

TRAINING FOR NEW TECHNOLOGY

A PAPER FOR

THE

HEAVY VEHICLE DESIGN SEMINAR

ROTORUA, N.Z. 1985.

BY

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The paper is presented in 2 parts:

Part 1: The Mechanic and Service Personnel.

Part 2: The Heavy Truck Driver.

#### INTRODUCTION:

There is a major problem in the New Zealand Heavy Transport Industry that is hampering the development of new or high technology today. The problem is not confined to any particular group or trade but applies equally to Management, Supervision, Mechanics and Drivers. "Everyone Must Learn How To Learn".

Too frequently you hear the excuses of individuals:

THE MANAGER: "Computers - They're costly and complicated - more trouble than what they're worth!"

THE SUPERVISOR: "Formal planning, scheduling and analysis of all shop work - I haven't the time - production through-put is my business".

THE MECHANIC: "I don't need those new fangled analyser gadgets to tune an engine - I can do it by ear".

THE DRIVER: "In Cab Warning Systems! - I can tell by a gut feeling or the seat of my pants if something's wrong with my truck".

In their own way they are probably right, but only infinitesimally so!

The remarks on the front of this seminar's registration form are the key to success for all registrants. 'Transport becomes safer and more efficient through knowledge'.

One of the major ways we gain knowledge is by EDUCATION or TRAINING.

Any successful business or operation will only succeed and prosper if planning for training is a major consideration in both its agendas and its budgets.

A minimum of 1% of an annual operating budget should be forecasted towards training costs at all levels.

WHY DO WE TRAIN? I believe the objects of training are threefold.

Contd...

ONE: To increase production by working better and smarter.

TWO: To protect the capital investment by applying the best maintenance methods and equipment.

THREE: To reduce accidents and injury by effecting the best safety systems.

HOW DO WE TRAIN? By commitment, by motivation and by honesty.

ONE: By commitment means support from the top down - allocation of funds and facilities - employment of competent training staff - management being seen as well as heard.

TWO: By motivation means job descriptions for all personnel - realistic production targets and goals - efficient appraisal systems - recognition of achievements by awards, incentives and status - monetary rewards.

THREE: By honesty means defining training needs - not using training as as cure-all for deficiencies - selecting and/or rejecting personnel for training as appropriate - grading and counselling.

For training and re-training systems to be successful - Students must want to learn - Instructors must want to teach and everyone - MUST LEARN HOW TO LEARN!

#### PART ONE: MECHANICS AND SERVICE PERSONNEL

I see the key areas in training for new technology as:

##### STREAMLINING SHOP PROCEDURES:

Repair time increases as time spent on indirect activities increase - the average mechanic spends approximately half of his time in activities other than direct mechanical repair work. See Fig's 1 and 2. While 100% labour productivity can never be realised, a level of approximately 70% can be obtained by good management and supervision. See Fig 3.

##### TROUBLE SHOOTING:

Guessing at problems cost money - a lot of modern mechanics have become "parts replacers" - if there is a problem with machines charging system, and the mechanic Contd.....

HOW MECHANICS SPEND THEIR TIME

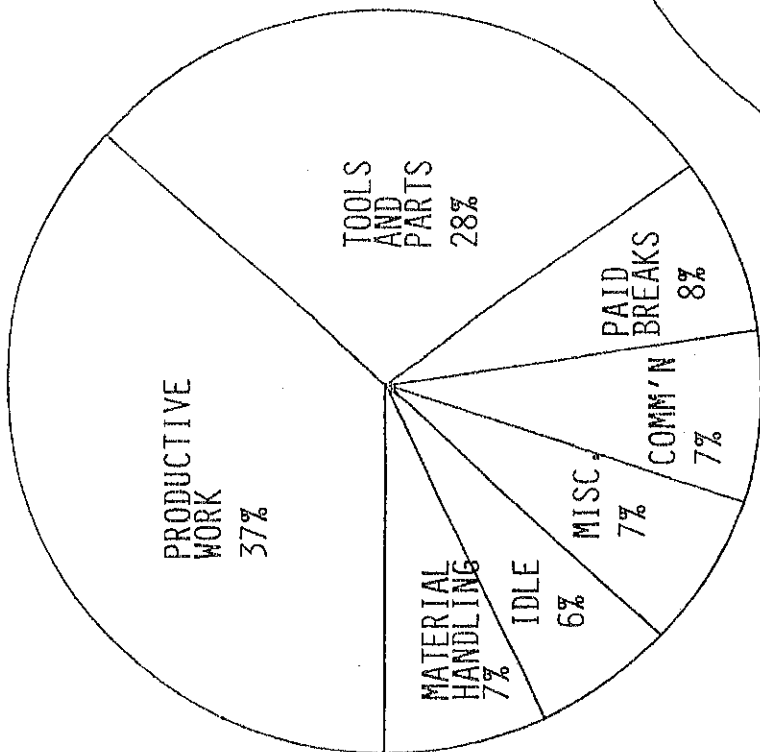


Fig. 1.

FOREST INDUSTRY SURVEY

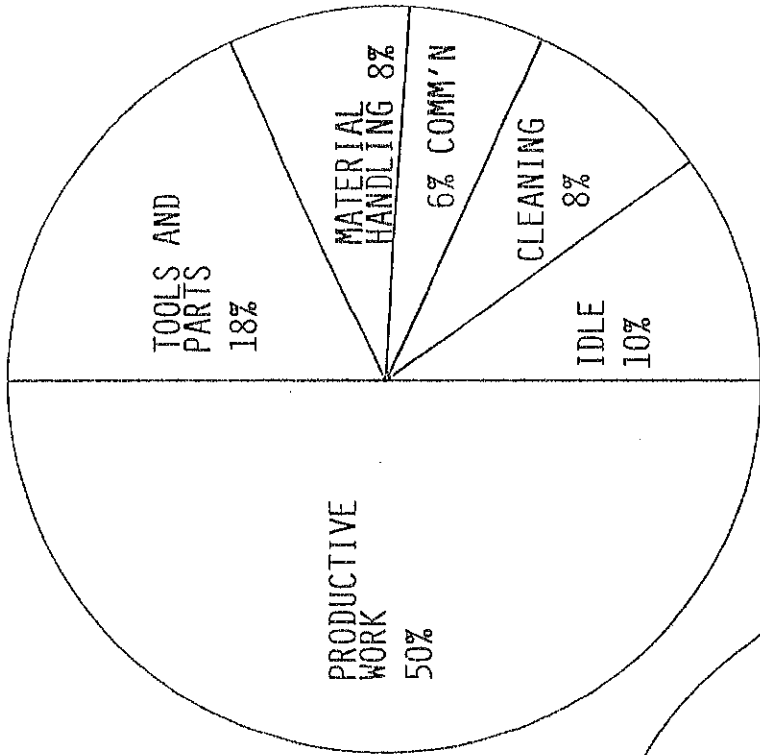


Fig. 2.

TRANSPORT INDUSTRY SURVEY

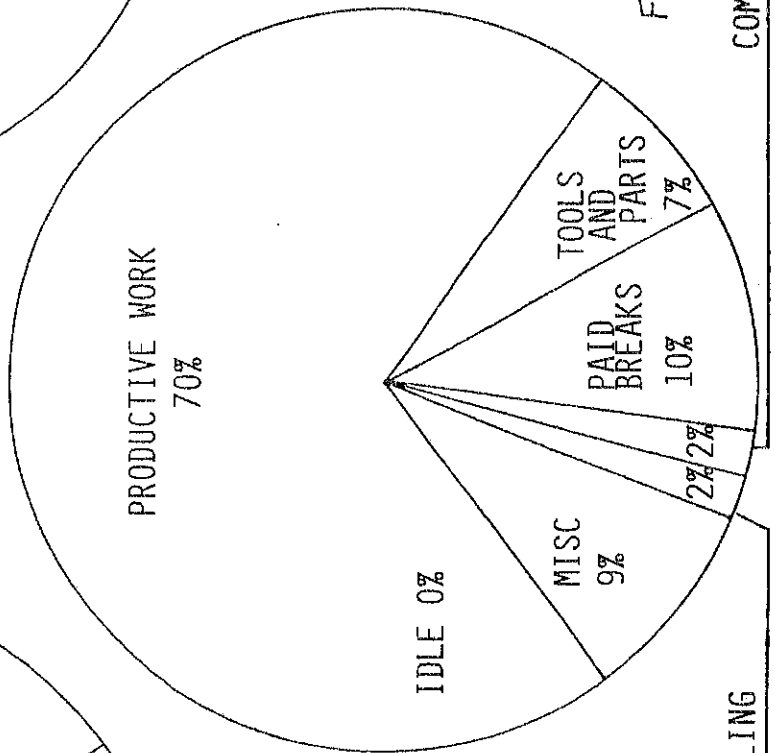


Fig. 3.

MATERIAL HANDLING

COMMUNICATION

TROUBLE SHOOTING Contd...

doesn't use the electrical testers either because he doesn't have them or he doesn't know how to use them - he'll start replacing parts. He might replace the alternator and regulator before he discovers that the problem is nothing more than a loose terminal. Look at what systems on your equipment take the major part of repair work and re-work and concentrate in "Back-to Basics" in those areas.

FIELD OR CALL-OUT SERVICE:

"The second trip will kill you" if you have field service calls that require a trip back to the workshop for tools, parts or technical help. The basic principle for efficient field service operations is "Select the best people and give them the right tools". How many times have you seen a call-out service mechanic arrive out in the shop ute with enough tools he can carry in one hand. Good preventative maintenance in the field can improve equipment availability and lessen a workshop's repair load. Don't forget grease guns, oil cans, a selection of lube and cleaning oils, etc.

DIAGNOSTICS:

Allied to all three above - new technology is high technology - although there is no substitute for experience, using modern diagnostic tools makes mechanics work smarter and better - we have become used to electrical system testers, pressure gauges, flow meters, manometers, thermistors, oil sampling and exhaust analysers - now we have on-board computers with self diagnostic facilities that pin-point faults to the mechanic - digital, read-out and cassette recording features -

TESTING RIGS:

Not only the engine and chassis dynamometers, but electric fuel injection test equipment - hydraulic test rigs for hydraulic components hoses, valves, pumps and motors, and also hydrostatic transmissions and control systems.

Contd...

TESTING RIGS Contd...

Many of the test rigs now have video display systems and built-in computer records.

TRADE TRAINING:

There is no substitute for the indentured apprentice system of training mechanics. Many educators and trade training institutions are currently recommending changes to the apprentice system. I personally believe that there is no substitute for hands-on basic training in the apprentice - master system, but degrees of specialisation must come, with modules of training or re-training recognised by the employer and the industry by qualification and status. Programmed learning systems, where an individual can learn and be tested at his own pace using audio visual and computer programmes will be introduced more and more.

The final area of training is in the individual's approach to quality we need to train mechanics not only to work smarter and better, but also to set and maintain their own technical standards by inspecting and testing their own work before it leaves the shop. Quality control starts with the individual and self control of technical standards will eliminate the costly spectre of "re-work".

PART TWO: THE HEAVY TRUCK DRIVER

In New Zealand we do not have a recognised heavy truck driver training system.

Our driving schools do not teach a person how to be a competent driver, they merely teach them how to move a vehicle along a road while obeying the relevant road code and transport regulations.

Most truck drivers learn by 'sitting - with - Nellie' or having-a-go round a yard or parking area, and then borrowing a mates heavy vehicle, which can be a ute, a van or a mini-bus to go for their licence.

Contd...

HEAVY TRUCK DRIVER Contd...

Unfortunately in my opinion we still have too many 'steerers' or 'truck jockeys' on our highways.

The Road Transport Industry Training Board has campaigned long and hard to raise the standards of 'professional' drivers in New Zealand.

Many transport companies both large and small have participated in the 'Driver - Assessor Training Scheme' organised by the R.T.I.T.B. Some have appointed Driver Training Instructors either on full-time or a part-time basis.

This is only filling a very small part of the training need requirement.

HOW GOOD ARE YOUR DRIVERS?

What standards do you as a manager or supervisor use to grade the level of your drivers?

It is by length of driving experience, length of service with your company, versatility as a driver, lack of accidents, good safety record, low vehicle running costs, use of driver assessor or trainer, etc?

All of these items have a bearing in the grading of drivers, and to them you must add such non-vehicle activities as:

Cargo handling and security documentation.

Knowledge of Road Code and Traffic Regulations.

Personal health and commitments.

Public and employer relations.

After grading your drivers does your "best" driver always get the newest truck . 'Best' drivers have been known to nurse a truck and the next driver get all the high costs and down-time!

HOW DO YOU TRAIN NEW DRIVERS?

The bureau of Motor Carrier Safety of the US Department of Transportation has recently published 'Proposed Minimum Standards for Training Tractor-Trailer Drivers'.

Contd...

HOW DO YOU TRAIN NEW DRIVER Contd...

They are the synthesis of investigations and extensive research projects conducted by and for the Bureau, reflecting the current state-of-the-art for training novice tractor-trailer drivers in the United States and Canada.

Four basic goals comprise the standards:

Student Safety During Training

Ability to Drive Safely

Ability to Drive Legally

Ability to Drive Efficiently

To achieve these goals, the standards specify minimum requirement for training.

One of the requirements detailed, is for the student to receive a minimum of both 38.5 hours behind-the-wheel and to have driven a cumulative 1,000 miles during this time!

A copy of the curriculum units standards outline is included in Appendix "A".

TRAINING FOR NEW TECHNOLOGY:

An item of old technology but which is new to a great number of N.Z. heavy truck drivers is the Tachograph.

The tachograph is a precision instrument that records on a chart, the speed of a vehicle in kilometers per hour, or engine RPM, distance travelled, or total engine revolutions, running, idling or stopping of engine. All of this recording is synchronised with recorded time. This information is used to determine whether or not vehicles are operated at their maximum efficiency. Although called the 'spy in the cab' by drivers. Their attitude can be changed by consultation and communication. A tachograph can help a driver drive better, can indicate engine and transmission malfunctions and can work for the driver if an adverse complaint is made against him.

Other driver monitors can be the 'keytrol' refueling system, the 'fleet card' accounting system, and an on-board digital or print-out fuel meters, plus digital and voice-synthesizer in cab warning systems.

Contd...



SAFETY:

Many of the new technology items are safety orientated and we can expect to see some or all of the following;

DRIVER ALERT Warns sleepy or inattentive drivers

DROWSE ALERT Measures the drivers reaction at the wheel. Driver must act within a certain time to touching a response bar or control.

BLINDSIDE MIRROR Electronically operated, remote control from cab gives driver clear vision behind.

STEERING CONTROL STABILIZER Helps to prevent loss of control in road run-offs, should a front tyre blow out or steering fail.

ELECTRONIC SPEED RECORDER-CONTROLLER Cab installed computer constantly record truck speed and engine speed. Governs both the engines top speed and the trucks to road speed, and driver to maximise fuel economy.

LOW TYRE PRESSURE WARNING SYSTEM Senses any air pressure drop below pre - selected level and activates flashing light in cab. The wheel sensors are tiny piezoelectric voltage generators, which get their power from rotation of the wheels. They transmit (on a radio frequency) to a cab installed receiver , no wiring or lines required. Can be installed on all wheels.

RADAR BRAKING ALERT Warns driver if a vehicle ahead is slowing especially useful in winter or where visability is poor. Mounted in centre of front bumper is microwave transmitter.

CLEARANCE SENSOR Electronically measures overhead clearance for high load or trailer.

HEAVY TRUCK DRIVING SIMULATORS Driving simulators have been with us for over 40 years and a major U.S. company is the world leader in the design, manufacture and marketing of land vehicle simulation systems.

Over 3,200 systems - totalling over 40,000 simulators are in

Contd...

constant use in 30 countries over 6 continents.

Simulation produces actual situations similar to driving.

The special wide screen technicolour training films are totally realistic because they have all been filmed in actual traffic surroundings.

A system consists of: (Annex B)

- Simulator cars (cabs)
- Instructor's Computer Console
- Driver Analyser
- Sophisticated individual audio system
- Complete set of 16mm Training Films
- Specially adapted projector
- Screen and loudspeakers
- All necessary connecting cables
- 2 years supply of spares

A 4 place (cabs) system can be installed in a New Zealand Training area, tested and 5 days training given for approximately NZ \$250,000 - (the all-up cost of a laden truck and trailer unit on a NZ highway).

A major feature of the simulator system is that it can be used as a cost effective standardised method for:

- Pre-screening trainees
- Training experienced as well as learner drivers
- Determining trainees specific areas of driving skill which need up-grading
- Test existing driver proficiency

The Associated Driver Analyzer operates in 3 significant modes:

1. Tests reaction time
2. Demonstrates the effect of various factors on stopping distance i.e.
  - a) Road surface conditions
  - b) Vehicle speed

Contd..

- c) Driver condition  
    Blood alcohol concentration
  - d) Gradients
  - e) Load
3. Tests perception skills.

REFERENCES:

1. Joseph J (1985) How to sell safety  
TODAY TRANSPORT Vol. 19 No.3 1985
2. GLYNDOVA 1985 SIMULATOR MANUAL
3. Ministry of Energy, New Zealand  
"THE PROFESSIONALS" 1984

## CURRICULUM UNIT STANDARDS OUTLINE

SECTION 1 - BASIC OPERATION	NUMBER OF LESSONS (OPTIONAL)	MINIMUM HOURS REQUIRED					TOTAL
		CLASSROOM	LAB	RANGE	STREET		
Unit 1.1 - Orientation	3	3.25	1.00	0	0	4.25	
Unit 1.2 - Control Systems	2	1.75	.75	0	0	2.50	
Unit 1.3 - Vehicle Inspection	2	2.00	4.00	0	0	6.00	
Unit 1.4 - Basic Control	4	.75	0	7.25	0	8.00	
Unit 1.5 - Shifting	2	1.25	0	3.00	0	4.25	
Unit 1.6 - Backing	2	.75	0	22.00	0	22.75	
Unit 1.7 - Coupling and Uncoupling	2	.75	0	3.50	0	4.25	
Unit 1.8 - Proficiency Development: Basic Control	3	1.50	0	36.00	18.00	55.50	
Unit 1.9 - Special Rigs	2	1.00	3.50*	0	0	4.50	
TOTALS	22	13.00	9.25	71.75	18.00	112.00	
<b>SECTION 2 - SAFE OPERATING PRACTICES</b>							
Unit 2.1 - Visual Search	3	1.25	.75	0	8.00	10.00	
Unit 2.2 - Communication	2	1.25	0	0	3.00	4.25	
Unit 2.3 - Speed Management	2	2.00	0	1.75	0	3.75	
Unit 2.4 - Space Management	2	1.75	0	0	6.00	7.75	
Unit 2.5 - Night Operation	3	.75	0	3.00	4.50	8.25	
Unit 2.6 - Extreme Driving Conditions	2	3.25	0	4.00	0	7.25	
Unit 2.7 - Proficiency Development: Safe Operating Procedures	2	1.00	0	0	70.50	71.50	
TOTALS	16	11.25	.75	8.75	92.00	112.75	
<b>SECTION 3 - ADVANCED OPERATING PRACTICES</b>							
Unit 3.1 - Hazard Perception	2	1.50	0	0	6.00	7.50	
Unit 3.2 - Emergency Maneuvers	2	1.50	0	4.00	0	5.50	
Unit 3.3 - Skid Control and Recovery	2	1.25	0	7.75*	0	9.00	
TOTALS	6	4.25	0	11.75	6.00	22.00	
<b>SECTION 4 - VEHICLE MAINTENANCE</b>							
Unit 4.1 - Vehicle Systems	2	11.25	2.00	0	0	13.25	
Unit 4.2 - Preventive Maintenance and Servicing	4	1.25	7.50	0	0	8.75	
Unit 4.3 - Diagnosing and Reporting Malfunctions	2	3.00	1.00	0	0	4.00	
TOTALS	8	15.50	10.50	0	0	26.00	
<b>SECTION 5 - NONVEHICLE ACTIVITIES</b>							
Unit 5.1 - Handling Cargo	4	5.00	4.00*	0	0	9.00	
Unit 5.2 - Cargo Documentation	2	4.75	0	0	0	4.75	
Unit 5.3 - Hours of Service Requirements	3	5.75	0	0	0	5.75	
Unit 5.4 - Accident Procedures	4	13.00*	.75	0	0	13.75	
Unit 5.5 - Personal Health and Safety	3	5.00	0	0	0	5.00	
Unit 5.6 - Trip Planning	2	4.75	0	0	0	4.75	
Unit 5.7 - Public and Employer Relations	2	4.25*	0	0	0	4.25	
TOTALS	20	42.50	4.75	0	0	47.25	
<b>TOTAL</b>	<b>72</b>	<b>86.50</b>	<b>25.25</b>	<b>92.25</b>	<b>116.00</b>	<b>320.00</b>	

29 Units (Mandatory) and 72 Lessons (Optional)

\* = Portions of time are optional - refer to text (Time Waivers and Optional Lesson Requirements) for details.

INTRODUCING THE

# L225 HGV

## DRIVOTRAINER

### Traffic Safety Training System

for heavy goods vehicles

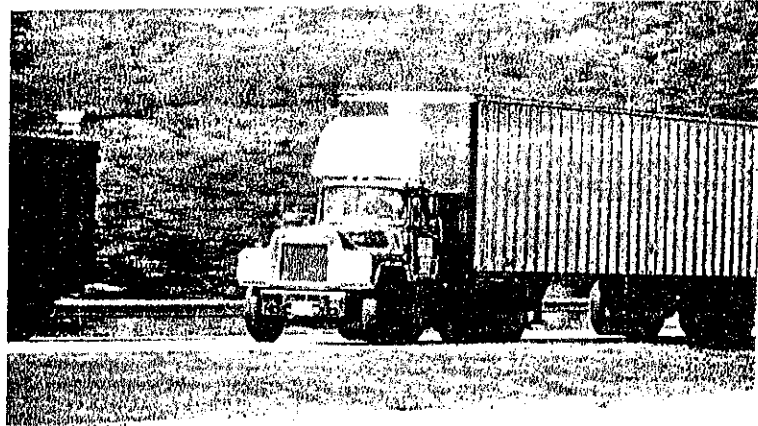
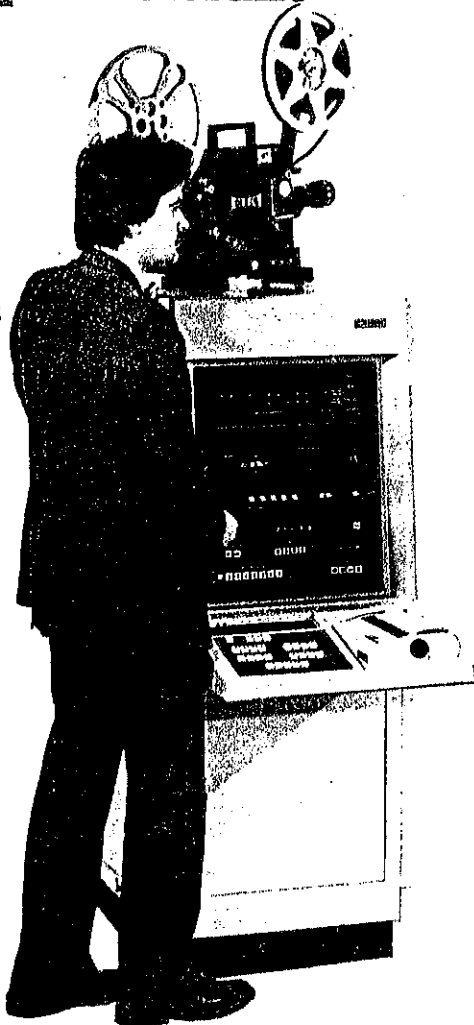


The recognized world leader in traffic safety training systems

**Now you can improve driving skills and attitudes while you put the brake on costs!**

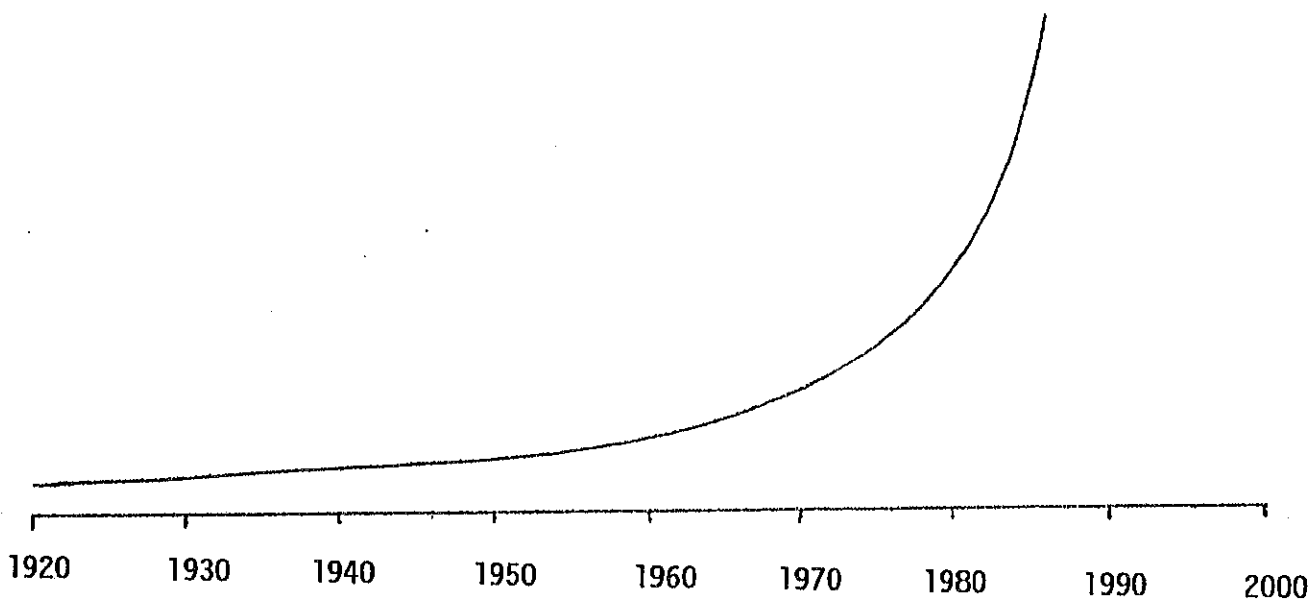
For experienced or professional drivers  
For new drivers

This simulation-aided training (SAT) system gives you a "hands-on" training tool, designed to integrate instructor, trainee, curriculum and equipment into a total learning/testing process.

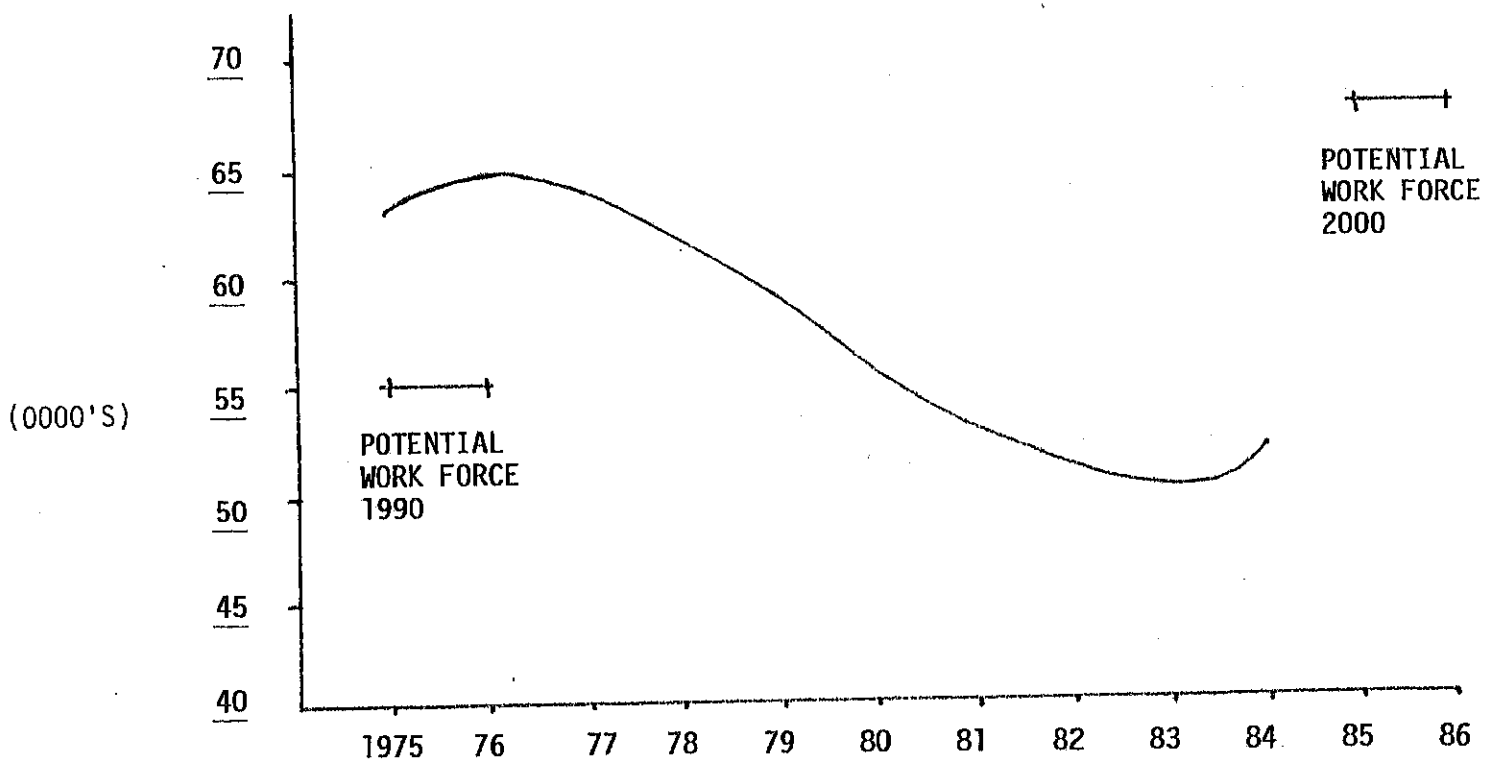


**AS SEEN ON TV  
NETWORK NEWS**

TECHNOLOGY INCREASE  
AUTOMOTIVE INDUSTRIES



5 YEAR OLD'S COMMENCING PRIMARY SCHOOL  
IN NEW ZEALAND



# Make traffic safety classroom

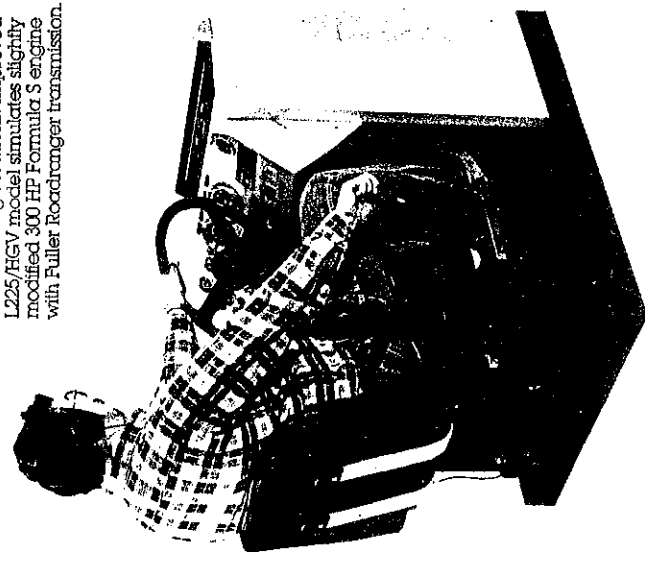
Doron simulation-aided training (SAT) helps make better drivers by improving their skills. And by encouraging proper attitudes toward their vehicles, toward the highway, toward other drivers. Doron SAT can dramatically enhance the quality of training by enabling your trainees to participate in realistic driving exercises without leaving the safety of the classroom. This hands-on involvement helps drive your lessons home. Helps you squeeze more effectiveness from your training budget.

## Engineered to make instructors more productive

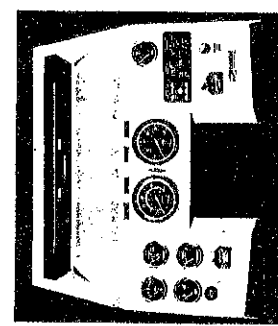
- Instructor's Control Center... state-of-the-art in computer-aided instruction for drivers
- monitors student response (up to 12 simulator "cabs" per Control Center)
- enables instructor to alter vehicle dynamics to match the changing situations of real-life driving
- permits individualized training
- helps spot problems before they show up on-road
- Analyzer feature gives testing/screening capability
- printer furnishes hard copy records of trainee performance

## Engineered to make trainees better prepared for real-life driving

Simulator Cab puts trainee in the driver's seat, steering, shifting, braking and accelerating in response to filmed driving situations. Improved L225/HGV model simulates slightly modified 300 HP Formula S engine with Fuller Roadchanger transmission.



Realistic sound system supplements visual cues on screen with interactive audio for engine, transmission, wind, road, air brakes and pneumatic h/w transmission range control. "Gear clash" sound occurs if trainee attempts unsynchronized shift.



Realistic instruments, including new oil gauge feature, gives trainee same readings as he'll find in the real world! Feedback panel warns driver of improper braking, steering, speed, signaling, acceleration, shifting and RPM.

# training come alive!



## The "fuel" that makes the system go... outstanding curriculum

The "fuel" which makes the L225 system go. Doron's library of 16mm wide-angle sound films, videotapes, film strips and sound cassettes, gears you up to offer all phases of traffic safety training. All audiovisual materials are produced by career traffic safety instruction specialists. The latest in visual and instructional techniques characterize each program. These curriculum materials coordinate with the L225 system "hardware" to make your trainees think they're actually in the driver's seat of real vehicles (and better prepare them for their actual on-road lessons). Each program is fully supported by instructor manuals.

Doron's basic curriculum package addresses these tasks and objectives:

- Driver Readiness**  
Procedures for getting the vehicle underway; starting, shifting, stopping and securing vehicle.
- Basic Skills**  
Techniques and procedures for turns, lane position and signal usage.
- Perceptual Skills**  
Techniques for hazard identification as well as plan of action when driving.
- Mixing with Traffic**  
Interacting with other highway users; signs, signal markings, Speed and vehicle control in traffic.
- High-speed Travel**  
Applying the driving tasks on high-speed roadways where quick, accurate thinking and action are a must.
- Accident Avoidance**  
How to recognize hazardous driving situations. How to avoid them.
- Vehicle Dynamics and Handling**  
Coping with the control and maneuverability characteristics of various vehicle types to be driven by trainees or encountered by them in the traffic mix.
- Emergency Situations**  
Involves skills used in evasive actions, skid control and other vehicle emergencies.



Foot pedal realism enables trainee to experience stall conditions. System simulates effects of grade, rolling friction, wind resistance, and drive train losses. Proper "double-clutch" technique can also be taught.



Ignition realism. Key must be turned completely clockwise to "start". And trainee can accelerate from stop in third gear, if needed.

**Environmental Factors**  
Introduces the special techniques or skills needed to cope with night driving and with various road conditions, including snow, ice and rain.

**Mental Set**  
Moods and emotions; responsible attitudes; importance of maintaining self-control.

**Evaluation**  
Integrates the several skills and techniques used in the driving task. Provides an opportunity to evaluate trainee's ability thus far.

If you need a special program, not part of our off-the-shelf selection, we'll be glad to custom produce a program to your exact specifications. In addition, our soundtracks and printed curriculum materials can be translated into virtually any language or dialect.

## The "Successful Driver Series" ... state-of-the-art curriculum



The "Successful Driver Series," a totally new library of Doron films, has debuted with its first installment, "Avoiding Collision Traps."

Future installments in the series are being developed with input from a newly formed Curriculum Advisory Committee, consisting of representatives from the American Driver and Traffic Safety Education Association (ADTSEA), Federal Express, the Milwaukee Public Schools, Texas A&M University and Doron.

The "Successful Driver Series" is fast paced with increased emphasis on collision avoidance rather than procedural skills. Presented by an on-screen narrator, the series blends non-driving instructional scenes with the more traditional driver-point-of-view driving sequences.

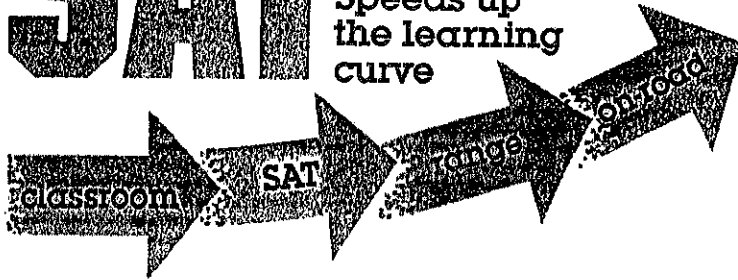
Several new subject areas are scheduled for introduction over the next few years, including stress factors, attitude/emotion, communications and preventable accidents, to name a few.

Each film is supported by a brief but functional instructor's guide, including film overview, crisply scene descriptions with key narrative and suggestions for additional discussion topics.

## Simulation-aided training

# SAT

Speeds up  
the learning  
curve



When inserted between classroom and range phases of your training sequence, simulation-aided training (SAT) helps trainees learn faster. SAT "front loads" your sequence with important driving lessons which are impractical to teach on-road or even on the driving range. You'll find SAT makes classroom training more dynamic; that your instructors are better able to grab and hold trainee's attention. You'll find trainees are more "up to speed" by the time they get behind the wheel of an actual moving vehicle during the latter phases of your training program.

# SAT

Puts real drive  
in your traffic safety  
training program

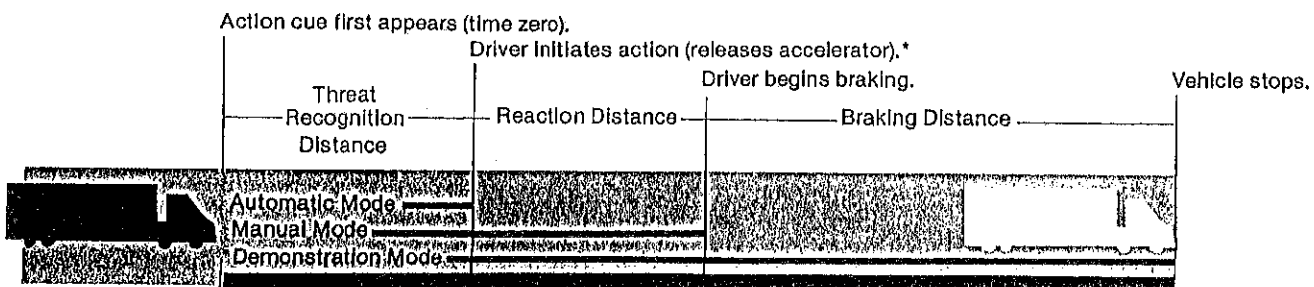
### A cost-effective, standardized method for

- evaluating driver proficiency
- training experienced as well as beginning drivers
- pre-screening trainees
- determining trainee's specific areas of driving skill which need upgrading

### Added training effectiveness!

The Driver Analyzer feature of our L225/HGV system operates in three significant modes, permitting the instructor to:

1. Test reaction time
2. Demonstrate the effect of various factors on stopping distance
  - a. road surface conditions (dry, wet, snow, ice)
  - b. vehicle speed
  - c. driver condition (blood alcohol concentration, or BAC)
  - d. grade levels
  - e. load ranges
3. Evaluate recognition skills



\*In the Automatic Mode, steering is used in some situations to measure Threat Recognition Distance. The distance scored will be from the point of action cue to the first movement of the steering wheel in the correct direction.

TOTAL STOPPING DISTANCE



# Put the brake on costs.

Driving safely saves money. Both now and down the road. And simulation-aided training (SAT) from Doron helps bring maximum cost-efficiency to your driver training/improvement programs.

## **REDUCE ACCIDENTS**

Improved driving skills and attitudes mean fewer accidents, less lost time.

## **SAVE ON INSURANCE**

Fewer accidents mean fewer insurance claims. And many insurers reduce premiums on drivers who complete approved training programs.

## **CUT OPERATING COSTS**

Better drivers use less fuel, cause less wear and tear on your vehicles.

## **CUT TRAINING COSTS**

With SAT, your instructor can handle more trainees more efficiently.

## **PREVENT PROBLEMS**

Identify and correct hazardous driving habits in the safety of the classroom.

**Note:** For bus and passenger car training, ask about variations on the L225/HGV model. You can configure Doron systems mixing truck/car/bus simulation to meet your special requirements. And we'll be happy to assist with your mobile classroom applications. Also refer to "Features" literature for more comprehensive description of L225/HGV features.

## Driver Analyzer Features

# Three modes of operation plus simulated alcohol impairment

### Manual Mode

Measures driver's reaction time distance (recognition plus reaction distances) at simulated speed of 55 mph and compares it to that of a driver whose reaction time is the accepted norm of 60 feet in  $\frac{3}{4}$  second.

### Demonstration Mode

Measures a driver's total stopping distance (recognition plus reaction and braking distances) under various selectable conditions of speed, roadway surface conditions, grade and alcohol impairment, and compares it to what the driver's total stopping distance would have been — at the same speed — under normal, or "ideal," conditions.

### Automatic Mode

Employing a 16mm film, produced by Doron especially for the Driver Analyzer, a driver's threat recognition distance is measured. This is sometimes referred to as perception distance.

Threat recognition distance as measured by the Driver Analyzer is a measure of the distance traveled from the earliest point in time that a potential threat could be recognized until recognition is actually made, as evidenced by the driver's initiation of an appropriate corrective action.

### Alcohol impairment

When simulated alcohol impairment has been imposed on the driver, in the Demonstration Mode, or the Automatic Mode, the Analyzer will illustrate threat recognition distance under conditions of the impairment (imposed) and compare it to what the distance would have been (normal) had the driver been sober.

## An expanded Simulator Vehicle Feedback Panel

- Alert Indicator serves as action cue for driver to apply brake
- Driver Distance Readout and Normal Distance Readout digital readouts display distance vehicle travels in a given test in each of three modes

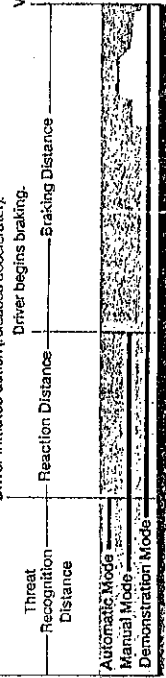
## An expanded Instructor's Control Center

- Alert Indicator, Driver Distance Readout, Normal Distance Readout correspond to same indicators on simulator Vehicle Feedback Panel
- Driver Selector Two-digit thumbwheel switch used to select a specific simulator vehicle number (driver). That driver's scores then appear in the LED Distance Readouts.
- On/Off Switch Activates the Driver Analyzer for use.
- Mode Selection Selects desired mode of operation: Automatic, Manual, Demonstration.
- Start Used in Manual or Demonstration Mode to start the Alert Indicator lights flashing.
- React When activated, simultaneously extinguishes yellow and green lights of Alert Indicator and freezes red lights in the "on" mode as action cue (time zero) for driver reaction.

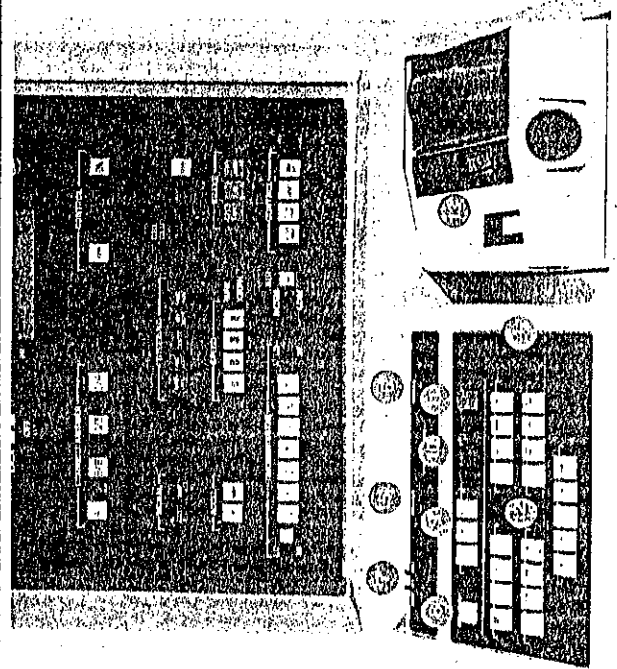
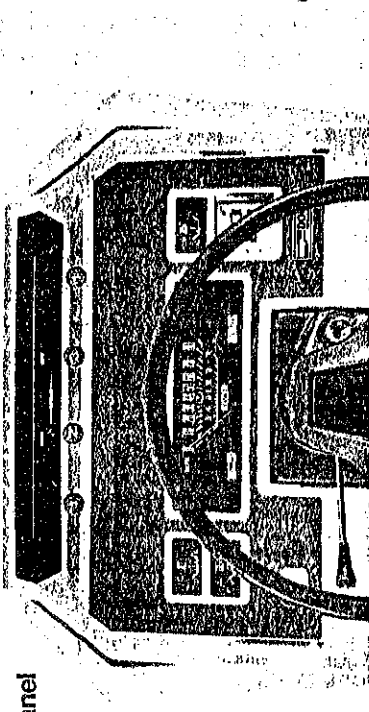
- Condition Selectors Illuminated pushbutton switches used to select speed, road surface conditions, grade, load,\* and BAC factors before initiating tests in the Demonstration Mode of operation.

- Printer Provides printed record of each driver's performance. Functional in both Automatic and Manual modes of operation.

\*Back training program systems only

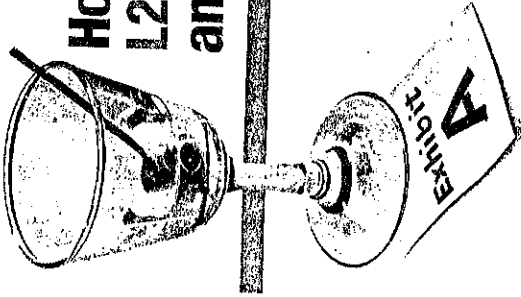


# Introducing the L225 Driver Analyzer



# How to really drive home the lessons of your traffic safety training program

## How to use our L225/Driver Analyzer as an alcohol education resource



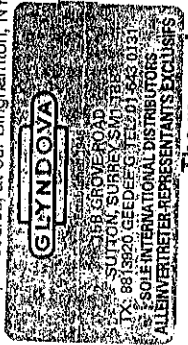
Lessons about drinking and driving should be taught in the classroom before they're taught in the courtroom. Doron's Driver Analyzer option vividly demonstrates the effect which increasing blood alcohol content has on driver reactions. And, true-to-life, the Analyzer shows how this impairment is magnified when combined with high speeds, steep grades, varying vehicle loads, and slippery road surfaces.

**training without alcohol intake**  
The beauty of training drivers about alcohol impairment through the Blood Alcohol Concentration feature of Doron's Driver Analyzer is that you can do it all in the safety of the classroom, without actual alcohol intake. No one ever crashes in an L225 simulator!

**training with alcohol intake**  
Consider using the Driver Analyzer as the centerpiece of an "Alcohol Awareness Exhibit." In this special event you can collaborate with a law enforcement agency to dramatically demonstrate how alcohol consumption affects driving ability. First test the sober responses of several volunteer drivers

Volunteer Driver	BAC (%)	Reaction Time Distance	Driver's Errors	Volunteer's Driver's Errors	BAC (%)	Reaction Time Distance	Driver's Errors
A	.00	45.4	0	0	.00	40.3	0
	.04	51.8	2	2	.07	42.8	1
	.10	49.5	3	3	.11 +	49.4	2
B	.00	47.4	0	0	.00	40.6	0
	.04 +	49.4	1	3	.07	46.2	2
	.11	54.9	4	4	.11	50.4	4

Ask our representative to show you our audio-visual presentation on the Driver Analyzer. Better yet, you can "test drive it" at various conferences and exhibitions and, of course, at our Binghamton, NY showroom.



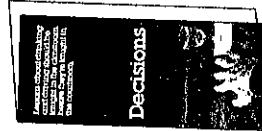
Domestic Sales  
P.O. Box 400, Binghamton, NY 13902  
607 772-1610

International Sales  
P.O. Box 400, Binghamton, NY 13902, U.S.A.  
607 772-1612, Telex: 532-450  
Cable: DORON, BGM

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behind the wheel of the L225/Driver Analyzer system. Next, have each driver consume alcoholic beverages over a period of time. At appropriate intervals, a law enforcement official can administer a "breathalyzer" test to measure actual blood alcohol concentration (BAC). Following this test, put your volunteer drivers back behind the wheel of the Driver Analyzer and test their "wet" responses. The Driver Analyzer will show that Reaction Time Distance increases correspondingly with increasing BAC levels. So do driver errors. The data in this chart, gathered in an Alcohol Awareness Exhibit conducted among student volunteers at a university, provides a good example — one which is best taught in the classroom before it's taught in the courtroom.

Free!



Drivers who drink pose the single greatest threat to roadway safety, according to the National Highway and Traffic Safety Administration. Doron's alcohol education curriculum, "Your DWI Decision," and our L225/Driver Analyzer product give you two tools to help combat the drinking/driving dilemma. This pamphlet with all the details is free.

The recognized world leader in traffic safety training systems

## A cost-effective, standardized method for

- testing driver proficiency
- training experienced as well as beginning drivers
- pre-screening trainees
- determining trainee's specific areas of driving skill which need upgrading

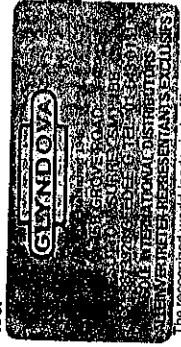
As discussed in companion literature, Doron's L225 Driver Analyzer is a simulation-aided training (SAT) system, a "hands-on" teaching tool, designed to integrate instructor, trainee, curriculum and equipment into a total learning/testing process. Now you can enlarge the scope of your L225 system by putting our Driver Analyzer option to work for you. It gives your trainee a firmer understanding of real-life driving conditions. And it broadens the reach of your traffic safety training program to include experienced drivers, in addition to those who are learning for the first time!

## Added training effectiveness!

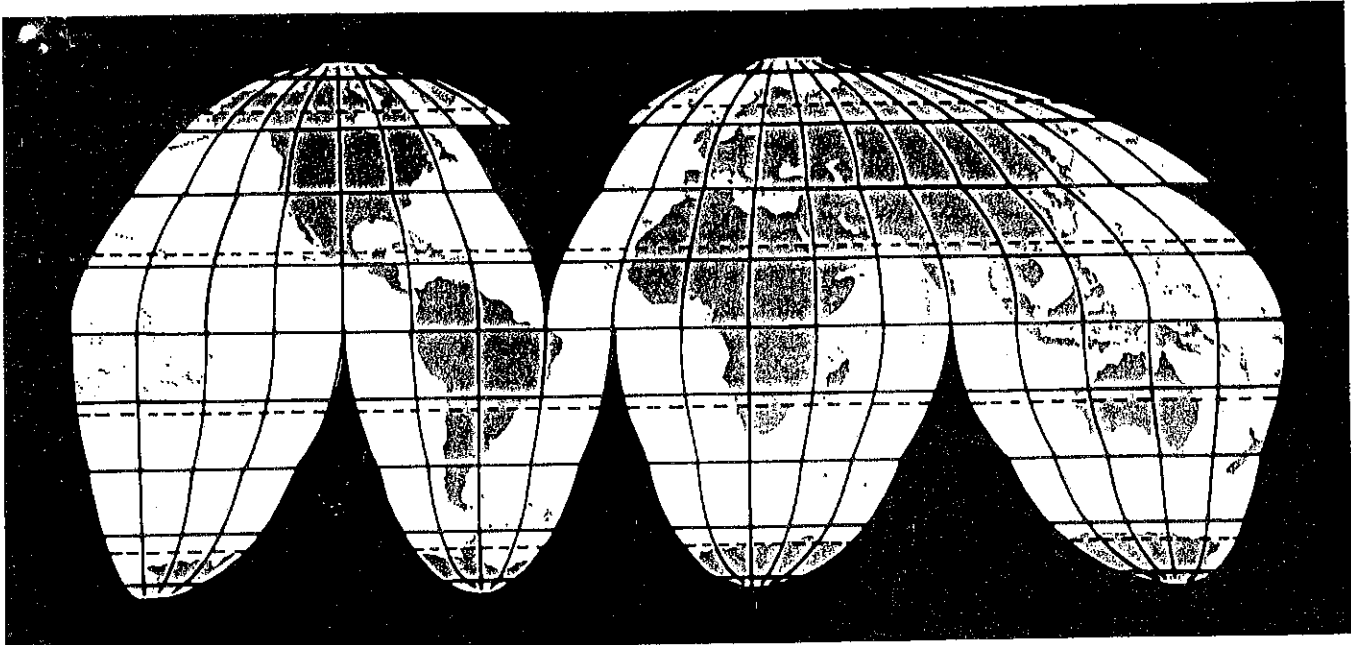
Doron's L225/Driver Analyzer operates in three significant modes, permitting the instructor to:

1. test reaction time
2. demonstrate the effect of various factors on stopping distance
  - a. road surface conditions (dry, wet, snow, ice)
  - b. vehicle speed
  - c. driver condition (blood alcohol concentration, or BAC)
  - d. grade (level, positive and negative 3 and 6%)
  - e. load truck training (HGV) systems only
3. test perception skills

With the L225/Analyzer, you'll find you can offer both more effective alcohol education and driver improvement training, too!



The recognized world leader in traffic safety training systems



# SAT AROUND THE WORLD

Doron simulation-aided training has won acceptance in numerous countries on six continents. The hands-on approach in the safety of the classroom, as a preparation for actual on-road training, offers an appeal which spans the barriers of geography, language or culture. Curriculum translation flexibility, our ability to adapt the electrical system to local power requirements, and our ability to adapt particular features of the hardware to local needs make Doron's SAT concept a world traveler!

## A total approach to SAT

### Planning

Perhaps we can best serve you by helping to plan your driver training/driver improvement programs from "the ground floor." Your Doron representative is qualified to help you assess your training requirements and take the guesswork out of your planning efforts. He or she can recommend the proper combination of L225 models, accessories and curriculum materials to put you on the right road.

### Installation

Doron Technical Service people accompany our L225 system to your location and oversee the details of proper installation.

### Training

We'll "train your trainers" how to train, the L225 way. This service is vital to the success of your L225 system. Because, no matter how attractive the L225 may seem, it is more effective in the hands of a trained traffic safety instructor. Doron's equipment and curriculum materials are simply tools. They cannot take the place of an interested, competent, knowledgeable, motivated instructor. Yet, in his or her hands, the L225 system can lift instruction to a new level of stimulation, involvement and learning effectiveness for your trainees.

### Maintenance

After our L225 becomes your L225, we continue to stand beside our product. With routine maintenance of your equipment and any replacement parts as needed, from our qualified technical service person-

nel. Call on Doron for the best system and the best service.

Improved driving skills and attitudes. Plus maximum cost effectiveness. That's the payoff from simulation-aided training. The L225/HGV Drivotrainer from Doron can make it work for YOU.

Take advantage of our free L225 literature including performance features brochure and curriculum catalog.

And ask our representative to show you the "Best of L225," excerpts from our most popular filmed curriculum materials.

But to really get the feel of the L225 road, you'll want to "test drive" our system. It's waiting for you to turn the key, at numerous driver training conferences and exhibitions and, of course, at our Binghamton, NY, showroom.



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