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Module 15: Vehicle Inspection Organization & Management

Purpose:

To focus on the roles, responsibilities and functional structure of a regulating agency responsible for new motor vehicle standards and in-use inspection programs.

Learning Outcomes:

- Understand the roles, responsibilities and functional structure for a regulating agency
- Identify the differences in equipment specifications required for inspections and maintenance
- Identify the types of equipment required for compliance testing
- Identify equipment required for safety and emissions inspections and maintenance
- Understand the requirements for accelerated vehicle scrappages

Contents:

- A. Roles, Responsibilities and Functions
- B. Inspection Centre Equipment Requirements
- C. Compliance Testing Equipment Requirements
- D. Repair Facility Equipment Requirements
- E. Accelerated Vehicle Scrappages.

Format:

1. Slide Presentation

2. Vehicle Inspection Organization & Management

3. Video Presentation

- Hamilton Test Systems Centralized Safety & Emissions Inspection Lane
- Hunter Engineering BT400 Brake in Motion Equipment
- Side Impact Crash Test
- Frontal Impact Crash Test
- Rear Bumper Crush Test

4. Internet Presentation

www.pmgtest.com

www.iihs.org

www.euroncap.com

1. Responsibilities, Roles and Functions

1.1 Responsibility

The state government is responsible for the protection of its citizens and the environment. This means that the central government may delegate this responsibility to a regulating agency, which has the expertise to develop and promulgate the appropriate regulations, legislation, policies and business rules.

The regulating agency has the power to enforce manufacturer compliance with new vehicle safety and emissions standards and can initiate vehicle recalls for any non-compliance after performing confirmatory testing independent of the manufacturers.

The regulating agency also co-ordinates the collection of motor vehicle-related data for future statistical analysis to determine the effectiveness of its policies in reducing motor vehicle and pedestrian fatalities; develops traffic safety and infrastructure programs and conducts research and development into motor vehicle safety through consumer complaints and statistical analyses of the data.

When dealing with motor vehicles which includes motor cycles and heavy trucks, the regulating agency's key role is to facilitate compliance by the motor vehicle manufacturers to ensure the delivery of safe vehicles to their citizens. It also co-ordinates the efforts of provincial jurisdictions to ensure that in-use motor vehicle standards developed by the individual jurisdictions are not more stringent than the new motor vehicle standards.

Should there be any need, the regulating agency is at the fore front in assisting in the development of any "Codes of Practice" for motor vehicle safety and emissions programs, the types of programs that are sanctioned by the regulating agency and the calculations of any program benefits.

1.2 Role

The regulating agency has a critical policy role in:

- Promoting safe and environmentally responsible motor vehicles for the transportation of goods and services;
- Promoting the legislative framework for good governance to meet local and national needs; and
- Promoting mutual respect between motor vehicle operators and pedestrians.

1.3 Functions

In North America, the regulating agency responsible for new motor vehicle safety standards is organizationally a part of much larger organization. In Canada, Transport Canada is the umbrella organization dealing with transportation issues by air, rail, road

and water. In the US, the Department of Transportation (DOT) is the parent organization that deals with transportation issues such as air, rail, road, water, highways and highway safety. In Australia, the Department of Transport and Regional Services is the umbrella organization responsible for land, aviation, rail and maritime transport.

The decision made by the state government on future motor vehicle safety and emissions standards will have far-reaching implications in terms of functions, roles and responsibilities of the regulating agency. The options to be considered by the state government and the regulating agency are:

- To develop motor vehicle safety and emissions standards unique to China;
- To adopt the European Union Commission's standards for motor vehicle safety and emissions; or
- To adopt the Canadian standards for motor vehicle safety and emissions.

1.4 Standards Unique to China

While there may be some benefits to the development of motor vehicle safety and emissions standards for the China market, the following serious issues require careful consideration:

- Research and development activities will be required to determine best practices;
- Added manufacturing costs for tooling and processing passed on to the consumers;
- Large capital costs for required infrastructure to support research and development activities;
- Restricting the ability to market excessive production off shore; and
- Diverse functional structure to support all activities associated with manufacturing motor vehicles unique to China.

1.5 Adopt EU Standards

As China has already adopted EU emissions standards for motor vehicles, philosophically it makes good sense to also adopt EU motor vehicle safety standards. The adoption of EU motor vehicle safety standards can be formalized by an instrument such as a Memorandum of Understanding.

1.6 Adoption of Canadian Standards

One of the main benefits of adopting the Canadian standards for motor vehicle safety and emissions is to have the ability to market excess production to Canada. In some instances, the adoption of Canadian standards may require an accelerated introduction of new technologies into the current vehicle fleet. For example, an emissions control strategy called On Board Diagnostics II (OBD II) has been fully implemented in Canada

commencing with the 1998 Model Year of light duty vehicles while China is committed to Euro II emissions standards by 2002.

2. Inspection Centre Equipment Requirements

The equipment at the inspection centres need to have closer tolerances to consistently provide a high level of accuracy and repeatability and must be durable enough to withstand a very high degree of use especially in a centralized inspection-only environment. The specifications for the equipment are often referred to “severe service” mode of operation and will also have more frequent intervals for maintenance and calibrations. The equipment requirements for new vehicle compliance testing are very different from the equipment requirements for in-use vehicle testing. Some differentiation can be made in terms of the grades of equipment required for each testing regime. Equipment required for compliance testing is often referred to as “laboratory grade” while equipment required for inspections are classified as “inspection grade” and “repair grade” equipment is defined as that used by the repair industry. It is obvious that there are different cost structures associated with the different grades of equipment. This is clearly discernible in the different procedures and tolerances espoused in Acceptance Test Procedures (ATP).

As in-use inspections are designed to test vehicles for occupant and pedestrian safety and vehicle emissions, the following list outlines the minimum equipment (hardware) requirements for an inspection-only facility:

i) Safety

- Brake tester
- Wheel alignment tester
- Suspension tester
- Headlight adjustment tester
- Speedometer tester

ii) Emissions

- Dynamometer
- Exhaust gas analyzer
- Calibration gases
- Opacity meter

While it can be argued that static tests are sufficient for safety inspections, this is easily countered by the fact the most damage occurs to both pedestrians and drivers when the vehicle is in motion and therefore dynamic testing is a requirement. There has been no attempt to include buildings or any customized applications software which may be required to integrate the two distinct inspection sequences. The above hardware, with the customized applications software can provide a fully automated protocol thus minimizing any chances of “clean piping” or “clean inspecting” of the vehicle fleet.

3. Compliance Testing Equipment Requirements

The equipment requirements for compliance testing is different from that required for the inspection process. Compliance testing equipment permits the regulating agency to perform the appropriate tests using similar equipment that manufacturers use for testing their vehicles for compliance with safety and emissions standards.

As a minimum, the following equipment (hardware) is required for compliance testing:

i) Safety

- Side impact tester
- Roof crush tester
- Frontal crash barrier
- Bumper-to-pole tester
- Test tracks
- Immersion trench
- Brake test
- High speed track
- Snow test
- Dynamic test
- Low speed circuit
- Brake test hill
- Rear impact tester
- Seat belt anchorage tester
- Head restraint tester
- Crash test dummies
- Instrumentation
- Vehicle test structure
- Collision barriers

ii) Emissions

- Constant Volume Sampler (CVS)
- Dynamometer
- Stand-alone Driver's Aid (SADA)
- Humidity Controls
- Sealed Housing Evaporative Determination (SHED) Testing
- Refuelling Station
- Calibration Gases
- Proprietary software capable of performing the Supplemental Federal Test Procedure (SFTP)

In many jurisdictions, the regulating agency normally involves third parties to perform compliance testing for motor vehicle safety and emissions. In Canada, Transport Canada utilizes the services of PMG Technologies Inc., a wholly owned subsidiary of Transport

Canada, to conduct compliance testing on their behalf. This permits PMG Technologies Inc to pursue other interests and be self-sufficient at the same time.

4. Repair Facility Equipment Requirements

The equipment required for repair facilities is of a commercial grade and is readily available from equipment suppliers. As a minimum, repair centres should have the following equipment:

- Alignment equipment including alignment rack
- Wheel balancing equipment
- Hydraulic lifts, jacks and jack stands
- Basic hand tools
- Vacuum and pressure gauges
- Engine analyzers
- Exhaust gas analyzers
- Hand-held diagnostic tools
- Scan tool
- Digital multi-meter
- Lubricant and fluid handling equipment
- Headlight aiming device
- Vehicle repair manuals in electronic or hard copy

It is important for the regulating agency to conduct regular audits of repair facilities to ensure the presence of the above equipment. During the regular audits, the agency should require repair facility personnel to perform calibration to ensure the equipment and operating systems are within acceptable ranges for normal daily operation.

5. Accelerated Vehicle Scrappages

Considerable discussions have been generated on accelerated vehicle scrappage programs. The state of California has a vehicle scrappage program for vehicles that fail the emissions inspection. In the past year, California spent approximately \$US50 million to scrap 20,000 vehicles and also provide financial assistance to vehicle owners under the Low Income Assistance Program (LIAP). The fundamental problem with California's program is that vehicle owners whose vehicles were eligible for this program were the same portion of the population who could least afford to be without a vehicle.

Before implementing a light duty vehicle scrappage program, the regulating agency must ensure that all other policies relating to consistent supply of the correct fuel quality, used vehicle importation and emission component retrofits are fully functional.

An accelerated light duty vehicle scrappage program can be developed with the following considerations:

- Vehicles that failed the enhanced safety inspections for vehicles more than ten years old;
- Vehicles that have failed the emissions inspections 3 times in the last 5 years and have failed a safety inspection;
- vehicles that have been rebuilt from two or more vehicles and have failed a structural integrity inspection;
- vehicles that do not fit into any emission control component retrofit programs