

2 – 4 December 2019

Venue: VACC, Level 7, 464 StKilda Road, Melbourne



Certification, Engineering & Modifications

HEAVY VEHICLE TRAINING

COURSE OUTLINE

The course is in three parts, each of which can be separately enrolled.

Date	Course	Details
2 December	CERTIFICATION	Certification procedures, permit vehicles, SP vehicles, IAP, RVCS, Legal issues Road Vehicle Standards Act, RAV, RAWs, Heavy vehicles sector explained
3 December	ENGINEERING	Brakes, engines, axles, suspension, steering, electrical systems, tyres and performance, PBS, chassis design
4 December	MODIFICATIONS AND REPLACEMENT PARTS	VSB overview, body attachments, brake modifications, mechanical couplings, towbars, vehicle mounted lifting systems, engine and transmission substitution, common failure modes, vehicle safety

WHO SHOULD ATTEND

Workshop managers, fleet operation managers, vehicle engineers, components suppliers and manufacturers, vehicle modifiers, insurance investigators, inspectors. The course will be informative for anyone with a professional interest in heavy truck and trailer safety and mechanical performance.

COURSE COSTS

ARTSA, CVIAA, CVIAV and VACC members:	2 & 3 December = \$550 (inc gst) b/w/VSK
	4 December = \$275 (inc gst)
Non-members:	2 and 3 December = \$770 (inc gst) b/w/VSK
	4 December = \$385 (inc gst)

Participants can elect to attend on any or all of the three days.

To attend, complete the registration form or enrol on-line via www.artsa.com.au/training

For all enquiries, contact ARTSA Executive Officer Greg Rowe on exec@artsa.com.au or phone 0407 825 132

Monday 2nd December 2019

PART 1 HEAVY VEHICLE CERTIFICATION

8:30 am	Outline and Introductions
8:45am	Overview of Heavy Vehicle Certification Procedures State v Federal responsibilities, NHVR, in-service v new, public road v private-road. Importation requirements and procedures. (Licensee, special, RAWs, personal). Registration types and categories. Permit and special-purpose vehicle types. Special purpose vehicle registrations. Evaluation vehicle registrations. Plant vehicles and dangerous goods vehicles. NEVDIS & registration procedures, VIN reporting requirements
9:15am	Permit Vehicles - Certification Aspects Axle mass limits in Australia. Road access approval process. Overview description of the PBS scheme. The roles of consultants, assessors & certifiers in PBS. PBS take-up levels. NHVR application and approval procedures. Timelines. Special-purpose vehicle approvals within the NHVR framework and also within the work safety domain.
9:45 am	Special Purpose Vehicle Requirements Work Safe certification framework. Australian Standards. Prescribed and non-prescribed vehicles. Standards applicable to in-service vehicles that are not derived from the ADRs. Design approvals issued by work safety authorities.
10:15am	Intelligent Access Project and the TCA Intelligent Access Project – overview of requirements in the various jurisdictions. Equipment approvals. Role of the TCA. Equipment certified by TCA.
10.30am	Break
11:00 am	The character and value of the Australian heavy vehicle fleet Vehicle registration codes. Vehicle totals in each registration category. New registration levels. Retirement levels. Leading suppliers. Value of the industry. Value of local manufacturing. Geographical factors. Vehicle and body types.
11:30 am	Industry Trends Country of origin trends. Geographical ownership trends. Vehicle type trends. Registration code trends. State of ownership trends. Technology trends. Size and value of the heavy vehicle industry. Technology outlook
12.30pm	Lunch
1:30 pm	The Road Vehicle Certification System (RVCS) Type approval schemes v individual vehicle approval schemes. Purpose and Structure of the RVCS. RVCS Website as a resource. UN ECE, EU Directive and GTR rules. RVCS vehicle categories (NB1, NB2, NC, TC, TD, MD4, ME). Special approvals. RVCS approval types (full, low volume, secondary, RAWs). L, D, S, P, A and T numbers. Second-Stage of Manufacture approvals. Introduction to Informed Filler and custom SE & SF forms. Administrative Circulars. COP and TFI Audits. Compliance plate supply and cost.

Informed filler forms How to compose an application for a compliance plate application.

3pm	Break
3:30 pm	Legal Responsibilities National Heavy Vehicle Law and Regulations. State variations. Role of WA and NT with the NHVR. COR Responsibilities arising from recent changes to the NHVL. Insurance risks. Replacement Parts Standards. Recalls obligations.
4:00 pm	The Coming Road Vehicle Standards Act and its Implications Proposed regulation changes. Proposed changes to import rules. RAWs scheme changes as applicable to heavy vehicles. Second Stage of Manufacture changes. RAV database.
4:30 pm	Who's Who in the Heavy Vehicle sector Size, character and importance of the heavy vehicle industry. A broad outline of the regulators applicable to heavy vehicles. Government – Industry reference groups. Industry Associations – who's doing what. What we know about the operator demographic. Freight task predictions.
5pm	Close

Tuesday 3th December 2019

PART 2 HEAVY VEHICLE ENGINEERING

8:30 am	Outline and Introductions
9.00 am	Heavy Vehicle Brake Systems Types of brake systems on heavy vehicles. Foundation brake systems. Drum v Disc. Brake fade. Air brake system features. Split system protections. Emergency brakes. Spring brakes. European v North American brake systems. Failure protections. ADR 35 & 38 requirements. Compatibility requirements. ECE Regulation 13 requirements v FMVSS 121 requirements. Brake failure claims. Australian stopping performance standards.
9.45 am	Adaptive Braking Systems ADR 35 & 38 requirements. Vehicle Stability Control components. Types of interventions, adaptive brake distribution, voltages and earthing requirements, autonomous braking, steering and lane assist, intervention monitoring. VSC performance on combination vehicles. Towing vehicle detection of VSC on towed vehicles. USA, North American and Japanese rules requirements for VSC / ESC, AEB and lane departure warnings. VSC on combination vehicles.
10:30am	Break
11:00 am	Engine & Transmission Developments Diesel engine technologies, engine failure modes, engine emissions and fuel economy developments, hybrid drives, turbochargers, engine brakes, retarders, CAN bus broadcasts, engine controller data storage, incident storage, RSL tamper response, virtual technician developments, engine telematics,...

11:45 am	Axles, Suspensions & Steering Vehicle dynamic modes, chassis vibration modes, wheel alignment measures, camber, caster, Ackerman angles, axle bending, suspension responses, suspension braking reactions, shock absorber performance, driver vibration levels, road friendly suspensions,...
12.30pm	Lunch
1:30 pm	Vehicle Electrical Systems 12V and 24V systems. Starter system resistance. Alternator characteristics. Electrical protections. Voltage distribution. Earthing. Starter motor current levels and resistance requirements. Automotive components. CAN bus physical layer. Private and public CAN buses. SAE 1939 and ISO 11898 CAN bus protocols. OBD connectors. Black box fault finding technique. Electrical failure modes. Workshop instruments and measurements. Electric hybrid technology overview.
2:15pm	Tyres and their Characteristics Tyre performance characteristics and classifications. Tyre standards. Tyre testing. tyre ratings, tyre wear modes, tyre slip curves, variation with inflation pressure, tyre lateral stiffness and centring moments, Variation of parameters with inflation pressure. Variation of braking distances and road-handling performance with tyre type and parameters. Load and inflation limits of tyres in Australia. Central Tyre Inflation systems.
3pm	Break
3:30 pm	The PBS Technical Standards Basic concepts and standards. Detailed description of safety and infra-structure standards. SRT / rollover. Tyre performance. Endurance braking. Simulation procedures and examples.
4:15 pm	Chassis Strength Design & Failure Modes Chassis ladder design. Vibration modes of vehicles. Acceptable design practice for chassis rail modifications. Reinforcements. Bending moment diagrams and stress calculations. Rivetted constructions, Acceptable factors of safety. Failure modes of metals and plastics. The 'Art' of Engineering Design.
5:00 pm	Close

Wednesday 4th December 2019

PART 3 HEAVY VEHICLE MODIFICATIONS

8:30 am	Outline and Introductions
8.45 am	Body Attachments – VSB Code J Types of mounts. Minimum number of attachments. Locations of attachments with regard to cross members. Hardware requirements – bolt grades, nut retention mechanisms. Load restraint guide. Prescribed force withstand levels.
10.15 am	Brake Modifications - VSB Code G Types of mounts. Minimum number of attachments. Locations of attachments with regard to cross members. Hardware requirements – bolt grades, nut retention mechanisms. Load restraint guide. Prescribed force withstand levels.
10.30am	Break
11 am	Brake Modifications (continued after break)
11:15 am	Mechanical Couplings and Towbars – VSB Code P D-value, V-value and S-value definitions and calculations. Types of couplings. Strength and endurance requirements. Towbar design principles. Safety chains. Drawbar design principles. Attachment hardware. Fifth wheel and turntable installation requirements. Requirements arising from AS 4968 Parts 1 & 2 and AS4177.
11:45 am	Vehicle Mounted Lifting Systems – VSB Codes R & T Description of systems that are within specification: Mobile cranes, vehicle loading cranes, tailgate lifters, tip truck lifting mechanisms, tilt tray mechanisms, tipping trailers. Requirements arising from AS 4418 Parts 5 (mobile cranes) & 11 (vehicle loading cranes). Tow truck requirements arising from AS 5400.
12.30pm	Lunch

PART 4 REPLACEMENT PART CONSIDERATIONS FOR MEDIUM AND HEAVY VEHICLES

1.30pm **The legal differences between a Modification and a Replacement**

What Replacements are within the scope of the VSBs, and National Heavy Vehicle Law.

What Replacement part installations are unclear / uncertain / not within published guidelines or laws.

Classification of replacement parts into Safety/Compliance Critical, Safety/Compliance relevant, Low risk parts.

Legal requirements on suppliers of replacement parts in Australia. The roles of the VSS (Federal) Regulator, NHVR, State Road Agencies and the ACCC.

Review of current replacement parts regulations arising under the ADRs (CRNs and SARNS)

Legal risks for operators arising under the NHVL.

How do other countries manage the replacement parts challenge ?

2:00 pm **Panel Discussion with Parts Suppliers and Operators**

2:30pm **Break**

3:00 pm **Workshop**

Workshop involving participants. Break into five groups. Each group to consider the situation involving replacement part use in a specific domain:

- i. Replacement parts use for brake systems
- ii. Replacement parts use for mechanical couplings
- iii. Replacement parts use for axles and hubs
- iv. Replacement parts use for suspensions
- v. Replacement parts use in steering systems

Each group is asked to identify legal uncertainties, practical difficulties that arise, safety concerns, resilience concerns and good practice guidance for suppliers.

4.00 pm **Presentations by each working group and group discussion.**

4:45 pm **Discussion of key points to be in the meeting Communique.**

5pm **Close**

In conjunction with:



TRAINING LEADER

Dr Peter Hart will lead the training with assistance from ARTSA and CVIAA practitioners.

Peter is an electrical engineer with close to 20 years' experience as a forensic examiner and expert witness. He is also an Agent in the Road Vehicle Certification System and a VicRoads engineering signatory.

Peter will be assisted over three three days by a number of specialists across the certification, engineering and modifications field.

Registration can be completed on line at:

www.artsa.com.au/training

Or by completing and returning the form below

Name _____

Organisation _____

Address _____

Contact email _____

Contact phone _____

Registration Costs	ARTSA, CVIAA, CVIAV, VACC Members (inc GST)	Non member (inc GST)	Number of tickets	Total
Part 1, 2 December – Certification	\$550	\$770		\$
Part 2, 3 December – Engineering	\$550	\$770		\$
Part 3, 4 December - Modifications	\$275	\$385		\$
All three days	\$1375	\$1925		\$
			Total	\$

Note: Members includes financial members of ARTSA, CVIAA, CVIAV, and VACC. Prices are inclusive of GST

Payment:

Registration requests without payment will not be processed. Faxed registration forms must include full credit card details. Payment in Australian dollars.

I enclose my cheque / money order payable to 'Australian Road Transport Suppliers Association'

Or charge to:

Mastercard Visa

Name of Cardholder

Expiry Date ____/____ CW No: _____

Card No;

Signature _____

_____/_____/_____/____

Total Cost; \$ _____

Email: exec@artsa.com.au

Post: ARTSA, PO BOX 1760, Glen Waverley 3150

Enquiries: exec@artsa.com.au

Cancellations / Substitutes / Refunds: Cancellations received in writing by 29th October 2018 will receive a full refund less an administration fee of \$75. After this date no refunds will be issued. Registrations are transferable.

For more details go to: www.artsa.com.au/training or contact Greg Rowe on 0407 825 132