill kit or any other means available (such as sand and earth).
6. If the spill has spread towards the switchboard area, turn off the main power supply and evacuate.
7. If a large amount of combustible product (eg. Diesoline) has been spilt and no other hazard exists, the vehicle may be moved (if necessary) under its own power. Ensure there are no naked flames, smoking or hazardous activity (eg. welding) taking place in the vicinity. Take care not to spread the liquid even more.
8. Clean up spill. Do not proceed with delivery until all potential hazards have been controlled or removed.
9. Any contaminated clothing must be removed.

Fire During Discharge

1. Immediately stop the flow of product. Press 'Emergency Stop'.
2. Raise the alarm.
3. If possible, close all valves, and disconnect from customer's tank.
4. If safe to do so, attempt to extinguish the fire using portable fire extinguishers.
5. Remove any other vehicles to a safe distance, away from the hazardous area.
6. If the vehicle is on fire do not attempt to move it.
7. If the fire grows beyond control, evacuate any persons in the vicinity to a distance of at least 50 metres from the vehicle.

APPENDIX D – QUEENSLAND STATUTORY REQUIREMENTS

Qld Dangerous Goods Safety Management Act

The Qld Dangerous Goods Safety Management Act and associated regulations prescribe requirements for the design, operation and maintenance of flammable and combustible liquid storages in Qld. Sites storing flammable and combustible liquids are classified under the Qld Dangerous Goods Safety Management Act **as follows:**

Type of Product Stored	Dangerous Goods Location (DGL)	Large Dangerous Goods Location (LDGL)	Major Hazard Facility (MHF)
Flammable Liquids PGII eg Petrol, Avgas	> 250 Litres	> 2,500 Litres	> 50,000 tonnes
Flammable Liquids PGIII eg Kerosene, Jet Fuel	> 1,000 Litres	> 10,000 Litres	> 50,000 tonnes
Combustible Liquids eg Diesel, Lubricating Oils	> 50,000 Litres	> 100,000 Litres	-

Sites storing quantities in excess of those listed above for a **DGL** must be licensed. The issue and control of licenses is managed by local government,

namely the local councils. Contact your local council for advice and requirements BEFORE commencing installation.

Some mines are exempted from the requirements of the Qld Dangerous Goods Safety Management Act, except Part 7 which allows persons appointed as hazardous materials emergency advisers (hazmat advisers) to provide advice and help in relation to hazardous materials emergencies.

For more information, visit <http://www.emergency.qld.gov.au/>

Qld Workplace Health & Safety Act

The objective of this Act is to prevent a person's death, injury or illness being caused by a workplace, by a relevant workplace area, by work activities, or by plant or substances for use at a workplace.

The act does not apply to:

- a) a coal mine to which the Coal Mining Safety and Health Act 1999 applies; or
- b) a mine to which the Mining and Quarrying Safety and Health Act 1999 applies

However, a person on whom an obligation is imposed under part 3 (Workplace Health and Safety Obligations) of the act must discharge the obligation by meeting the standard of workplace health and safety required under this Act even though another Act, other than an Act mentioned in subsection (1), may prescribe a lesser standard to discharge the obligation.

Specific Mine Related Acts

The following acts, referenced acts and associated regulations have specific requirements related to mine operation in Qld.

Mineral Resources Act

Coal Mining Safety and Health Act 1999

Mining and Quarrying Safety and Health Act 1999

DRAWINGS

TC1

<http://www.transtank.com.au/documents/T-002-25-GA1.PDF>

TC2

http://www.transtank.com.au/documents/T-C004-5-GA01_000.PDF

TC4

<http://www.transtank.com.au/documents/T-C12-GA1.PDF>