Activity: Risk Assessment of dual function TILTIP body.	**Approved By:** Signature and Date
Developed by: MBI Engineering Services Pty Ltd	**Date: January 2012**
Report Number: R0141	

Dual function 14 degree tilt / 48 degree tipping tray.

TILTIP Overview.

TILTIP represents flexibility, versatility, and utilisation.

Tilta Industries' designed its patented dual function 48 deg tipper / 14 deg Tilt Tray to address issues associated with the positioning of mobile and non-mobile equipment on and off site whilst enhancing logistics efficiencies.

It uses one cab chassis, one set of hydraulics, and simple in-cab and remote operator controls to improve labour and equipment utilization, meeting corporate return criteria on capital investment. There are no weight penalties over a conventional single function tipping tray.

The Tiltip Design Philosophy addresses known OH&S Issues associated with the loading & positioning of ancillary equipment such as bob cats, excavators, dozers, and other non-mobile equipment including bulk bins and site offices on and off site. It provides functionality and versatility and gives the operator a safe and accessible workplace to conduct start-up/shut-down, and load restraint procedures

The Tiltip design is compatible with OEM mid/heavy range rigid cab chassis, commencing with the 4x2, 7.5 ton GVM, 4.5 meter tray and 3 ton payload, ranging up through the 4, 6, 8, and 9 ton payloads, and then on to the 6x4, 24 ton GVM cab chassis with 7 to 9 meter trays catering for the 10 & 12 ton payload requirements

Tilta Industries has qualified for an Australian Industry Federal Grant to develop a series of quick release emergency skids customised for fire, flood and tempest disaster management and local authority infrastructure support activities which compliment the Tiltip operation.

Customised skids are "winched on"/" tip or tilt off", and applications include; site offices, bulk waste bins, electronic traffic signs, water carts, ablution and mess facilities, lighting & emergency generators, pumping equipment, etc.

What are the steps of the activity / items of equipment?	What are the potential hazards?	What are the consequences of such a hazard?	What is the likelihood of the hazard occurring on a conventional Tipper body?	Hazard Severity on a conventional Tipper body.	What is the likelihood of the hazard occurring on a TILTIP body?	Hazard Severity on a TILTIP body.	Executive comment / Actions.
Loading of ancillary equipment onto body.	Injury due to manual handling of ramps.	Major	Almost Certain	Extreme	N/A	N/A	Hazard eliminated as per best practice by elimination of ramps.
	Injury due to plant equipment falling off loading ramps.	Catastrophic	Possible	High	N/A	N/A	Hazard eliminated as the body touches the ground when in TILT mode and plant equipment driven on.
	Broken or fatigued ramps cause plant to fall to the ground. Caused by inadequate maintenance.	Catastrophic	Possible	High	N/A	N/A	Hazard eliminated as the body touches the ground when in TILT mode and plant equipment driven on.
	Unlevel ramps caused by ground sub-sidence causing plant to topple off and fall to the ground.	Catastrophic	Possible	High	Unlikely	Low	Hazard significantly reduced as a result of the weight of the ancillary equipment supported by a combination of the rear axle and the rear of the tray which remains in contact with the ground.

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	Failure to properly attach ramps to the tray body. Ramps fall to ground and injure the operator.	Major	Possible	Medium	N/A	N/A	Hazard eliminated as per best practice by elimination of ramps.
Operator access to the body deck.	Injury due to operator falling off steps whilst mounting / dismounting body	Moderate	Likely	Medium	Unlikely	Low	The likelihood is reduced with a TILTIP body as the operator mounts/dis-mounts the body mainly in TILT mode, thus not requiring side steps.
	Operator slips during ascent / descent on to Tilt tray.	Minor	N/A	Medium	Likely	Medium	Design controls – optional traction lugs, and operator hand rail to reduce the likelihood. The plat equipment loaded onto the deck also provides a stable hand rail for the operator to use.

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Restraint of load.	Adequate restraint tension to prevent load shift not achieved by tensioning dog chains over drop sides.	Catastrophic	Likely	Extreme	Unlikely	Medium	The TILTIP attachment of engineered strong points provide direct access to correct load restraint procedures and tensioning application.
	Adequate restraint angle not achieved by applying dog chains to the side rope rails.	Catastrophic	Likely	Extreme	Unlikely	Medium	The TILTIP attachment of engineered strong points provide direct access to optimal load restraint angle and desired tension.
Equipment trailers to tow ancillary equipment.	Soft tissue and crushing injuries associated with manual handling of trailer.	Moderate	Possible	Medium	N/A	N/A	Hazard eliminated as per best practice by elimination of ramps.
	Site and depot manoeuvrability issues associated with towing a trailer.	Major	Unlikely	Medium	Unlikely	Medium	With TILTIP a trailer is only required when a second ancillary device requires transportation.

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	Increased risk of the operator being run over by moving vehicles whilst loading or discharging ancillary equipment on road side.	Catastrophic	Unlikely	Medium	Unlikely	Medium	With TILTIP the incidence is reduced as the requirement to load / discharge ancillary on the road side is reduced.
	Increased risk of pedestrian impact caused by excessive yard congestion. This is exacerbated by the requirement of multiple trailers.	Catastrophic	Unlikely	Medium	Unlikely	Medium	With TILTIP the incidence is reduced as the requirement trailers is substantially reduced.
	Trailer instability whilst towing (jack knifing / fish tailing).	Catastrophic	Possible	High	N/A	N/A	Hazard eliminated as per best practice by elimination of ramps.

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Incorrect Tilt or Tip function use as a result of incorrect operator selection	Ancillary equipment being tipped off tray	Catastrophic	Unlikely	Medium	Unlikely	Medium	With the dual function TILTIP, this likelihood is increased. However TILT/TIP function selection can only be changed when the body is in the neutral position. Safety feature - the risk is minimised as the operator must maintain pressure on the rise switch to maintain tipping mode. Training / tutorial DVD to be distributed via OEM representatives and corporate cliental – date 04/2012.
Raised body free falls under gravity	Operator / service agent crushed	Catastrophic	Possible	High	Unlikely	Medium	With the utilisation of fuse valves as standard fitting on the hydraulics across the TILTIP range, should a failure occur hydraulic system will immediately lock.

Hazard Assessment matrix.

Likelihood

Consequence	Unlikely	Possible	Likely	Almost Certain
Catastrophic *Eg. Kill or Permanently Maim*	MEDIUM	HIGH	EXTREME	EXTREME
Major *Eg. Long term Injury or Illness*	MEDIUM	MEDIUM	HIGH	EXTREME
Moderate *Eg. Medical Attention with several days off work*	LOW	MEDIUM	MEDIUM	HIGH
Minor *Eg. First Aid Needed*	LOW	LOW	MEDIUM	MEDIUM

Step 1 – Consider the Consequences

What are the consequences of this incident occurring? Consider what could reasonably have happened as well as what actually happened.

Look at the descriptions and choose the most suitable Consequence.

CONSEQUENCE

Consequence	Personal Damage
Catastrophic	Extensive injury or death
Major	Medical treatment
Medium	First aid treatment
Minor	No treatment

Step 2 – Consider the Likelihood

What is the likelihood of the consequence identified in step 1 happening? Consider this with the current controls in place.

Look at the descriptions and choose the most suitable Likelihood.

LIKELIHOOD

Likelihood	Description
Unlikely	The event may occur, but probably never will.
Possible	The event could occur, but only rarely
Likely	The event could occur at some time
Almost Certain	The event is expected to occur in most circumstances

Step 3 – Calculate the Risk

A. Take Step 1 rating and select the correct column.

B. Take Step 2 Rating and select the correct line.

C. The calculated risk score is where the two ratings cross

CONSEQUENCE	LIKELIHOOD: Unlikely	Possibly	Likely	Almost Certain
Catastrophic	MEDIUM	HIGH	EXTRM	EXTRM
Major	MED	MEDIUM	HIGH	EXTRM
Medium	LOW	MEDIUM	MEDIUM	HIGH
Minor	LOW	LOW	MEDIUM	MEDIUM