

**Guidelines for
Aerial Agricultural Aircraft Support Vehicles
Carrying Class 3 Dangerous Goods.**

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PREFACE

These guidelines have been prepared on behalf of the Aerial Agricultural Industry Association for the guidance of Aerial Agricultural Aircraft Operators to explain and give a guidance to the requirements for the design, construction and operation of vehicles that are used to support aircraft that are operating in the field and do not return to an airfield for reloading and refuelling.

Aerial agricultural Aircraft Support Vehicles are purpose built vehicles fitted with mechanical equipment for loading chemicals, seed, fertilizer etc. into aircraft used in the agricultural industry. The vehicle may also carry a tank or tanks containing fuel for the aircraft. These tanks may be demountable tanks but there are also tanks that have been specially built to fit a space on the load area of the vehicle left after the mechanical loading equipment has been installed.

Road vehicles which transport dangerous goods in bulk on the load area of the vehicle are required by the Road and Rail Transport (Dangerous Goods) Act 1997 to comply with the requirements of the Australian Dangerous Goods Code (ADG Code). The ADG Code calls up the Australian Standards AS 2809.1, Road Tank Vehicle for Dangerous Goods General Requirements and AS 2809.2, Road Tank Vehicle for Dangerous Goods, Vehicles for Flammable Liquids,

This document list the requirements of the above standards which relate to the Aerial Agricultural Aircraft Support Vehicle. It aims to give guidance to the operators of these vehicles and provide a guideline with which the Aerial Agricultural Industry can reasonably be expected to comply and thereby reducing the risks of harm to persons and the environment during the transport by road of bulk dangerous goods.

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Guidelines for Aerial Agricultural Aircraft Support Vehicles Carrying Class 3 Dangerous Goods.

Section 1. Scope and General Requirements

1.1 SCOPE. These guidelines Apply to vehicles which are constructed specifically as aerial agricultural aircraft support vehicles, fitted with a loading mechanism for loading aircraft with agricultural chemicals and tanks for carrying Class 3 Dangerous Goods which are used. to refuel the aircraft.

1.2 APPLICATION. Aerial Agricultural Aircraft Support Vehicles, hereafter called the vehicle, must have no more than two tanks, not including the vehicle fuel tank, each with a capacity not more than 2,000 Litres, or having one tank with a capacity not more than 4000 Litres. There may be an additional tank/s fitted on the vehicle which are used for the carrying of chemicals which are not dangerous goods.

These guidelines **do not** apply to vehicles having multiple tanks carrying dangerous goods of Class 3 with a capacity of more than 2000 Litres each or having a single tank with a capacity more than 4000 Litres or a dedicated tanker. These vehicles must comply fully with AS 2809 "Road Tank Vehicles for Dangerous Goods" Parts 1 and 2.

1.3 NEW DESIGNS AND INNOVATIONS. Any novel materials, designs, method of assembly procedures, etc, which do not comply with specific requirements of this guideline, or are not mentioned in it, but which give equivalent results to those specified, are not necessarily prohibited. A qualified consultant can act in an advisory capacity concerning equivalent suitability, but the specific approval remains the prerogative of the Authority.

1.4 Referenced Documents. A list of documents applicable to the design of aerial Agricultural Support Vehicles is given in the annex.

1.5 INTERPRETATIONS. Questions concerning the meaning, application, or effect of any part of this guideline may be referred to a qualified consultant for explanation.

1.6 DEFINITIONS. For the purposes of this guideline, the following definitions apply:

1.6.1 Approved, approval— approved by, or approval of, the Authority.

1.6.2 Authority— the Authority having statutory (legal) control over a particular aspect of a vehicle.

1.6.3 Auxiliary engine— an engine that is additional to the main propulsion engine of the vehicle and can be operated either on or off the vehicle.

1.6.4 Baffle— a partition in a tank which is not liquid-tight, but which limits the surge of contents.

1.6.5 Bulkhead— a transverse closure forming a liquid-tight division between adjacent compartments of a tank.

- 1.6.6 Capacity** (of a tank)— the total volume space enclosed within the tank, expressed in cubic metres or litres.
- 1.6.7 Cargo**— the liquid dangerous good to be transported in the tank.
- 1.6.8 Cleaning ring**— a ring sometimes used in the attachment of a bulkhead to a tank shell, and having the annular space vented and drained.
- 1.6.9 Compartment**— a liquid-tight division of a tank.
- 1.6.10 Corrosive material**— a Class 8 substance as defined in AS 1216.1, or in the Australian Code for the Transport of Dangerous Goods by Road and Rail.
- 1.6.11 Dangerous goods**— any material which complies with the definition of Dangerous Goods as published in the Australian Code for the Transport of Dangerous Goods by Road and Rail, and/or is nominated as such by the Authority.
- 1.6.12 Demountable tank**— a tank designed to be lifted onto a conventional truck for use as a tanker.
- 1.6.13 Design pressure**— the maximum allowable working pressure in a tank, pipe or component.
- 1.6.14 Exposed area**— the area of a tank directly exposed to outside atmosphere.
- 1.6.15 Flammable liquid**— a Class 3 liquid as defined in the Australian Code for the Transport of Dangerous Goods by Road and Rail, or in AS 1216.1.
- 1.6.16 'g'**— the acceleration due to gravity (9.81 m/s^2).
- 1.6.17 Hazardous Area.** A hazardous area is that area;
(a) Within 500 mm of any point of product release, and
(b) to the rear of the cabin and 8 metres radially from any uncapped valve, uncapped pipe, hatch cover or transfer connection from ground level to a height of 500 mm.
- 1.6.18 Head**— liquid-tight transverse closure at the end of a tank.
- 1.6.19 International Gas Union (IGU) standard conditions** — 15°C and 101.325 kPa absolute.
- 1.6.20 Mass-filling ratio**— the ratio of the maximum mass of a liquefied gas permitted in a container to the mass of water which that container would hold at 15°C .
- 1.6.21 Quick-closing internal Valve**— a valve designed to be closed both automatically by the operation of one or more sensing devices (which may be fusible links), and manually from a remote position by the release of the means of holding the valve open.

- 1.6.22 Standard filling level**— the highest liquid surface level permitted in a tank for a specific liquefied gas assuming a liquid temperature of 5°C. It represents a safe but conservative filling level provided that the liquid temperature at the time of filling is not less than 5°C. It provides the location point for the fixed liquid level gauge, and a calibration check point for any variable liquid level gauge that may be provided.
- 1.6.23 Tank**— a container that is used for transporting the Class 3 dangerous good), and is mounted permanently or temporarily on a vehicle, and which is not a gas cylinder within the scope of AS 2030, or a liquid container having a capacity of 250 L or less, or the fuel tank for the vehicle. The term ‘tank’ embraces the container and all parts which affect its structural integrity.
- 1.6.24 Toxic material** — a Class 6 substance as defined in AS 1216.1, or in the Australian Code for the Transport of Dangerous Goods by Road and Rail
- 1.6.25 Ullage.** — a vapour space which is left above the liquid surface after filling, to permit a degree of thermal expansion of the liquid without loss of cargo. It is expressed as a percentage of the total tank capacity.
- 1.6.26 Vehicle** – a vehicle used in the Aerial Agricultural Industry to support the aircraft which is engaged in the aerial application of chemicals, seed, and fertilizer. The vehicle is fitted with equipment for the loading of the chemicals etc. on to the aircraft and a tank or tanks for the carrying of fuel for the aircraft.

Trailers or semi trailers are not regarded as agricultural aircraft support vehicles. These guidelines do not apply to trailers or semitrailers involved with agricultural aircraft activities.

SECTION 2. VEHICLE DESIGN AND CONSTRUCTION**2.1 Basic Design.**

2.1.1 Registration – The vehicle shall be registered as a motor vehicle in compliance with the Motor Traffic Authority.

2.1.2 Gross vehicle mass. The design of the vehicle shall be such that—

(a) the total mass of the vehicle and its load does not exceed the vehicle manufacturer's nominated maximum mass; and

(b) the load on any component does not exceed the rated load of that component.

NOTE: Reference should be made to regulations on axle loads and load sharing, published by the Australian Transport Advisory Committee, and 'Guide to Heavy Vehicle Suspension Systems and Acceptable Axle Loads' also by that Committee.

2.1.3 Stability. When the vehicle is fully loaded, the height of the centroid of the tank cross-section at tank hall-length shall fall within an isosceles triangle having a base length at ground level equal to the overall width between the outside walls of the outside tyres of the main load bearing axle group, and base angles not exceeding 64 degrees.

2.1.4 Road clearance. The clearance between any component and the road shall comply with the following requirements:

(a) The ground clearance for tank components and protection devices shall be not less than 250 mm within 1 m of any axle, or 350 mm for any other location, when the vehicle is unladen.

(b) Tank filling and discharge connections which are rigidly attached to the tank shall not extend lower than 40 mm below the plane through the centreline of the axles.

2.1.5 Tank attachment. The means of attachment of a tank to a vehicle shall be treated for design purposes as a tank support.

2.1.6 Cabin-to-tank clearance. A clearance of not less than 75 mm shall be provided between the back of the cabin and the closest point of the tank.

2.1.7 Rear impact protection. Each Vehicle shall be provided with a system of bumpers and/or barriers to protect the tank from rear impact or under-run in accordance with the following requirements:

(a) a vehicle fitted with loading equipment at the rear may be considered to have adequate rear impact protection, provided

(b) The impact surface shall be not less than 150 mm behind the rearmost vertical projection of the tank, and the inner face of the bumper bar shall allow at least 150 mm clearance from the tank or any component or fitting.

(c) The width of the system shall be not less than the width over the extremities of the tank.

- (d) The system shall be attached to the sub-frame of the vehicle or the chassis of the vehicle. It shall not be attached directly to the tank.
- (e) The design of the bumper system shall be calculated, using as the basis for the calculation design load equal to 40 t or twice the mass of the fully loaded vehicle, whichever is the lesser, uniformly distributed over the bumper bar, and a stress equal to the yield stress of the material.
- (f) If the rear tyres are more than 600 mm from the impact surface of the bumper, and if the clearance under the bumper exceeds 600 mm, an under-run protection shall be provided.

Section 3 Engine and Exhaust.

3.1 Engines.

3.1.1 Vehicle Propulsion Engine. The propulsion engine of the vehicle can be either compression ignition (Diesel) or Spark ignition type

*Note. Spark ignition engines **SHALL NOT** be used for pumping flammable liquids. If the main propulsion engine of the vehicle is used for the pumping of product **the engine shall** be of the compression ignition type.*

3.1.2 Auxiliary Engines. Internal combustion engines used for the pumping of product shall be of the compression ignition (diesel) type.

3.1.3 Pumping Engine Shut Down System (Strangler). All internal combustion engines (Propulsion Vehicle or Auxiliary engine) used for the pumping of product shall have an engine shut down system. This may be in the form of a strangler fitted to the air intake of that engine or other suitable method.

The activation point for the system shall be in a convenient location at or near the pumping controls.

3.1.4 Spillage hazards. Shields or diverters shall be provided where potential spillage or leakage could create a hazard.

In addition to other considerations specific attention shall be paid to the following:

- (a) The effect of corrosion on important safety components, e.g. brake piping.
- (b) The possibility of a flammable liquid spillage contacting an ignition source, a hot engine or exhaust component, or the like.
- (c) the possibility that some hot engine or exhaust pipe may cause the warming of some Fuel carrying component to an undesirable degree.
- (d) The likely pattern of movement of any spillage, i.e. surges due to dynamic effects, tracking or flowing along vehicle components, spraying from spinning shafts, couplings, failed seals, etc.

3.2. Exhausts.

3.2.1 Exhaust. Any engine exhaust system discharge shall be directed away from the tank or any of its appurtenances.

3.2.2 Propulsion Engine Exhausts. Spillage shielding shall be provided for any hot areas of the engine, transmission system and exhaust piping which may be subject to spillage from above.

- (a) No exhaust piping shall run beneath the carry tank unless it is shielded to minimise the risk of heating the carry tank shell.
- (b) Any vertical exhaust immediately behind the vehicle cabin must discharge at a level not lower than the top of the cabin and at least 1m from any tank opening.
- (c) The exhaust shall be shielded to not less than the top of the carry tank.

- (d) The shield for a vertical exhaust pipe shall extend as nearly as practicable to the full height of the pipe, but not lower than the top of the tank, and shall be sealed to it liquid-tight at the top. The shield shall be at least 100 mm larger in diameter than the exhaust pipe. Any openings or perforations for ventilation shall be located on the side remote from the tank.
- (e) The distance between the shield and any cargo-carrying component shall be not less than 75 mm.

3.2.2.1 Propulsion Engines Spark Ignition. For a vehicle with a spark ignition engine the exhaust shall terminate on the right-hand side of the vehicle, sideways and forward of the front wheel, or not more than 150 mm behind the front wheel. No part of the exhaust shall run to the rear of the vehicle cabin.

3.2.2.2 Auxiliary Engines. The Air Intakes and Exhaust of any auxiliary engine shall terminate at a level not lower than the top of the vehicle cabin and not in a hazardous area. All hot areas of the auxiliary engine and its exhaust shall be shielded. The exhaust shielded shall have a clearance of at least 50 mm and extend to the height of the vehicle cabin.

NOTE. Spark Ignition engines, propulsion or auxiliary, are not to be used for pumping flammable liquids.

3.3 Tyres. The maximum load carried on each tyre shall not exceed the load rating of the tyre.

3.4 Guarding. Power-driven rotating machinery which operates while the vehicle is stationary and which by reason of its location may constitute a hazard to personnel shall be guarded adequately.

3.4.1 Tail shafts. Provision shall be made to protect a tank, piping or other flammable liquid-carrying component from damage in the event of failure of the vehicle's tail shaft.

Section 4 VEHICLE WIRING AND ELECTRICAL EQUIPMENT.

4.1 Battery. The battery shall be firmly secured to prevent movement. The Battery enclosure shall be ventilated and be easily accessible. It shall have a substantial and secured acid-resistant cover, electrically insulated on the side adjacent to the battery terminals.

4.2 Battery-isolation switch. A battery isolation switch shall be provided, so arranged to isolate the battery from all circuits and equipment, except that supply may be maintained to certain vehicle instrumentation (e.g. an operation recorder) which cannot be shut off, provided that specific approval has been obtained, and the instrumentation is within the cabin. The means of operating the isolating switch shall be located on the right hand side and to the immediate rear outside of the cabin, in such a position that it is clearly visible and easily accessible to a person outside the vehicle, and shall be clearly labeled.

NOTE: Where an engine is fitted with an alternator, and the battery is isolated before the engine is stopped, damage to the alternator is likely unless its field coils have been first disconnected. Hence, on such vehicles, the battery-isolating switch should be of a type which automatically opens the alternator field coil circuit immediately before the battery is isolated.

4.3 Roll-over Device. The vehicle shall be fitted with a roll-over device which automatically shuts down the engine and isolates the battery. The device shall not be activated at less than 45° to the vertical.

Note. The requirement to fit a roll-over device shall only apply to aerial agricultural aircraft support vehicles built, or brought into service for the first time, after 1st October 2001.

4 Vehicle Wiring.

4.4.1 Cables. Cables shall be of stranded copper of a minimum of seven strands and of adequate current carrying capacity, and shall be provided with terminals of the insulation-gripping type, except on battery and starter cables,

Cables shall comply with either AS 2218 or BS 6862, Part 1.

4.4.2 Protection of wiring. All wiring outside and to the rear of the vehicle cabin shall be fitted in conduit or located within the vehicle chassis members so as to afford it weather-proof level of protection. If conduit is not used then sealing glands shall be used. Junction boxes for electrical cable shall be weather-proof and use threaded gland or bonded entries. Intrinsically safe cabling is exempt from this requirement.

Any conduit used shall be in accordance with AS 2052, AS 2053, or AS D26 (flared fittings), or by an approved alternative means having at least equivalent effectiveness.

If proprietary equipment such as transmission temperature probes does not easily meet the above requirements then the hazard should be assessed and an equivalent method should be used.

4.5 Circuit protection. Each circuit, except the starting and ignition circuit, shall be protected by a fuse or manual reset circuit-breaker, in accordance with the following requirements:

(a) The current rating of the fuse or circuit-breaker shall not exceed the rated current-carrying capacity of the conductor.

(b) Circuit-breakers shall be of the manual reset type with instantaneous short-circuit protection capable of repeatedly opening the circuit in which it is used without failure,

4 Electrical Equipment (Lights, Pumps etc.) Any electrical equipment that may be required to be active during the transfer of any Class 3 dangerous good and that is located within a hazardous zone (see AS 2430, Part 1) shall be suitable for use in such a zone.

The following hazardous zones shall be deemed to exist during the whole period of fuel transfer and for 5 mm thereafter:

(a) For flammable liquids, the following shall be Zone 1:

(i) Within 1 m of an external valve or transfer connection.

(ii) Within 100 mm above the top of the hatch or coaming, and 500 mm laterally and longitudinally from the edge of a coaming or 500 mm radially from a hatch.

4.7 Fill and discharge lights. The lens of any light used to illuminate a fill or discharge point shall be protected by a stout wire guard of approximately 3 mm wire size and 12 mm aperture, at least 12 mm clear of the lens, unless the thickness of the lens itself constitutes equivalent resistance to breakage. Exposed lights shall be weatherproof, having a degree of protection equivalent to 1P53 of AS 1939.

4 Electrical bonding. The electrical resistance between the tank and the vehicle chassis, , and, between the tank and the connection of the vehicle pipework to the delivery hose, shall not exceed 10 Ω .

4.9 Earthing point. At least one non-corrosive bare metal lug shall be welded to an integral part of the tank for use as an earthing point, unless the vehicle incorporates an earth Wire reel system. The lug shall be in a position convenient for the operator but shall not be within the space enclosed by the coaming, and shall be as far away as practicable from points where flammable vapour may emerge. Additional lugs may be placed at convenient points.

Section 5 TANKS, ACCESSORIES, and COMPONENTS

5.1 MATERIALS.

5.1.1 Suitability. Materials shall be suitable for the conditions of use, and in particular shall be compatible with adjacent materials and with the dangerous good carried.

5 TANK DESIGN AND CONSTRUCTION.

5.2.1 Tank shape. The tank may be of any shape provided it does not have a capacity;

(a) where 2 tanks for carrying Class 3 dangerous goods are fitted to the vehicle exceeding 2,000 litres

(b) where 1 tank only for carrying Class 3 dangerous goods is fitted to the vehicle exceeding 4,000 litres.

5.2.2 Distribution of loads. The loads from supports should be taken on stiffening members and should be distributed as widely as possible through pads, gussets, and the like.

5.2.3 Design criteria.

a) Tank Shell and End Plates.

The tank shall be constructed of at least 2 mm low carbon steel or equivalent.

(b) The design load for the tank and its attachments shall be not less than twice the total mass of the tank, its accessories, and its cargo. The mass of the cargo shall be calculated from its actual density or 1000 kg/m^3 , whichever is the greater, and the maximum permissible loading quantity.

(c) Stresses due to internal pressures caused by liquid head and vapour pressure shall be added to the static load stresses. The vapour pressure shall be 20 kPa. (These tanks being small compartment tanks)

(d) Loadings caused by the weight of equipment, the reactions at supports, and thermal gradients shall be taken into account.

5.3 Tank Fittings.

5.3.1 Tanks All tanks shall be fitted with;

(a) a **fill pipe** that extends to 50 mm and not less than 35 mm from the bottom of the tank. The fill pipe may also be used as the dip pipe if a separate dip pipe is not fitted.

(b) a **dip pipe** that extends to 50 mm and not less than 35 mm from the bottom of the tank.

5.3.2 Fill and Dip Pipes. The dip and fill pipes shall be provided with;

(a) a closure (a leak tight cap or screwed cap or plug).

(b) an equalising hole not less than 3 mm in diameter covered with anti flash gauze screen which connects the vapour space of the tank to the pipe.

5.3.3 Dip Stick. A dip stick shall be provided to each tank. The dip stick shall be suitable for use in the tank dip tube and shall contact the bottom of the tank. The dip stick shall be marked with graduations that indicate the content of the tank every 50 litres.

5.4 Outlet Connection. The outlet connection for any tank for liquids shall be provided with an internal valve or a valve in the outlet piping as close as possible to the outlet connection to the tank.

NOTE. These valves are to be closed unless product is being transferred to or from the tank.

5.5 Vents.

5.5.1 Pressure/Vacuum Vents. A pressure/vacuum vent, which prevents the escape of product in the event of an overturn of the vehicle, shall be fitted so that it connects to the vapour space of the tank during normal operation of the vehicle.

NOTE.

The fill, dip piping and vent etc. may be combined in a hatch assembly complying with AS 2809 Part 2 and properly secured into the tank.

5.6 Component attachment. The attachment of auxiliary components and accessories should be to the subframe or skirting wherever practicable. Where attachment to the tank shell is unavoidable, the following requirements shall apply:

(a) The design of the component or its method of attachment shall be such that the component will break before damage is caused to the shell.

(b) Where the attachment is to a mounting pad welded to the tank—

(i) the mounting pad shall be no thicker than the shell at that point, and shall extend at least 25 mm beyond the perimeter of the component attachment, and shall be shaped so as to avoid stress concentrations at sharp corners; and

(ii) the means of attachment shall not create pockets which could initiate corrosion.

The welding of the pad to the tank shall be continuous unless a gap for drainage is provided at the bottom. A plugged telltale hole shall be provided where such a drainage gap is not provided.

5.7 Roll-over protection. Every tank shall be provided with roll-over protection which shall comply with the following requirements, as appropriate:

5.7.1 Protection of piping and fittings. All piping and fittings at the rear and side of vehicle to be protected from impact.

(a) All valves, hatches, pipe end caps, and vents shall be protected with roll-over protection that extends to at least 25 mm above the highest fitting on the top of the tank.

(b) Rollover protection may be provided;

(i) by the provision of a coaming, guard or dome to the top of the tank, or bars fixed into such a position that protection is provided to all tank fittings in the event of a roll over of the vehicle.

(ii) For demountable tanks, the protection shall comprise one of the options allowed in (a) or (b) as appropriate., or

(iii) a vertical metal strip not less than 4.5 mm thick surrounding the fittings may be used.

- (c) The material of a guard shall be compatible with that of the tank shell.
- (d) Any air space enclosed inside a coaming, guard or dome, shall have openings to permit draining and purging before repair.

5.8 Tank Mounting. The tank shall be mounted securely to the vehicle, with the mountings being of at least 12 mm diameter "U" steel bolts or equivalent, secured to the vehicle chassis or the vehicle body support members.

Note. Bolting the tank to the tray of the vehicle is not considered sufficient.

5.9 PIPEWORK AND PIPE FITTINGS.

5.9.1 Strength of piping. Piping and associated fittings shall be designed for the pressure to which they may be subjected in service, and shall be designed and supported to allow for expansion, contraction, and vibration. Unrestrained slipjoints shall not be used for this purpose.

5.9.2 Discharge piping. Discharge piping shall be located so that it is protected from damage that could occur in the normal operation of the tanker.

5.9.3 Hoses and hose couplings. Hoses shall be constructed in accordance with AS 2683. Hose shall not be used in that section of piping which is between the tank's internal valve and the first valve outside the tank.

5.10 PUMPS.

5.10.1 Suitability. A pump intended for handling flammable liquids shall be suitable for use with flammable liquids and for the required flow rates and pressures.

5.10.2 Pressure regulation. A pumping system shall be provided with automatic means to ensure that the design pressure of any component is not exceeded.

5.10.3 Electric pump motors. An electric motor driving a pump shall be suitable for Zone 1 areas

5.10.4 Location of controls. Power-driven pumps shall be provided with controls which shall be clearly marked, easily accessible, and located in a position remote from the pump.

5.11 TESTING.

5.11.1 Tanks. A tank or an individual tank compartment shall not leak, distort, or show evidence of impending failure when filled with water the temperature of which does not exceed 38°C and hydrostatically pressurized to 30 kPa. Each tank or compartment shall be tested individually with adjacent compartments empty and at atmospheric pressure. Relief devices which could prevent the test pressure being reached shall be made inoperative during testing.

5.11.2 Hatch assembly. A hatch assembly shall pass the test described in Appendix A of AS 2809 Part 2

5.11.3 Piping. Piping systems shall be tested in accordance with the following:

- (a) A piping system subject to pumping pressure shall be tested to a pressure 1.5 times the maximum working pressure.
- (b) Valves, manifolds, piping, and fittings in a bottom-loading system which can be subjected to surge pressures due to the closure of some valve in the system shall be tested to 1600 kPa.
- (c) Piping and in-line valves shall be tested at a pressure of 200 kPa before attachment to the tank.

Section 6 AUXILIARIES.

6.1 Safety equipment. The vehicle shall incorporate provision for the storage of such safety equipment as may be necessary for the aircraft fuel. The storage shall be in a readily accessible location which is not in proximity to the discharge connections..

6.2 FIRE EXTINGUISHERS. Fire extinguishers are to be provided as follows:

- (a) One 60B or two 30B dry powder type, located and secured in a readily accessible position, and
- (b) One 10B located and secured in the cabin of the vehicle in a readily accessible position.

6.3 Information Signs, Notices And Markings.**6.3.1 Safety information.**

- (a) Emergency procedure guides, applicable to Class 3 Dangerous Goods, are to be carried and located in the emergency information holder attached to the drivers door or in a conspicuous place in the cabin of the vehicle.
- (b) Shipping documentation, which clearly indicates the class and quantity of all dangerous goods being transported, shall be provided. The shipping documentation should be amended after every delivery to reflect the quantity that is actually on the vehicle.

6.3 Placarding.

Each vehicle shall be provided with signs in accordance with the requirements of the Australian Code for the Transport of Dangerous Goods by Road and Rail.

- ie. A placard with the name of the Fuel, UN Number (Petrol 1203) Hazchem Code. (3YE) Emergency Contact Telephone Numbers (000 Police, Fire brigade) Specialist Advice contact telephone numbers, and a Class 3 Label measuring at least 250 mm square.

6.3.3 Valve operation. At each point from which a valve may be operated remotely, manual top operators excepted, a sign shall be provided to make clear the direction and type of movement required to close the valve.

6.3.4 Isolating switch operation. Where a field circuit isolating switch is fitted, a notice shall be displayed adjacent to the controls directing the operator to open the switch before pumping commences.

Section 7 Licensing of the Vehicle and the Driver**7.1 Vehicle Licensing.**

Vehicles are to be licensed to transport Class 3 Dangerous Goods in bulk.

The Application for a vehicle licence to transport bulk dangerous goods **MUST** be accompanied by a statement, signed by the applicant, to the effect that the vehicle complies with the **"AAIA Guidelines for Aerial Agricultural Aircraft Support Vehicle that Carry Class 3 Dangerous Goods in Bulk."**

7.2 Driver licensing.

The Driver of any vehicles carrying Dangerous Goods in bulk are to be licensed for the Classes of dangerous Goods being carried.

7.3 Vehicle Insurance.

All vehicles transporting dangerous goods in bulk must have insurance cover for not less than \$2,500,000 per event in respect of;

- (a) property damage, personal injury and other damage (excepting consequential economic loss) arising out of any fire, explosion, leakage or spillage of dangerous goods in, on or from the vehicle or a container on the vehicle; and,
- (b) costs incurred by or on behalf of a government authority in a clean-up resulting from any event of the kind referred to in paragraph (a).

SECTION 8. MAINTENANCE PROCEDURES

8.1 GENERAL PRECAUTIONS.

Tanker servicing and repair which can be conducted on a scheduled basis at pre-arranged times shall be carried out in workshops in which the staff have had prior training in the precautions and emergency procedures required for tankers for flammable liquids. Where, because of breakdown at a remote location, a workshop without such trained staff is used, the owner's representative shall instruct the workshop staff of the nature of the cargo and the precautions to be taken.

(a) The tank shall be gauged to determine that it is not filled beyond the maximum filling level. Any overfilled condition shall be corrected.

(b) No hot work shall be conducted either indoors or outdoors on the tank or on any component that has contained liquid or vapour unless the tank and the component are gas-free and a work permit has been issued.

(c) The vehicle shall not be parked near a source of heat of sufficient intensity to risk causing a discharge from the vents due to heating of the cargo.

NOTES:

1. *The Australian Dangerous Goods Code specifically bans the parking, garaging, or storing of a vehicle carrying a tank that has not been gas freed.*

2. *Where hot work is involved, particular care is necessary to ensure that the gas-free condition is maintained, as vapours can be released by the heating of deposits or sediments, or from gas pockets in the tank or pipework.*

3. *Particular care should be taken with flammable liquids. At normal ambient temperatures explosive mixtures will form (see AS 1940, Appendix B). A flashback to the interior of the tank is possible, and a normal pressure-vacuum vent will not prevent a flashback.*

4. *As the cargo tank will breathe through its vents because of temperature changes, it is essential that monitoring of the surrounding atmosphere be conducted immediately before the starting of any hot work, continuously during any such work, and immediately after any break.*

8.2 ENTRY INTO TANK. Where it is necessary that personnel enter a tank, a work permit shall be issued prior to commencing and AS 2865 shall apply.

NOTE: Examples of typical work permits are illustrated in AS 1940, AS 2865.

8.3 GAS-FREEING OPERATIONS. Gas-freeing operations shall be conducted at a distance not less than 15 m from sources of ignition, either in the open air or under a specifically designed shelter with at least half the wall space open.

8 TANK REPAIRS OR MODIFICATION. Where a tank is repaired or modified, the following requirements shall apply:

(a) Where a tank is ruptured as the result of an accident, it may be rebuilt and replated to its original design. The tank and its appurtenances shall be tested in accordance with Clause 5.11 before it is approved for re-use.

(b) If the basic tank design is changed, or there is a change in the basic structure, the design shall be re-assessed and re-approved to current Standards.

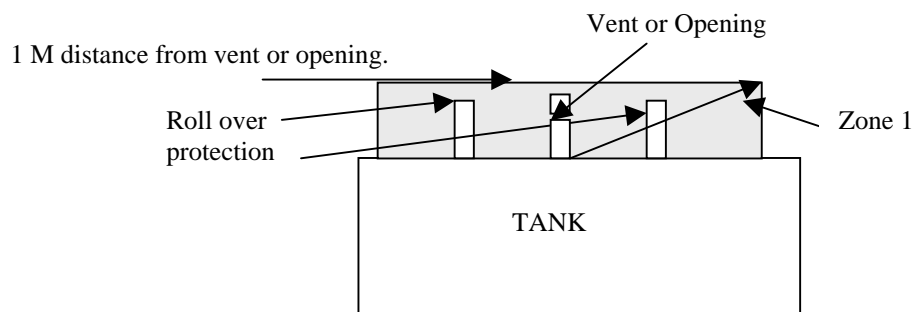
8.5 REGULAR TESTING.

8.5.1 Hatches, vents, valves. At intervals not exceeding two years, the pressure-tightness of every hatch, vent, and valve, including valves on the vapour-recovery system, shall be tested at 25 kPa, either on the tank with the pressure-vacuum valves blanked off, or after removal from the tank, i.e. as a bench test.

8.5.2 Pressure-vacuum vents. At intervals not exceeding two years, P/V vents shall be removed and completely dismantled and cleaned. New O-rings and seals shall be fitted. The reassembled vents shall be subjected to the test procedure specified in Appendix B of AS 2809 Part 2 1999, for check tests.

8.5.2 Method. Air or air over water shall not be used to pressure-test fittings in place on the tank.

8.5.4 Records. A record of all tests performed on a vehicle shall be kept for not less than five years.



Zone 1 is in two parts: a circular zone centred on the vent as indicated, plus a longitudinal zone between and to the height of the coamings for the length of the tank



Our reference : HOF 29487 DG953
Contact : John Magill, 02 9995 5417

REGULATION AND

Aerial Agricultural Association of Australia Ltd
C/- Mr W.T.Southwell
Southwell Technologies
28 Murray Street
QUEANBEYAN NSW 2620

Dear Mr Southwell

Guidelines for Aerial Agricultural Aircraft Support Vehicles.

At the 19th Competent Authorities Panel meeting, held in Melbourne on the 25 March 2003 your submission requesting an exemption from Clause 4.4.1 of the sixth edition of the Australian Dangerous Goods Code (ADG Code) was discussed. Following that meeting additional negotiation was required to finalise the matter. I apologise for the delay in replying.

The Panel agreed to the exemption which allows the AAAA Guidelines for Aerial Agricultural Aircraft Support Vehicles, known as Code AAAA-1, dated May 2003 to be used as the design code for aerial agricultural aircraft support vehicles instead of Australian Standard AS 2809 parts 1 and 2 as prescribed by Clause 4.4.1 of the ADG Code.

The Panel also agreed that this exemption should apply throughout Australia.

The exemption notice is attached.

The exemption only applies to the use of certain tanks that are not approved by a Competent Authority. All other provisions of the ADG Code and Regulations, such as vehicle and driver licensing and vehicle placarding, apply.

Yours sincerely

ALAN RITCHIE
Manager Dangerous Goods
by delegation

20 August 2003

EPA reference HOF29487

EXEMPTION EXEM2003/06**NSW ENVIRONMENT PROTECTION AUTHORITY
NSW ROAD & RAIL TRANSPORT (DANGEROUS GOODS) ACT 1997**

In accordance with Section 32 of the Road & Rail Transport (Dangerous Goods) Act 1997, the Aerial Agricultural Association of Australia Ltd, its members and agents are granted an exemption from certain provisions of the Road Transport Reform (Dangerous Goods) (NSW) Regulations (the Regulations) with respect to the sixth Edition of the *Australian Code for the Transport of Dangerous Goods by Road and Rail* (the ADG Code).

This exemption:

- 1 Is an exemption from the provisions of Regulations 4.7, 4.8, 4.9, 4.10, 4.11, 4.12 and 4.13 of the Regulations which relate to the approval of tanks for the transport on a vehicle of bulk dangerous goods;
- 2 Applies to the transport in bulk of dangerous goods of Class 3 (flammable liquid) being fuel for aircraft;
- 3 Applies to members of the Aerial Agricultural Association of Australia Ltd and their agents;
- 4 Applies to aerial agricultural aircraft support vehicles with a maximum bulk dangerous goods capacity not exceeding 4,000 litres;
- 5 Permits the use of tank vehicles built, operated and maintained so as to comply with the requirements of the document "Guidelines for Aerial Agricultural Aircraft Support Vehicles carrying Class 3 Dangerous Goods", known as Code AAAA-1, published by the Aerial Agricultural Association of Australia Ltd and dated May 2003, to be used as support vehicles for Agricultural Aircraft;
- 6 Is subject to the condition that a compliance plate complying with Clause 4.5.1 of the ADG Code is fitted to the tank. For the information required by this clause, the compliance plate is to show the following information:
 - (a) for subclause 4.5.1 (f) - "EPA NSW" for the Competent Authority and "EXEM2003/06" for the approval number; and
 - (b) for subclause 4.5.1 (m) - "Code AAAA-1";
- 7 Is subject to the condition that:
 - (a) only dangerous goods of Class 3 are to be transported in bulk on the vehicle; and
 - (b) goods, including packaged dangerous goods, incompatible with dangerous goods of Class 3 are not transported on the vehicle;
- 8 Is subject to the conditions that:
 - (a) A copy of this exemption is carried in the emergency information holder in the cabin of the vehicle; and
 - (b) all requirements of the Regulations, other than those detailed above, are to be complied with;
- 9 Will remain in effect until 31 December 2013 or until cancelled or varied by notice in writing; and

- 10 Applies to operations throughout Australia in accordance with a decision of the Competent Authorities Panel on 25 March 2003 pursuant to the provisions of Regulation 15.10(1)(c) of the Regulations.

For the purposes of this exemption, the referred Regulations of the Road Transport Reform (Dangerous Goods) (NSW) Regulations are identical to the Commonwealth Road Transport Reform (Dangerous Goods) Regulations published in the ADG Code.

LISA CORBYN
Director-General

per ALAN RITCHIE
Manager Dangerous Goods
by delegation

20 August 2003

ANNEX

LIST OF REFERENCED DOCUMENTS

Standards Association of Australia

- AS 1076 Code of Practice for Selection, Installation and Maintenance of Electrical Apparatus and Associated Equipment for Use in Explosive Atmospheres (Other Than Mining Applications)
Part 1—Basic Requirements
- AS 1216.1 Classification, Hazard Identification and Information Systems for Dangerous Goods, Part 1—Classification and Class Labels for Dangerous Goods
- AS 1678 Emergency Procedures Guides—Transport
- AS 1727 Tank Containers (International Sizes)
- AS 1844 Portable Fire Extinguishers—Foam (Gas Pressure) Type
- AS 1845 Portable Fire Extinguishers—Foam (Stored Pressure) Type
- AS 1846 Portable Fire Extinguishers—Dry Chemical Type
- AS 1848 Portable Fire Extinguishers—Halogenated Hydrocarbon Type
- AS 1850 Portable Fire Extinguishers—Classification, Rating and Fire Testing
- AS 1939 Classification of Degrees of Protection Provided by Enclosures for Electrical Equipment
- AS 1940 SAA Flammable and Combustible Liquids Code
- AS 2052 Metallic Conduits and Fittings
- AS 2053 Non-metallic Conduits and Fittings
- AS 2218 Cables for Use in Automotive Vehicles—PVC Insulated Cables Having Copper Conductors
- AS 2430 Classification of Hazardous Areas
Part 1—Explosive Gas Atmospheres
- AS 2809.2 Road Tank Vehicles for Dangerous Goods, Part 2—Tankers for Flammable Liquids
- AS D8 Hose Couplings for Use with Vacuum and Air-pressure Braking Systems on Prime Movers, Trailers and Semitrailers
- AS D26 Tube Fittings with Dryseal American Standard Taper Pipe and Unified Threads for Automotive and Industrial Use

Department of Transport

- ADR 35 Commercial Vehicle Braking Systems
- ADR 38 Heavy Trailer Braking Systems.

Australian Transport Advisory Council

Australian Code for the Transport of Dangerous Goods by Road and Rail

British Standards Institution

- BS 6862 Cables for Vehicles
Part 1—Cables with Copper Conductors

Australian Institute of Petroleum

- AIP-CP9 Code of Practice for Air Brake Systems for Heavy Duty Combination Vehicles