State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
ABCA20	1

ADDRESS CORRESPONDENCE TO ATTENTION OF:

SHELLY MURRAY
304-558-8801

VENDOR

*709004155   607-772-1610
DORON PRECISION SYSTEMS INC
PO BOX 400 174 COURT STREET

BINGHAMTON NY   13902-0400

SHIP TO

ALCOHOL BEVERAGE CONTROL
 COMMISSION
322 70TH STREET, S.E.

CHARLESTON, WV
  25304-2900   558-2487

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
08/19/2009				

BID OPENING DATE: 09/24/2009   BID OPENING TIME   01:30PM

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT

THE WEST VIRGINIA PURCHASING DIVISION, FOR THE AGENCY,
THE WEST VIRGINIA ALCOHOL BEVERAGE CONTROL
ADMINISTRATION, IS SOLICITING BIDS FOR AN ALCOHOL
DRIVING SIMULATOR PER THE ATTACHED SPECIFICATIONS.

TECHNICAL QUESTIONS MUST BE SUBMITTED IN WRITING TO
SHELLY MURRAY IN THE WEST VIRGINIA PURCHASING DIVISION
VIA MAIL AT THE ADDRESS SHOWN AT THE TOP OF THIS RFQ,
VIA FAX AT 304-558-4115, OR VIA EMAIL AT
SHELLY.L.MURRAY@WV.GOV. DEADLINE FOR ALL TECHNICAL
QUESTIONS IS 09/09/2009 AT THE CLOSE OF BUSINESS.
ALL TECHNICAL QUESTIONS RECEIVED, IF ANY, WILL BE
ADDRESSED BY ADDENDUM AFTER THE DEADLINE.

QUESTIONS CONCERNING THE ACTUAL PROCESS BY WHICH A
VENDOR MAY SUBMIT A BID TO THE STATE OF WEST VIRGINIA
ARE NOT CONSIDERED TO BE TECHNICAL QUESTIONS AND MAY
BE SUBMITTED AT ANY TIME PRIOR TO THE RFQ OPENING AND
IN ANY FORMAT.

RECEIVED

2009 SEP 23 A 10: 14

PURCHASING DIVISION
STATE OF WV

0001   LS   035-47
                    1

SIMULATOR

CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE
RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN
NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES
SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM
TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
Michael P. Stricek 607-772-1610		9/22/09

TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE
Senior Vice President	16-1020280	

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

ADDRESS CORRESPONDENCE TO ATTENTION OF:

SHELLY MURRAY
304-558-8801

```
*709004155        607-772-1610
DORON PRECISION SYSTEMS INC
PO BOX 400 174 COURT STREET

BINGHAMTON NY  13902-0400
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ALCOHOL BEVERAGE CONTROL
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LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT

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BANKRUPTCY:  IN THE EVENT THE VENDOR/CONTRACTOR FILES
FOR BANKRUPTCY PROTECTION, THE STATE MAY DEEM THE
CONTRACT NULL AND VOID, AND TERMINATE SUCH CONTRACT
WITHOUT FURTHER ORDER.

                    NOTICE

A SIGNED BID MUST BE SUBMITTED TO:

        DEPARTMENT OF ADMINISTRATION
        PURCHASING DIVISION
        BUILDING 15
        2019 WASHINGTON STREET, EAST
        CHARLESTON, WV  25305-0130




THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF
THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:

SEALED BID


BUYER:                  SHELLY MURRAY

RFQ. NO.:               ABCA20

BID OPENING DATE:       09/24/2009

BID OPENING TIME:       1:30 PM




PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY
TO CONTACT YOU REGARDING YOUR BID:
```

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE *Michael P. Stricek*	Michael P. Stricek	TELEPHONE 607-772-1610	DATE 9/22/09
TITLE Senior Vice President	FEIN 16-1020280		ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

	State of West Virginia	**Request for**	RFQ NUMBER			PAGE

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

ADDRESS CORRESPONDENCE TO ATTENTION OF:

SHELLY MURRAY
304-558-8801

V
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*709004155   607-772-1610
DORON PRECISION SYSTEMS INC
PO BOX 400 174 COURT STREET

BINGHAMTON NY   13902-0400

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ALCOHOL BEVERAGE CONTROL
 COMMISSION
322 70TH STREET, S.E.

CHARLESTON, WV
  25304-2900   558-2487

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
08/19/2009				

BID OPENING DATE: 09/24/2009   BID OPENING TIME   01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT

CONTACT PERSON (PLEASE PRINT CLEARLY):

****** THIS IS THE END OF RFQ   ABCA20 ****** TOTAL:

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE		TELEPHONE	DATE
	Michael P. Stricek	607-772-1610	9/22/09
TITLE Senior Vice President	FEIN 16-1020280	ADDRESS CHANGES TO BE NOTED ABOVE	

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

Request for Quotation

West Virginia Alcohol Beverage Control Administration

Alcohol Driving Simulator

Requisition Number: ABCA20

1.0 **Scope and Classification:**

    1.1   Scope: The specifications are intended to cover all requirements for the design, purchase, training and installation of a driving simulator.

    1.2   Scope of work: The simulator package will involve the building of the simulator, development of custom DUI scenarios, installation of software, and the installation of the simulator in trailer provided by the WV ABCA.

2.0 **Specifications:**

    2.1   Successful bidder, hereafter "Installer" shall deliver a complete driving simulator with all software, provide related lesson plans, instructional materials, installation, labor, supervision, insurance, and planning necessary to provide the following:

        2.1.1 A driving simulator that will mimic the operation of a vehicle equipped with automatic transmission and that will allow for the manipulation of handling to mimic weather, road conditions, and driving at different levels of intoxication.

        2.1.2 Driver Compartment:

            2.1.2.1 The driving compartment will provide an adjustable driver's seat with seatbelt.

            2.1.2.2 The driving compartment will provide a steering column with a shifter, hazard light button, headlight knob, ignition and turn signals.

            2.1.2.3 The driving compartment will provide a dashboard with an instrument panel containing a speedometer, fuel gauge, temperature and oil gauge.

            2.1.2.4 The driving compartment will provide a front windshield monitor that will allow for input of visual driving conditions controlled by the provided software.

            2.1.2.5 The driving compartment will provide a right and left side window (the window will be installed at a slightly forward angle) that will allow for input of visual driving conditions controlled by the provided software.

2.1.2.6 The driving compartment will provide an accelerator pedal, brake pedal and emergency brake that simulate the operation of a real vehicle.

2.1.2.7 The driving compartment will be mounted on shock casters to allow for easy movement of the system.

2.1.3 Sound System:

2.1.3.1 The simulator will be equipped with speakers that will create surround sound.

2.1.3.2 The simulator sounds will mimic vehicle operation sounds heard within the cab of an actual vehicle.

a) Engine sounds
b) Transmission sounds
c) Acceleration sounds
d) Braking sounds

2.1.3.3 The simulator will mimic exterior road noises heard within the cab of an actual vehicle.

a) Road surface (gravel, blacktop and dirt)
b) Potholes
c) Railroad tracks
d) Speed bumps and curb contact

2.1.3.4 The Simulator will mimic exterior noises heard within the cab of an actual vehicle.

a) Collisions
b) Weather (wind, rain, thunder and ice)
c) Emergency vehicle sirens
d) Passing vehicles
e) Car horns

2.1.4 Simulator Vehicle Control Programming:

2.1.4.1 The simulator will be equipped with a devise that will cause the steering wheel to shake and vibrate mimicking the feel and the operation of an actual vehicle involved in the following situations.

a) Collision
b) Road surfaces
c) Snow and ice
d) Braking
e) Skidding
f) Rough roads and bumps

2.1.4.2 The simulator steering and braking will be controlled

by the programming software to allow for the following:

    a) Adjustment of reaction time to mimic the effects of higher BAC.

    b) Adjustment of reaction time to mimic the effects of adverse weather conditions.

2.1.5   Simulator Software:

  2.1.5.1 The simulator software will allow the instructor to control the BAC level input which will affect the handling of the simulator controls.

  2.1.5.2 The simulator software will allow the instructor to control the weather conditions experienced by the driver.

  2.1.5.3 The simulator software will allow the instructor to change the lighting condition from daytime, nighttime, fog, rain or snow.

  2.1.5.4 The simulator software will allow the instructor to control the driving terrain from mountainous to flat.

  2.1.5.5 The simulator software will allow the instructor to control the driving environment from urban to rural.

  2.1.5.6 The simulator software will be customized to reflect interstates, highways and streets found throughout West Virginia within the various DUI scenarios.

  2.1.5.7 The simulator software will be programmed to allow for playback of a driving session upon completion of said session.

  2.1.5.8 The simulator software will be designed to allow for future changes to programming by the manufacture at the request of the WV ABCA.

  2.1.5.9 The simulator software will allow for upgrades and the additions of other simulator software, such as; emergency vehicle driver training if the agency desires to add this or like programs at a later date.

2.1.6   Instructor's Control Console:

  2.1.6.1 The simulator will have an instructor's control console that will allow the instructor to enter scenarios and control external parameters, such as; weather, lighting conditions and BAC levels.

  2.1.6.2 The simulator's instructor's control console will allow an instructor to convey radio dispatches to the driver.

2.1.6.3 The simulator's instructor's control console will allow the instructor to view the vehicles operation while the scenarios are in progress.

2.1.7 Shipping of Simulator:

2.1.7.1 The Installer will be responsible for shipping of the simulator to the WV ABCA.

2.1.7.2 The simulator shall be shipped to the following location:

WVABCA
500 River Road
Hub Industrial Park
Nitro, WV 25143

2.1.7.3 It shall be the responsibility of the Installer to ensure that the simulator arrives at said location with no defects, damages and is in perfect working order.

2.1.8 Training and Instruction:

2.1.8.1 The Installer will provide sixteen (16) hours of training and Instructions to a maximum of 10 employees.

2.1.8.2 The WV ABCA will provide the Installer with a list of the designated personnel to be trained prior to said training.

2.1.8.3 The installer will provide the training in Charleston, WV at a location provided by the WV ABCA.

2.1.9 Warranty:

2.1.9.1 The installer will provide a 1 year warranty on the simulator.

2.1.9.2 The Installer's warranty shall cover any and all repair(s) of the simulator and replacement(s) of any and all defective parts.

2.1.9.3 The Installer will be responsible for any costs associated with repairs, such as; travel costs and shipping costs.

2.1.9.4 The Installer will be responsible for making any and all software or hardware upgrades.

2.1.9.5 The Installer will provide for over the phone technical support.

2.1.10 Extended Warranty:

2.1.10.1 The Installer will submit a pricing for an additional extended warranty.

2.1.10.2 The extended warranty will be broken down into a yearly fee for the duration of 2 years of extended coverage.

2.1.10.3 The extended warranty will provide for the repair of the simulator and any and all costs associated with such repairs, such

as; travel costs and shipping costs.

2.1.10.4 The extended warranty will include making any and all software or hardware upgrades.

2.1.10.5 The extended warranty will provide for over the phone technical support.

3.0   Acceptance and Testing Requirements:

3.1   The Installer shall meet the following stipulations prior to delivery of and payment for the simulator:

3.1.1.1 The Installer shall be a registered vendor with the State of West Virginia.

3.1.1.2 The Installer shall demonstrate that all simulator components, hardware, software and scenarios are in operational order.

3.1.1.3 The Installer will remain available to work through and troubleshoot any and all problems with the simulator and related simulator components, hardware, software and scenarios.

4.0   Delivery:

4.1   The Installer shall deliver the simulator and all related components, hardware, software and scenarios in no more than thirty (30) days upon award.
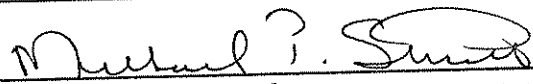
5.0   Billing:

5.1   The Installer shall divide the billing into separate categories, such as; simulator station, scenario software, customized software, instructor's control console, extended warranty and handling to accommodate for the WV ABCA's reimbursement from grant sources.

West Virginia Alcohol Beverage Control Administration
Alcohol Driving Simulator
ABCA20 Bid Schedule

Please list the pricing for all components of the simulator listed below:

Quantity	Description	Total Cost
1	Driver Simulator Station	$ 96,480.15
1	Surround Sound System	$ Included
1	Driver's compartment with instruments and dashboard	$ Included
1	Simulator Software	$ Included
1	Custom Simulator Software	$ Included
1	Instructor's Control Console	$ Included
1	Shipping and Handling	$ Included
1	16 Hours of Training and Instruction	$ Included
1	Extended two (2) year warranty	$ $11,989.20 ($5,994.60 per year)
1	Installation in WV ABCA Trailer	$ Included
	TOTAL	$108,469.35

Vendor: ___Doron Precision Systems, Inc.___

Signature: ___(signature)___

Michael P. Stricek - Senior Vice President

Date: ___9/22/09___

Rev. 09/08

State of West Virginia
VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with **West Virginia Code**, §5A-3-37. (Does not apply to construction contracts). **West Virginia Code**, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the **West Virginia Code**. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

1. **Application is made for 2.5% resident vendor preference for the reason checked:**
   ____ Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or,**
   ____ Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or,**
   ____ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; **or,**

2. **Application is made for 2.5% resident vendor preference for the reason checked:**
   ____ Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or,**

3. **Application is made for 2.5% resident vendor preference for the reason checked:**
   ____ Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or,**

4. **Application is made for 5% resident vendor preference for the reason checked:**
   ____ Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; **or,**

5. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**
   ____ Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; **or,**

6. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**
   ____ Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: Doron Precision Systems, Inc.   **Signed:** _Michael P. Stricek_
                                                           Michael P. Stricek

Date: 9/22/09   **Title:** Senior Vice President

*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.

RFQ No. __ABCA20__

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

VENDOR OWING A DEBT TO THE STATE:
West Virginia Code §5A-3-10a provides that: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:
If this is a solicitation for a public improvement construction contract, the vendor, by its signature below, affirms that it has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the *West Virginia Code*. The vendor **must** make said affirmation with its bid submission. Further, public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the *West Virginia Code* and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the *West Virginia Code* may take place before their work on the public improvement is begun.

ANTITRUST:
In submitting a bid to any agency for the state of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the state of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the state of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the state of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership or person or entity submitting a bid for the same materials, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

LICENSING:
Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY:
The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf.

Under penalty of law for false swearing (*West Virginia Code* §61-5-3), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

Vendor's Name: __Doron Precision Systems, Inc.__

Authorized Signature: ___*Michael P. Stricek*___ Date: __9/22/09__
Michael P. Stricek
Purchasing Affidavit (Revised 01/01/09)   Senior Vice President

DORON®
PRECISION SYSTEMS, INC.

State of West Virginia
Request for Quotation # ABCA20
Alcohol Driving Simulator
        Presented by:
Doron Precision Systems, Inc.
Due Date: Thursday, September 24, 2009 @ 1:30 P.M.

DORON®
PRECISION SYSTEMS, INC.

September 22, 2009
LD: 09 – 220

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street, East
Building 15
Charleston, WV 25305-0130

Attn: Ms. Shelly L. Murray

Re: Request for Quotation # ABCA20
Alcohol Driving Simulator

Dear Ms. Murray:

Doron Precision Systems, Inc. is pleased and excited to submit its enclosed proposal for the design, manufacture, supply, delivery, installation, instructor training and maintenance support of a one (1) position **550Car**™ driving simulation system.

The 550Car is the latest interactive simulator on the market today. The 550Car has a proven track record as a training simulator. The 550Car incorporates Doron's interactive operating system and Virtual World software, which are proven through their use in over 200 simulators installed worldwide. It is a complete system that **includes** a library of driving scenarios for training both new and experienced drivers and demonstrating the detrimental effects of drinking on the driving task.

According to the Center for Disease Control (CDC), thirty six (36) people are killed and nearly seven hundred (700) people are injured, some severely, in motor vehicle crashes due to alcohol impaired drivers each and every day in the United States.

This social problem costs the country nearly 51 billion dollars per year. As a result of these somber statistics Doron Precision Systems, Inc. engineered a DUI/DWI malfunction feature and this software enables the instructor to easily demonstrate the adverse effects of drinking alcohol on a driver's ability to drive.

The Instructor has the ability to insert various B.A.C. levels from the IWS console and depending on the level selected the software will delay the steering and braking responses of the simulator proportionally to simulate the effects of the State of West Virginia selected level of impairment. The default B.A.C. is zero and the Instructor can select B.A.C. levels of .04%; .08% and .1% when any scenario on the system is selected.

The System includes Doron's digital servo TrueSteer™ steering system, remote controlled mirrors, both flat and convex (If appropriate for the student vehicle selected), and Doron's unique TextAloud™ feature that provides a digital voice file with detailed scenario instruction at the beginning of each exercise.

The 550Car has an enclosed cab and incorporates a visual system comprised of three (3) of the latest technology plasma monitors for its forward and side views. It provides a full 190 degree field-of-view and it has a 160 degree viewing angle, and an interactive audio system.

The Instructor is able to input vehicle malfunctions to further enhance the training capabilities of the system.

Doron's exclusive Scenario Developer™ software, which is included in the 550Car System allows the creation of totally new scenarios and the modification of existing scenarios with great ease. A user does not need any specialized computer knowledge to operate Doron's Scenario Developer™.

In addition to the warranty provided in the first year, Doron provides on-site, preventative maintenance support through its nationwide team of service technicians (who are full-time Doron employees). Doron's unique, pro-active philosophy helps to prevent problems before they occur. Doron's service agreements include parts and labor, preventative on-site maintenance, unlimited on-site service calls and telephone and modem support.

The quality of Doron's service is evidenced by its nearly one thousand U.S. customers who maintain service agreements with Doron. No company even comes close to matching Doron's experience and reputation for quality customer service at a reasonable price.
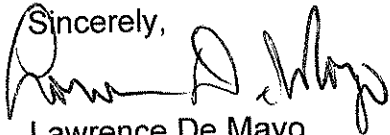
Because of its "Total System Philosophy", Doron provides comprehensive support to its customers before, during and after the sale. Our highly experienced training team will provide a full three days of onsite training, which exceeds the requirement contained in paragraph 2.1.8.1 of the Request for Quote. This on-site advanced training program includes system operation, use of the extensive training scenario library and comprehensive training for the easy to use, Windows-based Scenario Developer™. When training is complete, your instructors will be able to easily create their own training scenarios to further customize the training program. This training will be provided by a nationally-recognized driver training instructor with more than twenty five years of experience in driver training.

Doron manufactures each of its driving simulation systems as new upon receipt of a customer's order. This ensures that only the latest computers, displays and other hardware are provided. With a Doron system you can be assured that you do not receive pre-manufactured or used products. Doron's software engineers are constantly expanding and improving the Virtual World and your Doron system has been designed to be upgradeable to ensure long life and utility.

Since its founding in 1973, Doron has been located in Binghamton, New York and has been the world leader specializing in driving simulation with more than 2000 simulator systems (25,000 simulators) installed in over 60 countries. Doron has more experience in the design, manufacture and support of driving simulator systems than all of its competitors combined.

We appreciate the opportunity to offer our products and services to the State of West Virginia Alcohol Beverage Control Commission. The entire Doron team looks forward to serving you by supplying proven, reliable products and services and supporting a successful, cost-effective driving simulation based demonstration program.

Sincerely,

Lawrence De Mayo
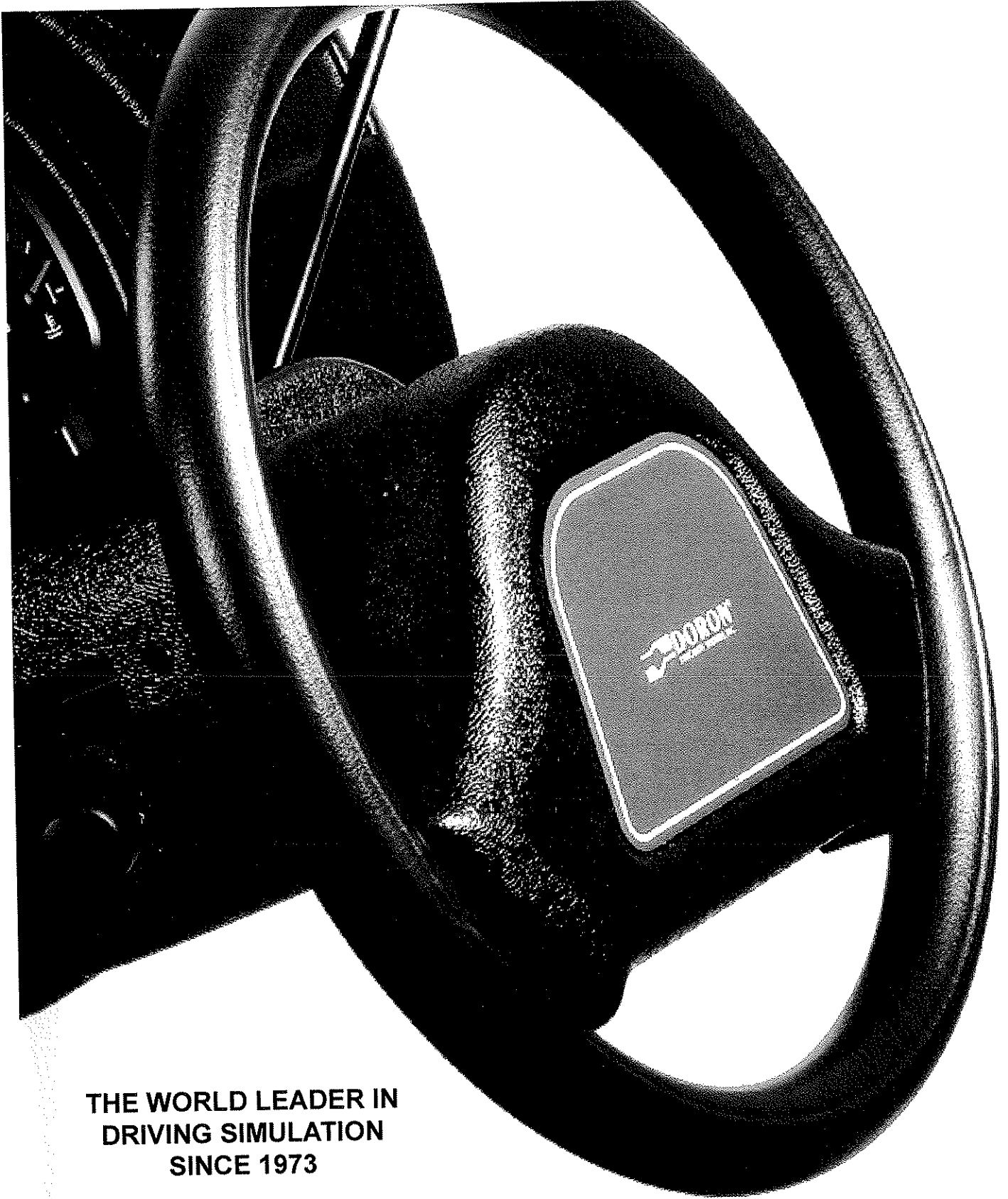Products & Contracts Manager

Enclosure

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THE WORLD LEADER IN
DRIVING SIMULATION
SINCE 1973

DORON®
PRECISION SYSTEMS, INC.

Applications Engineering
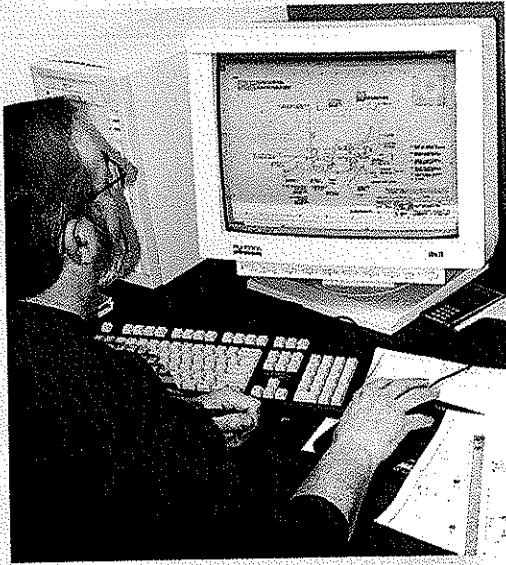
For those customers whose unique needs are not completely satisfied with a standard system, Doron's experts are ready to assist in planning, designing, and manufacturing one that will. Many times modifications or variations of existing standard systems will solve the problem. This process starts the moment a special need is identified. Doron's experienced team works with customers to understand their specific needs and assure that the resulting system meets or exceeds their expectations.
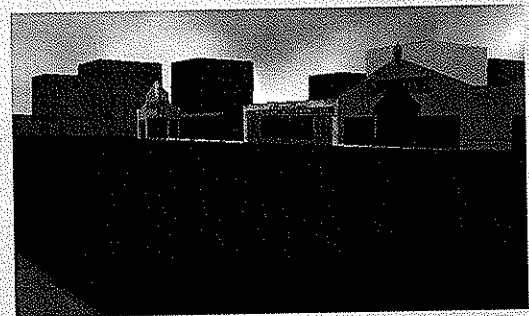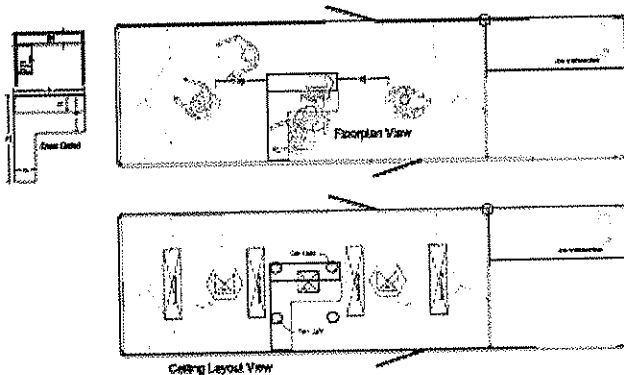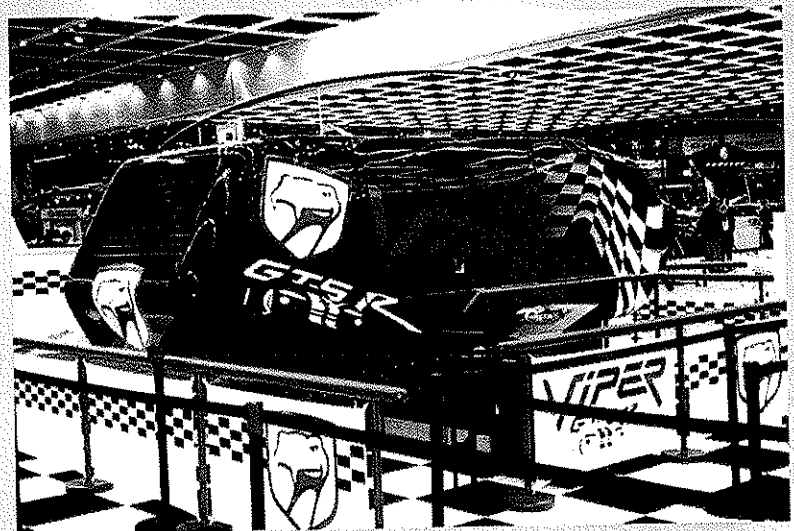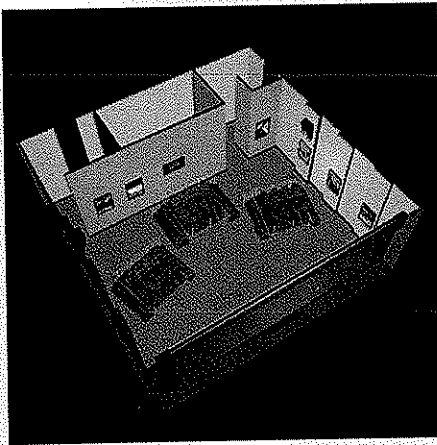
Audiovisual Development & Distribution
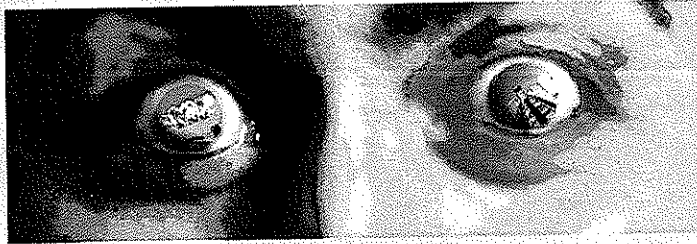
Doron's customers benefit directly from the Company's in-house audiovisual production capabilities. Doron is committed to continually add new programs to its extensive audiovisual program libraries. In addition to producing programs for its standard library, Doron is frequently called upon to create new unique programs essential to satisfying the diverse needs of its customers.

Doron produces program materials in various formats including, true wide screen (anamorphic) video, standard broadcast video as well as computer generated imagery (CGI). The audiovisual team maintains an inventory of these simulator programs so that they are readily available to meet customer needs. Doron's audiovisual products must pass intensive quality assurance procedures before shipment, to ensure customer satisfaction.
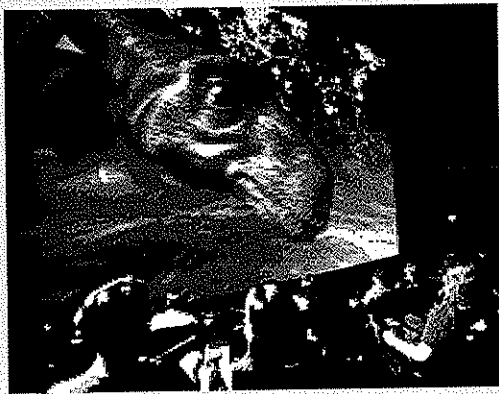
Sales & Marketing
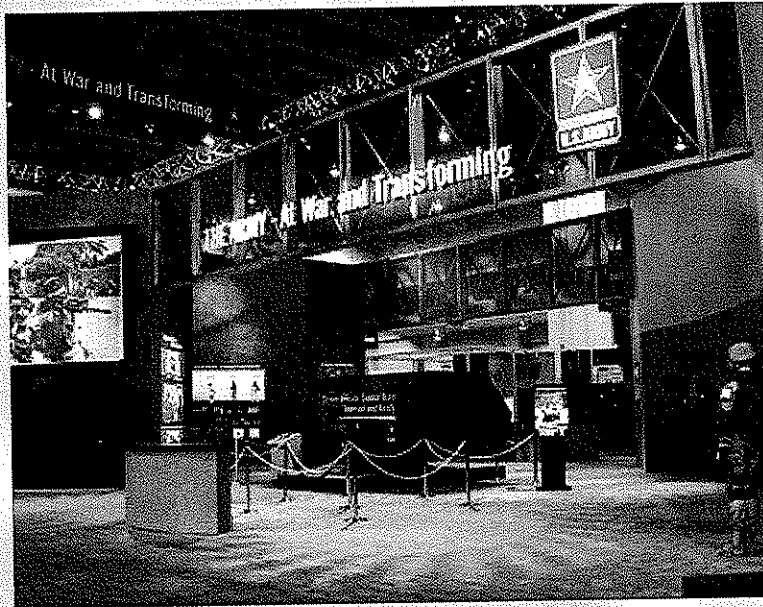
Doron's sales and marketing team consists of individuals versed in the many aspects of product and systems application. Strategically located throughout the United States, these members of the Doron team have extensive experience which provides added value for our customers.

Doron's business touches the four corners of the world. The worldwide acceptance of Doron's driver training simulation and entertainment simulation is a direct result of the network of key distributors, agents and dealers. Through this organization, Doron systems have been installed in over 60 countries.

Training
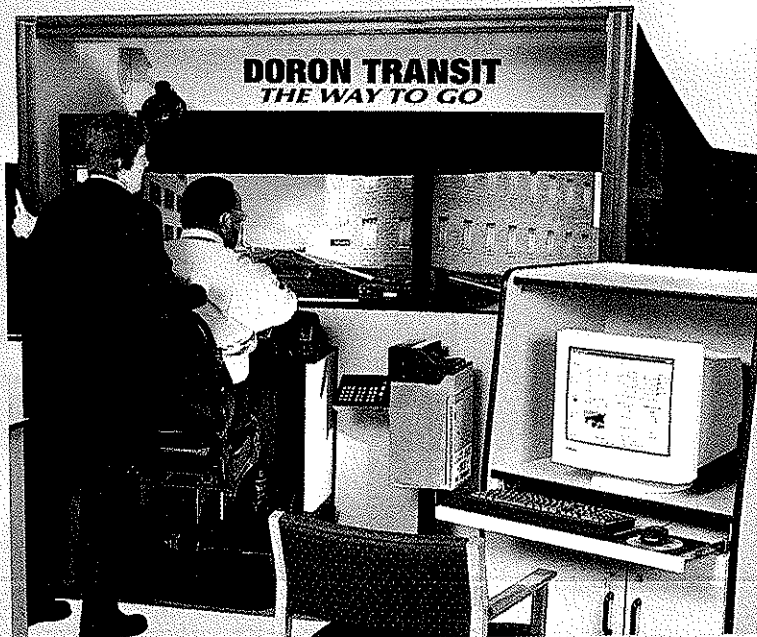
Successful driving simulation programs require well-prepared instructors. Doron provides comprehensive instructor training with every system it sells. This training provides the knowledge of learning theory, familiarization of system operation, and the teaching techniques which best utilize the training curriculum (scenarios) to meet the customer's needs.

Doron factory trained service personnel provide complete operational and routine maintenance training of customer's personnel.

The Recognized World Leader in Driving Simulator Systems

460 Series

The 460Series interactive driving simulator systems, available in bus, truck, and emergency vehicle models, are customizable, modular, upgradeable, and able to provide the most effective driver training to transit, trucking, and emergency vehicle drivers.
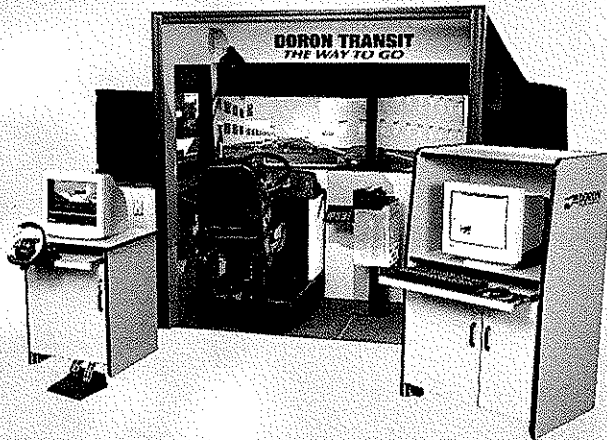
460Bus simulator system
(not pictured are 460Truck & 460EV systems)

- High impact CGI panoramic real-time visual system specifically engineered to reflect the actual views seen from the drivers seat.
- Remote controlled real-time rear-view mirror images are synchronized and imbedded in the appropriate simulated window images.
- The 460 Series includes dozens of scenarios designed to meet the specific industries driver training, remedial training, and defensive driving needs.
- Multiple units can be networked, optional instructor controlled vehicle ("fox") is available, and the user-friendly operating system is Windows based.

Combination Systems

The proven, Doron Comprehensive Training Program, is the result of over 30 years experience in applying two of the most appropriate state-of-the-art simulation technologies to obtain optimum training quality, driver screening, and efficiency at the lowest cost.

Each system contributes its own unique characteristics that, when combined, results in the most powerful, broad-based safe driving program available. Each system includes its own set of scenarios, each of which is based on one or more Specific Training Objectives (STO).

Various weather and road surface conditions, routine emergency, and potential crash situations are comprehensively addressed in Doron's combined program. Both systems are expandable to accommodate any number of trainees needing this highly immersive, comprehensive, hands-on training.
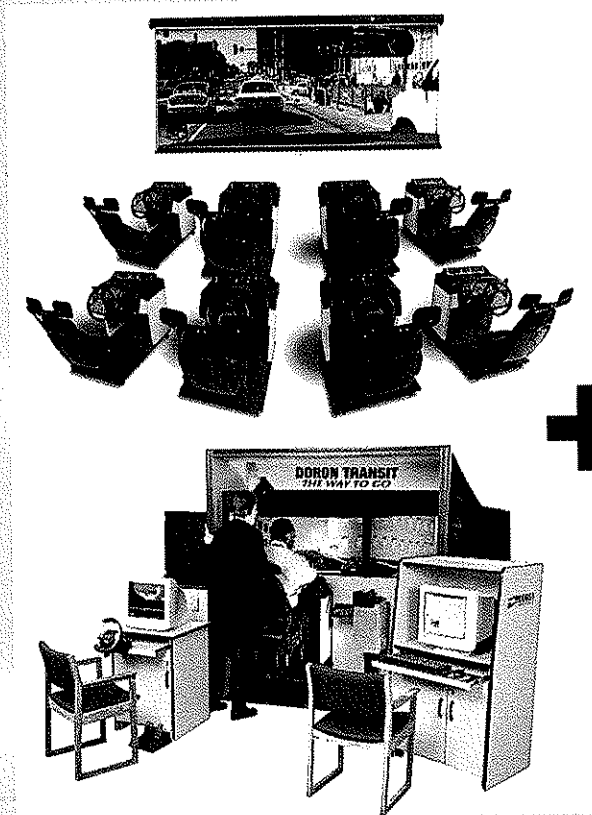
8-place 400Car system in classroom setting combined with 460Bus

Doron Reliability...
Delivered Worldwide.

Transport 6
Motion Base Entertainment System
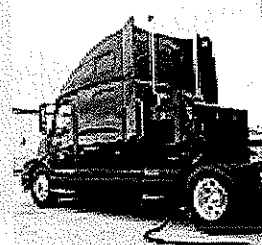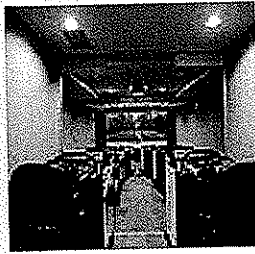
Risk Mangement Company
Mobile Classroom

Motion Theatre
Entertainment System
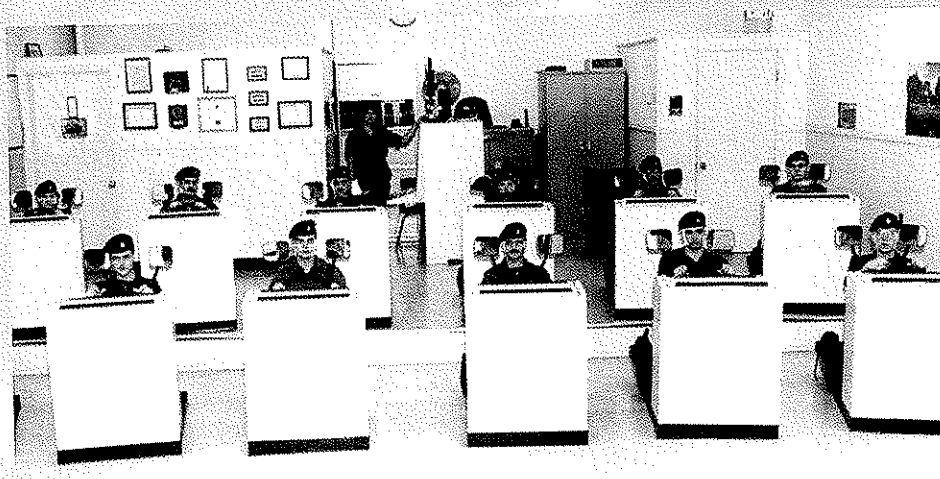
Canadian Army

The Company

Mission

To provide customers with complete simulation systems for the best value possible. Our systems must either substantially reduce our customers' operating costs or have a significant effect in increasing their profits.

Philosophy

Doron's philosophy is to conduct its business on the basis of honesty, integrity and fairness. This philosophy is proven successful by thousands of satisfied customers throughout the world. The company bases its engineering, manufacturing, service and salesmanship on the principle of providing the best value possible to all of its customers. Value means sound engineering design utilizing the most appropriate technology, superior workmanship, software quality, system reliability and prompt customer service, all at fair and reasonable costs to the customer.

The company utilizes a "total system concept" as a cornerstone of its philosophy. A Doron simulation system is defined by Doron as a set of components, including hardware, computer software, audiovisual software, installation, training and support services functioning together for the defined outcome: customer satisfaction.

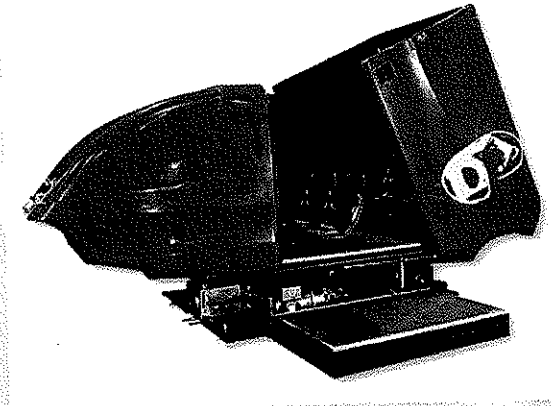Doron's total system concept is also manifested in how it functions as a team to provide the best possible value for its customers. Doron's various departments (i.e. Sales, Engineering, Manufacturing, Customer Service, Training, Audiovisual, Administration and Finance) function in concert to support customer satisfaction.

History

Doron Electronics, Inc. was founded in 1970 as a manufacturer's representative organization specializing in electronic, education and training systems. The company covered the northeastern states from offices in Concord, Massachusetts and Clifton, New Jersey. In late 1973, Doron Precision Systems, Inc. was formed to acquire the driver training and learning systems business from the Singer Company. Doron Electronics, Inc. was later merged into Doron Precision Systems, Inc. Today, the Company operates from its modern corporate headquarters at the Kirkwood Industrial Park in Binghamton, New York.

Since 1973, Doron has expanded its engineering and manufacturing capabilities, built a strong customer service department and has added in-house audiovisual software development capabilities. The Company has produced over fifty (50) titles for its semi-interactive systems. In addition, over 220 scenarios have been produced and are available for use with Doron interactive (CGI) systems. Included are libraries for Law Enforcement, Emergency Services (Ambulance and Fire), Transit Bus, Truck (Tractor Trailer) and Defensive Driving. Special scenarios have also been produced to meet unique customer needs. Doron also added a line of entertainment simulation systems and motion systems. A substantial international market has been developed for all of its products. Over 25,000 driving simulators have been delivered and installed in more than 60 countries.

Introduction to Doron Driving Simulation Systems

Doron offers a number of different types and models of driving simulation systems for land vehicles. All of these systems are **complete** systems, including the "hardware" (simulated vehicle "cab") and instructor console/work station. Additionally, there is system operating software (computer programs) and curriculum software. Depending upon the training needs, the hardware and curriculum software are selected to provide an overall training system that best and most cost-effectively meets the specific training requirements.

Throughout its over 35 year history, Doron has taken the approach of carefully analyzing training needs and developing the **best and most cost-effective systems** to meet those needs. The result of this experience is a series of hardware systems and an extensive library of audiovisual software titles and computer generated scenarios. Selection of the applicable hardware and software provides the most effective training system for each application.

In Doron's standard systems, the hardware and vehicle cab is "generic", not replicating any specific make, year or model vehicle. This keeps the system from becoming dated. This approach supports long system life, resulting in optimum cost-effectiveness. Doron also customizes systems to replicate specific vehicles for customers' special applications.

A most important element in any training system is the quality of the curriculum/training materials. As mentioned above, Doron provides **complete** systems, including the training software. Programs are developed with the guidance of recognized experts. For example, Doron's programs for the Novice Driver are developed with the guidance of its Curriculum Committee which includes nationally recognized Traffic Safety and Driver Education professionals. This curriculum is compatible with, and strongly supports, the American Driver and Traffic Safety Education Association "Minimum Standards for In-Car Performance". Another example is Doron's program for Law Enforcement Officers. It consists of a library of scenarios, which have been evaluated and certified by The California Commission on Peace Officer Standards and Training (CA POST) as having "met or exceeded" the CA POST requirements.

Frequently a combination of Doron's interactive driving simulation systems and multiple position semi-interactive systems form the basis of the most comprehensive simulation-based program available to support driver training and driver improvement. Doron has a number of satisfied customers (transit, truck and law enforcement) who have found that this approach is cost-effective and very efficiently fulfills their training needs.

Doron personnel are available to assist in defining the best solution to a customer's specific driver training or screening/evaluation needs.

DSS-01-0609

DORON®
PRECISION SYSTEMS, INC.
SINCE 1973

DORON QUALIFICATIONS

Since 1973 Doron Precision Systems, Inc. has continuously developed, manufactured, installed and serviced complete driving simulation systems for land vehicles including cars, buses and trucks. Doron's systems include hardware, microprocessor software, audiovisual software, curriculum materials and accompanying Instructor Guides. Over 25,000 driving simulators have been delivered in more than 60 countries worldwide.

Doron maintains a staff of professional personnel whose full time responsibilities are the continuing development of hardware, audiovisual software, and computer software for driving simulator systems.

Engineering

The Company's electrical/electronic engineers, mechanical engineers, technicians, and designers have extensive experience in the development of various types of driving simulator systems and related subsystems, including motion systems.

Curriculum Development

Doron's staff of professionals have broad experience in traffic safety and driver training. This staff is supported by curriculum committee(s) which include nationally recognized traffic safety education experts.

Training – Operation/Use

Professional training personnel have wide experience in training users in effective use of driving simulation systems. Their responsibilities include continuing development and administration of training programs including, but not limited to, the training of purchaser's instructional staff in the operation and effective use of the system(s) purchased. This comprehensive training is provided at no additional cost to the customer.

Manufacturing

Doron currently manufactures complete driving simulator systems for law enforcement vehicles, passenger vehicles, trucks, commercial buses, and school buses. Systems are inclusive of all hardware, audiovisual software (curriculum/scenarios) and computer software, all mutually compatible to assure a complete functioning system. A well equipped model/machine shop, in addition to fabricating selected parts for standard products, supports engineering development and is geared to fabrication of unique parts as may be required for modifications to meet special customer needs.

Service/Maintenance

Since 1973 Doron has maintained a full-time professional staff of factory trained technicians responsible for the installation and maintenance of all Doron manufactured systems. Service personnel are strategically located throughout the country, to provide high quality effective service. Doron provides service to customers owning various of its driving simulator systems throughout the U. S. All service technicians are Doron trained and possess a background on computer systems and digital and analog electronics. In addition to the extensive spares inventory maintained at headquarters in Binghamton, N.Y. for systems, each service technician maintains a stock of selected parts to minimize potential down time. The intent is that no unit be completely down more than 48 hours, excluding holidays and weekends.

To further assist in keeping down-time to a minimum, Doron will, at time of installation, brief appropriate designated purchaser personnel in performance of basic checks and in, some cases, certain adjustments.

DSS-07-0306

DORON®
PRECISION SYSTEMS, INC.
SINCE 1973

P.O. Box 400, Binghamton, NY 13902-0400, 607-772-1610, Fax 607-772-6760
Email: sales@doronprecision.com   www.doronprecision.com

DORON DRIVING SIMULATION SYSTEMS
ADDED VALUE

Established in 1973, Doron Precision Systems, Inc. is the only company with over thirty-five (35) years experience in driving simulation. Doron offers a broad line of off-the-shelf, proven, **state-of-the art, cost-effective systems** for training of Novice Drivers, Law Enforcement, Emergency Vehicle, Commercial Truck Drivers and Transit Operators.

Doron has an in-house staff of professionals who have broad experience and career commitments to **traffic safety training**. This in-house staff is supported by curriculum committee(s) of nationally recognized traffic safety education experts. This team supports the **ongoing development** of related materials and the advancement of simulation technology as it relates to driver training and **traffic safety education**.

The Company's professional training personnel have wide experience in the effective use of driving simulation systems. Their responsibilities include continuing development and administration of training programs including development of user guides and manuals and training of customer instructional staff in effective use of the systems.

Doron's electrical/electronic engineers, mechanical and software engineers, technicians and draftspersons have extensive experience in the development of various types of driving simulator systems and related sub systems, including motion systems. **Their goal is always to utilize the latest, but most appropriate, cost-effective state-of-the art technologies** in developing easy to use reliable systems.

Since 1973 Doron has maintained a full-time professional staff of factory trained technicians responsible for the installation and maintenance of all Doron manufactured systems. Doron's service personnel are strategically located throughout the country to provide high quality and effective service. These regional service personnel maintain an inventory of most commonly used parts to help keep down-time at a minimum. Parts are also available from the extensive spares inventory at the factory, including via overnight package services when necessary. Doron is not aware of any other company matching this service capability.

Doron also maintains a staff of full-time sales professionals dedicated to satisfying driver training and simulation needs. The **professional staff** includes individuals educated in traffic safety, public administration, electronics and/or law. This diversity of background results in a well rounded team participating in the sales and follow up process. Doron's salesmanship, based on extensive experience, knowledge, honesty and integrity, is unmatched in the industry.

The above outlines the advantages and reflects the "added value" of doing business with Doron. This may sometimes result in difference in price. Customers and references can best verify the Company's honesty, integrity and quality of products and services. Doron invites and encourages contacting its customers, many of whom have successfully used its systems and services for years – ten to over 25.

DSS-05-0609

DORON PRECISION SYSTEMS, INC.
550Car™ PRICE QUOTATION
ALCOHOL BEVERAGE CONTROL COMMISSION
SEPTEMBER 22, 2009

System consisting of:

- One (1) 550Car driving simulator cab
- Equipped with TrueSteer™ digital servo steering system
- Equipped with three (3) 42" plasma flat screen displays (190° field-of-view)
- One (1) instructor's console
- Dispatch radio system
- Remote Controlled side-view mirror adjustment
- Pre-recorded Audio Scenario Description Feature
- Curriculum of Defensive Driving Scenarios
- Scenario Developer Software
- Comprehensive user guide
- Three days of on-site Instructor training
- On-site installation
- One (1) year warranty
- First year on-site preventative maintenance service support
- Shipping and packing to Charleston, West Virginia.

Total Price for a one (1) place system: **$101,000.00**

Options (Not included in above pricing):

Fox™ (Instructor Driven Vehicle)	$ 5,000.00
Situation Display:	$ 6,300.00
SkillTrak™:	$ 3,950.00
Modular Ambulance, Fire Truck Insert Cab	$ 29,500.00
Fire/Ambulance (EMS) Training Scenario Package	$ 3,995.00
Law Enforcement Training Scenario Package	$ 5,995.00
Pit Maneuver Training Scenario Package	$ 500.00
Truck Driving Training Scenario Package	$ 2,995.00
Transit Bus Training Scenario Package	$ 2,995.00
DWI Simulation Software	$ 2,995.00
PES™ (Performance Evaluation System)	$ 6,995.00
Auto or Manual Transmission Add-on	$ 3,000.00
Additional year of Preventive maintenance service support	$ 5,994.60

Alcohol Beverage Control Commission
Price Quote – page two
September 22, 2009

Terms are as follows:

- Prices are F.O.B. Charleston, West Virginia
- Prices are valid for ninety days from date
- Terms are net thirty (30) days
- Prices do not include any applicable duties or taxes
- Delivery is 60 to 90 days ARO

Respectfully submitted,

Lawrence De Mayo
Products & Contracts Manager

DORON®
PRECISION SYSTEMS, INC.
SINCE 1973

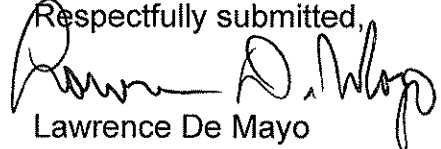P.O. Box 400, Binghamton, NY 13902-0400, 607-772-1610, Fax 607-772-6760
Email: sales@doronprecision.com   www.doronprecision.com

INTERACTIVE
DRIVING SIMULATION SYSTEM

550Car

FUNCTIONAL SPECIFICATIONS

1   ORGANIZATION OF THIS DOCUMENT

This specification contains the following sections:

1.	Organization of document	Describes the specific sections of this document.
2.	Introduction	Provides a summary level description of the 550Car.
3.	Functional Specification	Describes the general capabilities of the 550Car. This section covers the whole system and focuses on the functionality that is provided.
4.	Hardware Specifications	Provides additional detailed descriptions of the 550Car hardware specifications. Many topics from Section 3 are repeated here, with specific hardware functionality described in greater detail.
5.	Software Specifications	Provides a detailed description of the 550Car software specifications. Various topics from Section 3 are repeated here, with specific software functionality described in greater detail.
6.	Options	Describes options available at the time of purchase or in the future. These options expand the capability of the 550Car.

2 INTRODUCTION

This document defines the system components for the supply and acceptance of a 550Car Driving Simulation System for use in the demonstration of the adverse effects of drinking alcohol on the driving task. The system will be delivered and installed in a trailer provided by the WV ABCA.

2.1 System Description

The 550Car is a self-contained Computer Generated Imagery (CGI) based, interactive driving simulation system. The simulator will be delivered, installed, and fully tested as a turnkey system—including all software and hardware required to support the demonstration of the adverse effects of drinking alcohol on the driving task.

One comprehensive virtual driving world provides an environment where users may drive. This database is similar to the real world and includes urban, suburban, rural, industrial areas with buildings and foliage typically found in these regions. Highways are also provided. All of the driving areas are integrated into one virtual world. Drivers are able to drive from one area to any other just as in the real world.

The 550Car presents training opportunities with respect to situation awareness, judgment and decision-making skills, vehicle maneuvering skills, and skills assessment for driver trainees in the safe operation of a vehicle. Software includes several vehicle dynamics models. Simulated driving surfaces include pavement, grass, gravel, and dirt/sand with traction and sound variations on each for both dry and wet conditions. Weather conditions include clear, variable fog, rain, and snow/ice. Light conditions are selectable by time-of-day period: day, night, or dawn/dusk. Sun glare is provided when driving to the West at sunset and to the East at sunrise.

The 550Car reinforces hands-on vehicle operation by providing realistic skill training anywhere in the virtual driving world. The simulator complements actual driving experiences by training for proper driver reactions to potentially dangerous surfaces, weather, and traffic conditions. Operation of the system will be under the control of a trained instructor operator who will interact with the driver (as appropriate) to meet the demonstration needs. The instructor maintains control over weather and other real-time variables that affect road surface conditions, visibility, traffic situations, and vehicle performance.

2.2 System Components

The simulator is built using actual and/or representative parts and components. The simulator includes the driver's seat, active steering wheel, foot pedals, transmission selector, light controls and other appropriate operational controls, gauges, indicators, and switches. The simulator also includes a simulated cab representing a typical vehicle. All sight lines and angles required to safely operate a vehicle are accurately preserved for presentation to the driver. The system software provides the Instructor with the ability to enter different BAC levels so that the driver can experience the adverse effects of the different levels of alcohol consumption on their ability to drive the virtual vehicle.

The simulator includes a real time computer system which: 1) simulates the functionality and dynamics of the vehicle, 2) controls "out-the-window" visual scenes and vehicle sounds as they relate to driving and student performance, 3) provides appropriate outputs to the trainee's dashboard instruments, 4) senses and responds to inputs via driver controls, 5) interfaces with the instructor work station, and 6) provides realistic interaction with other driving stations networked in the same scenario.

The simulator includes a minimum of three (3) high resolution 42" Plasma displays to present a continuous horizontal visual field-of-view of at least 190 degrees. Slewing of images is not utilized nor required due to the appropriate field-of-view which is provided.

Simulated mirror images are inset in the displays. The size and relative position of the mirror images automatically changes to correctly replicate the vehicle being simulated. Simulated vehicles that use convex mirrors include simulated flat and convex mirror images. All mirror images can be remotely adjustable by the driver in real time during any driving scenario.

The simulator includes a sound system which generates appropriate vehicle motor and other operational sounds of a vehicle.

The Instructor Work Station (IWS) is used to facilitate all driving activities. The IWS enables the instructor to control the operation of the simulator, select scenarios, replay all or portions of the session to highlight good or bad driving performance, and perform record keeping of individual driving sessions.

All components of the disassembled system shall pass through a 36-inch wide by 80-inch high access opening.

3 FUNCTIONAL SPECIFICATION

3.1 General

3.1.1 Overall Responsibilities

Doron will design and manufacture the system and verify its performance and reliability. Doron will provide documentation, packaging, shipping, installation, warranty and first year on site maintenance service support of the system.

3.1.2 Condition

The 550Car is a complete, functional operating system that has been factory assembled, wired, tested, and is ready to operate upon installation within the user's facility.

3.2 Functional Specifications

The system objectives and functional specifications for the 550Car are described in general terms in this section. Specific, detailed information for the base hardware, base software, and options are described in the following sections. These sections together describe the complete operational functionality of the 550Car Driving Simulation System.

3.2.1 System Objectives

The objective is to demonstrate to vehicle operators the detrimental effects of drinking on their ability to perform the driving task. Specifically, the 550Car provides detailed driver orientation to the operation of different types of vehicles, demonstrates vehicle maneuvering and presents a variety of decision-making challenges to the driver.

The 550Car supports the following specific objectives.

3.2.1.1 Basic Driving Skills

The system enables instruction and testing of basic driving skills such as driving on a variety of roadways, and cornering. This may pertain to job applicants, newly hired drivers, re-training of current drivers, or problem drivers needing remedial training in these areas. In addition, the system enables instruction and evaluation of other fundamental driver skills such as proper signaling, and use of mirrors .

3.2.1.2 Maneuvering and Interacting with traffic

The 550Car System enables instruction and testing for maneuvering in typical urban, suburban, rural and residential areas. Skills can be trained for lane position management, maneuvering in vehicular and pedestrian traffic, adherence to posted and un-posted traffic laws, and scanning techniques.

3.2.1.3 Emergency Response Judgment and Decision Making

The system provides scripted scenarios for both training and evaluating judgment/decision-making skills such as intersection analysis, lane choice, speed, vehicle positioning, and tactical approach.

3.2.2 Vehicle Simulation

The vehicle performance model provides an accurate representation of all components of the vehicle being simulated. A full power train (engine, transmission, axle ratio); accurate vehicle brakes; a suspension system; plus the steering system are modeled.

The vehicle model faithfully responds to forces dependent on vehicle speed, road friction conditions, and driver inputs. Vehicle models react to the driver's inputs and provide the necessary data to the simulator to support an appropriate response from the instruments of the driving station.

The instructor has the ability to select the vehicle type and also vary any available characteristic from the instructor work station. The performance of the vehicle changes in response to the selected variable conditions and affects the handling and driving characteristics experienced by the student driver.

A series of instructor selected vehicle equipment failures are selectable and listed on the following table.

TABLE 1 VEHICLE EQUIPMENT FAILURES

Failure	Response
Engine Temperature	Illuminate Indicator, enact vehicle response
Check Engine	Check Engine Indicator, reduced engine response
Low Fuel	Fuel gauge drops to "empty"
Steering axle tire blowout.	Sound, effect induced by torque controller to steering wheel

Instructor-selected failures are conveyed to the student in the same manner as an actual vehicle conveys them. A combination of indicator lights, and/or vehicle performance responses are used to alert the student operator that a failure or malfunction has been initiated.

The simulated vehicle selected for a training session meets the following requirements.

3.2.2.1 Vehicle Dynamics

The 550Car vehicle dynamics allows for representative sizes and weights for typical vehicles. The vehicle handles correctly on all variations of

road and surface conditions with variable loads. Turning radius, acceleration and deceleration characteristics are correctly represented and utilized within the system software.

3.2.2.2 Response to Terrain Changes
Driving on pavement/concrete, gravel, dirt, sand, and grass areas with dry, rain, snow/ice, and icy conditions produces the appropriate effects. Traction (acceleration and braking) is correctly represented.

3.2.2.3 Radio Communications
The System includes an integrated realistic radio communication unit. The instructor has the ability to initiate/participate in a role play with the simulator drivers. The instructor has the ability to communicate in real time with the simulator drivers through the radio communications unit. In addition, simulator drivers have the ability to communicate with each other in linked training scenarios.

3.2.2.4 Transmission Selector
The simulator has an automatic transmission. The Engine sounds change as a function of gear and changes in engine speed (RPM).

3.2.2.5 Gauges, Indicators and Controls
The 550Car utilizes actual and/or representative components for selected active controls and gauges. Minimum active controls include brake, accelerator, gear selector, turn signals, essential light switches, and essential indicator lights.

Active gauges include a speedometer, tachometer, fuel, voltmeter and various warning/indicator lights.

3.2.2.6 Overhead View
A momentary switch is provided on the dash that switches the displayed view from a driver's perspective to an overhead view in real time. The overhead view allows the driver to see his/her vehicle location with respect to other vehicles or objects within the virtual environment.

3.2.3 Vehicles/Pedestrians
The virtual driving world includes at least 50 unique vehicles that can interact with student vehicles. Various types of cars, trucks, buses and municipal vehicles are included. Several pedestrians including men, women and children are also provided. The system also includes animals that can interfere with driving such as dogs and deer.

These vehicles and pedestrians are included in the pre-programmed scenarios to create specific training opportunities. They also are available to instructors, through the scenario developer, to create new scenarios or modify existing ones.

3.2.4 Collision Detection

The 550Car software defines appropriate collision parameters for all objects in the visual database, including buildings, signs, fences, trees, and other vehicles placed in the visual scene. System software detects any occurrence of the trainee vehicle's collision with any other vehicle or object.

Collisions are categorized as major or minor. Major collisions include trainee collisions with buildings, fences, trees, pedestrians, and any other vehicles (static or moving). Major collisions occur when impact speed is high. Low speed collisions are minor collisions. Major collisions generate an appropriate crash sound, an immediate halt of the simulator, and a broken windshield (simulated) in the trainee's simulator.

Minor collisions generate an appropriate crash sound but the trainee's driving activity is not automatically halted. When minor collisions occur, the trainee's vehicle performance is degraded.

The IWS provides a "repair" function. Instructors are able to repair a vehicle after a collision with a mouse click. This function allows the instructor to choose to continue the scenario if he/she chooses.

3.2.5 Computer Image Generation

3.2.5.1 Out-the-Window Scene

The out-the-window scene is correct for each simulated vehicle and changes automatically for each vehicle upon vehicle selection. Rearview mirrors are provided for views behind and to the sides of the trainee's vehicle. Each rearview mirror presents the appropriate field of view the driver would see from the vehicle being simulated.

3.2.5.2 Weather

Weather affects driving surface conditions; the effects of rain, fog, and snow/ice on paved and unpaved surfaces are included.

3.2.5.3 Time of Day

Time of day is selectable from the Instructor Work Station twenty-four hours a day in increments no greater than ten minutes. This allows training in various levels of light (and darkness). Sun glare is provided in the early morning hours when driving to the East and in the evening when driving to the West.

3.2.6 Training Scenarios

A library of scenarios are provided as part of the basic 550Car Driving Simulation System to meet specified training objectives. Each is selectable by the instructor from the IWS. Once the system has been powered up and the first scenario has been loaded, new scenarios load and are ready for training in no more than five (5) seconds. The System is capable of displaying several different virtual environments. The selected scenario automatically loads the appropriate virtual environment for the desired training. It is not necessary for the instructor to select separate driving worlds to switch from one scenario to another.

While normal driving will occur on the generic roadways, the System permits off road driving any time and anywhere in the visual database. All streets, roads, and expressways are designed in accordance with U.S. federal and state highway specifications for grade, width, curvature, and overpass height. All traffic control devices and highway markings meet U.S. federal and state guidelines. All traffic signals (stop lights) are fully functional.

Instructors are able to select from a library of pre-recorded scenarios to which trainees may drive. The system includes a full package of scenarios. The scenarios vary in complexity from basic to advanced. Each scenario includes an instructor guide sheet detailing the specific objectives of the scenario and suggestions for training.

3.2.6.1 Basic Driving Skills

The instructor is able to select the configuration and start the trainee's session at the beginning of a simulated testing area. The trainee's general driving skills associated with backing, cornering, parking, use of mirrors and turn signals, and other fundamental driving skills can be observed and evaluated qualitatively by the instructor.

This "basic skills" driving area is a flat, hard-surfaced terrain marked by white lines and orange cones which visually delineate training and testing areas for the control skills listed on the following table.

TABLE 2. CONTROL SKILLS

Forward stop at crossing line
Straight backing for at least 100 feet
Lane change right and left
Turning while backing through a five-cone serpentine course
Close quarters right turn
Angle park
Parallel park (right and left side)

Collision parameters are associated with the all objects in the driving area.

This driving area can also be used to teach the trainee essential backing skills, providing pointers about the handling characteristics or problems associated with his or her vehicle under adverse conditions.

3.2.6.2 Maneuvering in Urban and Residential Areas

Scenarios support driving in city and expressway environments. City features include, at a minimum, wide avenues, two and four lane roads, and tight side streets. Gravel and dirt roads are included in the driving area. The rural driving portion includes hills and mountains. Buildings and trees are included appropriately throughout the driving area.

3.2.6.2.1 City Expressway Driving

The expressway portion of the driving area is representative of the U.S. Interstate highway system. High-speed entrance/exit ramps are included, with both cloverleaf and trumpet style intersections. This driving area, with the presence of surrounding traffic, presents the certain types of driving opportunities listed on the following table.

TABLE 3. EXPRESSWAY DRIVING OPPORTUNITIES

High speed freeway entrance and exit
High speed merges
Lane changing
Signaling
Overtaking and passing
Being passed and reacting to being cut off
Maintaining proper following distance
Reacting to obstacles in the road
Reading and reacting to road directional signs
Emergency/high speed braking and steering
Merging two lanes into one lane

3.2.6.2.2 City Driving

The city portion of the driving area includes two, three, and four-lane streets with turn lanes and intersections. Structures including houses, store fronts, bridges, factories, fire stations, commercial buildings, and sidewalks are present in the city driving area. Road signs, traffic control signs (including, as a minimum, stop signs, yield signs, one-way street signs, do not enter signs, merge signs, and speed limit signs), and functional traffic lights are provided. The city driving area, with the presence of surrounding

traffic, provides the types of driving opportunities listed in the following table.

TABLE 4. CITY DRIVING OPPORTUNITIES

Maneuvering in tight city streets
Maneuvering on multi-lane city boulevards
Maintaining posted speeds
Maintaining proper following distance
Reacting to traffic signals, stop signs, and yield signs
Passing and being passed
Making lane changes
Proper signaling
Entry into moving traffic
Reacting to obstacles in the road
Making left and right turns
Maneuvering on a traffic circle
Reading and reacting to road directional signs
Back-up control and speed
Distance judgment while backing
Proper positioning of vehicle at emergency scene
Reacting to crossing pedestrians.

3.2.6.2.3 Suburban Driving Area

To facilitate additional high-speed driver training in traffic and in other adverse conditions, the driving area includes suburban two-lane roads incorporating numerous hills and curves. Limited visibility sections created by hidden curves and tree lines are included. Road surfaces are predominantly concrete or asphalt. Suburban intersections are controlled primarily by stop signs and occasionally by yield signs. The suburban driving area, with the presence of surrounding traffic, provides the types of driving opportunities listed in the following table.

TABLE 5. SUBURBAN DRIVING OPPORTUNITIES

High speed maneuvering on curving roads of various surfaces
High speed passing on curving roads and roads with limited sight lines
Emergency braking and steering.
Reacting to traffic signals, stop signs, yield signs, etc.
Passing other vehicles and being passed
Making left & right turns
Observance and responding to road directional signs and cues
Interaction with crossing pedestrians and animals

3.2.6.2.4 Country Driving Area

The database includes country driving incorporating numerous hills and winding two-lane roads. Limited visibility presents sudden curves to enhance training in speed and vehicle control. To reflect actual driving areas, straight sections with limited foliage as well as winding sections that result in blind curves are provided. Some of the roadways are lined with cornfields presenting visibility problems. Drivers must be able to react to animals such as deer running in front of their vehicle.

Most road surfaces are uniform and smooth, but some are narrow—with little or no shoulder. Some of the country roads are made up of either gravel or dirt surfaces with accompanying changes in traction. Most intersections are controlled by stop signs and occasionally yield signs.

The country driving area, when combined with the presence of surrounding traffic, provides the types of driving opportunities listed in the following table.

TABLE 6. COUNTRY DRIVING OPPORTUNITIES

Maintaining posted speeds
Maintaining proper following distances
Maneuvering on curving roads
Reacting to traffic signals, stop signs, and yield signs
Passing and being passed
Reacting to obstacles in the road
Making left and right turns
Medium and high speed emergency braking and steering
Reading and reacting to road directional signs
Railroad crossings

3.2.6.3 Light Industrial Driving Area

A light industrial driving area is included to represent geographic regions that are less urban in nature. This area incorporates a small number of office and manufacturing buildings and concentrates on including elements commonly found in municipal regions: multiple speed limit zones including hospital and school zones, a police department, fire department, DMV, corporate buildings, manufacturing buildings, fast food stores, gas stations, etc.

The Light Industrial Driving Area provides the driving opportunities listed in the following table.

TABLE 7. LIGHT INDUSTRIAL WORLD DRIVING OPPORTUNITIES

Maneuvering in typical city streets
Maneuvering on multi-lane suburban boulevards
Maintaining posted speeds
Maintaining proper following distance
Reacting to traffic signals, stop signs, and yield signs
Approach, entry, and exit of near- and far-side emergency stops
Passing and being passed
Making lane changes
Proper signaling
Entry into moving traffic
Making left and right turns
Reading and reacting to road directional signs
Parking both at curbsides and in parking lots
Responding to emergency vehicles (police & rescue)
Back-up control and speed
Distance judgment while backing
Backing correction/over-correction
Reacting to crossing pedestrians.

3.3 Audio Scenario Instruction

Scenarios include a pre-recorded or computer-generated audio instruction message that can be played prior to the start of each scenario. This feature is controlled at the IWS and may be turned on or off by the instructor at any time during a session.

3.3.1 Sounds

The 550Car includes an audio system for generation of sounds consistent with the visual scene and the driver's actions in the simulator. The simulator is capable of producing the following sounds.

TABLE 8. GENERATED SOUNDS

Simulated Vehicle
Squeal of tires, with traction varying with terrain and load, etc.
Proper engine sounds based on engine speeds and throttle position
Road noise
Siren/Yelp/Wail
Major/minor collision sounds as appropriate
Wind/Rain/Thunder
Horns
Sirens
Radio
Two-way radio communication from IWS and other simulators (when in linked scenarios

3.3.2 Instructor Work Station (IWS)

The 550Car incorporates an Instructor Work Station (IWS) with PC, flat screen monitor, and mouse. The instructor uses this station, for example, to start and stop the simulator, to select the vehicle type for the trainee, to set environmental conditions (fog, rain, etc.), to monitor the student's actions and skill level, initiate "replay" and "restart" features for the student, perform record keeping and scenario development. The IWS provides a full-color windows format display and mouse selectable (point-and-click) menu-driven functions for easy operation. Instructor personnel only require simple training in the functionality of the IWS.

3.3.2.1 Control of the Simulator

A principal purpose of the IWS is to enable the instructor operator to make key choices prior to and during each training session. The choices available to the instructor are listed on the following table.

TABLE 9. INSTRUCTOR CHOICES PRIOR AND DURING TRAINING SESSION

a. Driving conditions
Time of day (in ten minute increments or less) *
Driving surface friction (0% to 100%) *
Environmental conditions (dry, rain, snow/ice) *
Fog level, ranging from no fog to fog-reduced visibility (with visual grayness) of less than 100 feet *

b.	Selection of training scenarios from library
c.	Selection of training lessons from lesson library
d.	Mechanical Failures (instructor initiated in real-time)
	Tire blowout *
	Engine overheat * Low Fuel *
e.	Simulator vehicle selection – from menu
f.	Simulator vehicle repair *
g.	Replay / Restart *

Items above marked with an asterisk symbol (*) can be adjusted or modified by the instructor at any time during execution of a training scenario.

3.3.2.2 Replay and Restart

Scenario replay and restart capabilities are provided to enable subjective, timely instructor feedback to the driver and immediate correction of problem areas. Instructors are able to select replay and restart at any time during or at the end of any scenario. Replay displays the recorded events and conditions of the simulation and the responses of the driver as they occurred. The replay function allows instructors to skip forward and back to critical points. Retry allows the driver to drive the situation anew from the start of the scenario.

3.3.2.3 Replay Marks

The instructor has the capability to establish specific locations/circumstances at any point in any training scenario and return to that exact situation at any time during the replay session. During replay, the instructor is able to skip forward and back from one replay mark to another to review. With consistent, repeatable training in mind, the replay marks are at the same point in each scenario for every driver. Instructors may edit the replay marks and add additional ones if desired.

3.3.2.4 Record Keeping

3.3.2.4.1 Student Evaluation

Data records are able to be stored in a database that will remain accessible from the Instructor Work Station. Data can be sorted by categories such as date, student name, job class, instructor name,

class type, or other criteria. Selected data can be displayed at the Instructor Work Station for review.

3.3.2.4.2 Saving to Disk

The system is capable of saving the driver's performance for future review.

4   HARDWARE SPECIFICATIONS

4.1   General

4.1.1 Facility Size Limitation

The complete 550Car system fits in the designated simulator system room or trailer.   The system will be arranged in a way that is functional for demonstration.

The entire system, when disassembled into components, can pass through a 36-inch wide by 80-inch high access opening.

4.1.2   Environmental Conditions

4.1.2.1 Operating Temperature

The operating temperature is 60° F to 80° F with preferred operating range less than 70°.

4.1.3   Electrical Specifications

4.1.3.1 Power
The system operates on 120 VAC +/-10%, 60 Hz, single phase electrical service and draws no more than 20 amps per each dedicated circuit.

4.1.3.2 Fusing
Each power and control circuit is fused at an applicable rating.

4.1.3.3 Line Protection
Cables, wires, and wire bundles will be installed in a manner to prevent abrasion, rubbing, strain, tension, and malfunction due to induction between wires and cables and will meet best commercial practices. Inter-connecting electrical lines of the system are routed through protective hardware. Any mounting hardware required is provided.

4.1.3.5 Underwriters Laboratory
Primary power components, are Listed, Classified, Recognized, or Approved and are labeled as such, by Underwriters Laboratory (UL) for their intended application.

4.2   Hardware Component Description
The 550Car system is composed of one (1) Driving Station and an Instructor Work System. The driving station includes a Visual System, Sound System, and Computer System. The combined interaction of these subsystems provides an

interactive, continuous, driving environment using computer generated imagery (CGI).

4.2.1 Driving Stations

The driver interacts with the simulation through a vehicle driving position containing a driver's seat, dashboard instrumentation, and vehicle operating controls. The driving station is fabricated to include controls in the proper spatial orientation similar to that of the vehicle being simulated.

Each simulator cab contains all of the basic controls, features and gauges found in a late model vehicle and each simulator cab does not duplicate a specific make, model or year vehicle to avoid obsolescence.

4.2.1.1 Driving Position

The driving position includes actual or replicated components present in actual vehicles. The driving position is mounted on casters to facilitate quick changes with other modular driving positions. A durable, industry-standard floor covering with a non-skid surface is installed to provide a long life for the simulator and aesthetic appeal.

All driving positions (which include the driver's seat, dash assembly, steering and pedals) are modular. Any modular driving position from any Doron vehicle simulator is interchangeable from one simulator to another.

4.2.1.1.1 Real/simulated Mirrors

Simulated rear view mirrors are provided and functional. Mirrors are included in the visual displays and are used to convey information regarding conditions as they exist behind and around the trainee's vehicle. Drivers are able to adjust mirrors in real time by using remote controls located inside the cab enclosure. Both the flat and convex mirrors (when applicable) adjust in real time.

When a different vehicle is selected by the instructor from the IWS, the mirror size and position changes automatically to correctly represent the vehicle being simulated.

4.2.1.1.2 Steering

The simulator includes a force feedback steering system. Drivers "feel" road vibrations, changes in road surface and collisions through the steering wheel.

4.2.1.1.3 Driver Controls

All driving controls (steering wheel, accelerator, brake) are active and have a realistic feel. Steering is adjustable to "soft, medium or

hard". Other controls including turn signal controls, headlight dimmer switch, park brake, and microphone switch are active and function as in a typical vehicle.

4.2.1.2 Driver Seat

4.2.1.2.1 Adjustable Seat
The driver's seat is an actual vehicle seat and is adjustable.

4.2.1.2.2 Seat Belt
The driver's seat is equipped with a seat belt that has a retractor mechanism to take up slack in the belt.

4.2.1.2.3 Seat Belt Sensor
The seat belt is installed with a sensor mechanism that alerts the instructor and trainee, after the ignition switch is turned on, that the seat belt has not been fastened.

4.2.1.2.4 Seat Vibration
The driver's seat is equipped with a vibration device to simulate representative vehicle vibrations including driving surface responses.

4.2.1.3 Dashboard Instruments
Dashboard instruments are the actual or replicated instruments used in a typical vehicle and are laid out in a similar manner as in an actual fleet vehicle.

4.2.1.3.1 Ignition Switch
The simulator includes an ignition switch located on the steering column to start the vehicle.

4.2.1.3.2 Speedometer
The speedometer is an analog meter that replicates an actual vehicle speedometer. The operation of the speedometer is computer controlled to provide an accurate indication of the trainee's vehicle speed during driving simulation. The speedometer is included in the front dash layout. The speed is also displayed on the forward visual screen.

4.2.1.3.3 Tachometer
The tachometer is an analog meter that replicates an actual vehicle tachometer. The operation of the tachometer is computer

controlled to provide an accurate indication of the simulated engine rpm's during the driving simulation. The tachometer is included in the front dash layout.

4.2.1.3.4 External Light Switch

A headlight switch is provided on the simulator. Activation of the high beam switch turns on a light on the dashboard to indicate the current headlight condition (on/off). Placing the switch in the "on" position has the visual effect of turning on the headlights and illuminating the out-the-window scene ahead of the vehicle at night. Other external lights are visible in the visual scene but are not be required to illuminate the scene.

4.2.1.3.5 Warning Lights, Indicators, and Switches

Warning lights, indicators, and switches required to support driving are active. Other lights/indicators/switches (such as climate control) are present but are not active.

Temperature, fuel and oil pressure gauges are included and are active. An operational parking brake is installed and is operational.

4.2.1.3.6 Compass

A compass is provided and clearly displayed in the forward view graphics monitor. The compass provides directional data similar to that of an actual vehicle compass. The operation of the compass is computer controlled to provide an accurate indication of the driver's vehicle heading.

4.2.1.4 Driving Controls

The driving controls consist of the following:

4.2.1.4.1 Accelerator and Brake Pedals

The accelerator and brake pedal assemblies are similar to actual vehicle components in size, shape, and material construction. The position of the accelerator and brake pedals during student driving is sensed by the computer (using long-life potentiometers) and provides interaction with the simulation so that any changes in the visual scenes correspond to the dynamics of the trainee's vehicle—based on the position of the accelerator and brake pedals. Pedals are provided in the appropriate orientation as they are positioned in an actual vehicle.

4.2.1.4.2 Steering Controls

The steering wheel is an actual vehicle component and provides realistic friction and restoring torque to simulate the resistance feel of an actual vehicle's steering system. The steering system is computer controlled to provide feedback to the driver about the forces being generated at the driving wheel. This system also provides feedback when the front wheels of the driver's vehicle strike an object. The movement of the steering wheel is sensed by the computer and provides interaction with the simulation so that the simulation of the visual scenes corresponds to the dynamics of the vehicle performance based on the position of the steering controls.

4.2.1.4.3 Transmission Controls

The simulator utilizes an automatic transmission selector controls similar to those in actual police vehicles. Selection of each gear results in vehicle dynamic performance comparable to the actual vehicle.

4.2.2 Instructor Work Station

The Instructor Work Station (IWS) consists of the following elements:

4.2.2.1 Instructor Console

The IWS console is a desk or upright console manufactured of durable materials suitable for the training environment. The IWS is equipped with a PC-based computer, a monitor, keyboard, and optical-mechanical mouse. The monitor is a LCD flat panel display and measures at least 17 inches diagonally and is capable of displaying at least 1024 x 768 resolution with 32 bit color. The computer system is professionally installed and all wires are concealed from view.

The IWS communicates with the self-contained computer network system of the simulator. This terminal is the communication input location for starting the simulator from a powered down condition, initiating system software loading of operational programs, performing system maintenance, conducting diagnostics and trouble-shooting, changing system level parameters, setting up the driving simulations, monitoring driver actions and reactions to driving situations, recording driver performance data, and initiating system shutdown.

4.2.3 Visual System Specifications

4.2.3.1 Computer Generated Imagery

The visual system consists of high quality Computer Generated Imagery (CGI) subsystems that create a presentation of a three-dimensional

geometric database. The 550Car includes a minimum of three (3) 42" Plasma screens providing views similar to those from the drivers seat in a late model vehicle. All mirror images are adjustable in real time using a remote control in the driving station. The views presented by the 550Car is representative of those in the actual vehicles. The images in all views are presented in real time and are synchronous.

The comprehensive database presents buildings, obstacles, trees, hill, etc., with sufficient detail to determine one's relative position. The visual presentation appears natural and represents typical U.S. roadways and communities.

The visual system provides the capabilities listed in the following table.

TABLE 10. VISUAL SYSTEM CAPABILITIES

Presentation of various weather conditions including variable fog, rain and snow/ice,
Presentation of various levels of sunlight intensity to simulate various periods of day/night time (including sun glare) adjustable in increments of 10 minutes or less
Presentation of a large quantity of active and passive traffic elements
Presentation of continuous motion
Arbitrary uninterrupted driving within the driving course (both on-highway and off-highway) at any time
Sufficient resolution for discovering, recognizing and identifying objects
Collision detection of vehicles, pedestrians, buildings and traffic signs.

The graphics computer or image generator is an open architecture design running a MS Windows operating system. The image generator is based on commercially-available "off the shelf" computers (COTS).

Photo texturing of polygons is used to maximize scene realism and to provide enhanced motion cues. Identically configured high-resolution image generators are used for the graphical presentation.

4.2.3.2 Object Resolution

The object resolution allows a student to detect a moving vehicle measuring approximately 8 foot by 8 foot about one half mile away.

4.2.3.3 Visual System Display Units

The 550Car includes three (3) 42" high resolution Plasma visual displays with a minimum resolution of 1024 x 768.

4.2.3.4 Adjacent Channel Matching

Variation in color, brightness, contrast, resolution, and collimation between adjacent channel displays is not immediately noticeable for the full range of simulated conditions. Special emphasis is given to matching brightness and contrast in barely visible portions of the dawn/dusk and night scenes.

4.2.3.5 Video Rates and Scene Quality

Moving models are updated and a complete scene is computed at a rate of not less than 60 Hz. The simulation update rate is 60 Hz or better. The scene is "textured" to maximize scene realism and to provide improved motion cues. Critical objects utilize "photo texturing" which provides for the display of digitized photographs of buildings, signs, and other objects—adding realism to any scene.

4.2.3.6 Field of View

The 550Car includes at least three (3) 42" high resolution Plasma visual displays providing a horizontal field-of-view of at least 190 degrees. The simulator provides a vertical field-of-view of at least 32 degrees. Slewing of visuals is not utilized.

4.2.3.7 Overhead View

A momentary switch is provided on the dash that switches the displayed view from a driver's perspective to an overhead view in real time. The overhead view allows the driver to see his/her vehicle location with respect to other vehicles or objects within the virtual environment.

4.2.3.8 Rearview Mirrors

The 550Car includes simulated mirror images. These images are representative in size, shape, location and field-of-view of the mirrors in the actual vehicles. All mirror images for all vehicles are adjustable by the driver via remote controls located in the simulator driving position.

All mirror images are representative of the vehicle being simulated. When the instructor selects a different vehicle from the IWS, the simulated mirrors automatically change to correctly represent the new vehicle's mirrors.

4.2.4 Sound System

The sound system incorporates a high-quality audio reproduction of continuous and asynchronous vehicle sounds. The sounds correlate to driver actions and environmental conditions as well as the visual scene.

4.2.4.1 Vehicle Sounds

4.2.4.1.1 Realistic Sounds

The sound system for the 550Carl present realistic, real-time digital audio reproduction of sounds including:

- engine starting
- engine running – normal and continuous based on throttle position and speed
- normal traction
- reduced traction
- sound of tires on pavement
- sound of tires "off-road"
- tire skidding
- tire curb impact
- vehicle cornering
- tire blowout
- abnormal sounds based on malfunctions
- wind
- rain
- thunder
- horn
- collision – major and minor

4.2.4.1.2 Audio Scenario Instruction

Each scenario includes a pre-recorded or computer-generated audio instruction message that can be played prior to the start of each scenario for consistent training. This feature is controlled at the IWS and may be turned on or off by the instructor at any time during a training session.

4.2.4.1.3 Simultaneous Sounds

The sound system is capable of reproducing multiple, digital audio channels of sound (simultaneously). It contains provisions to mix the digital audio channels to provide a variety of audio cueing presentations.

4.2.4.1.4 Speakers

Vehicle sounds are computer-generated and rendered by audio speakers included with the system. Volume is adjustable.

4.2.4.1.5 Coordinated Sounds

Vehicular audio sounds properly result from driver actuation of controls, computer evaluation of control positions (accelerator,

brake, etc.), and computer evaluation of engine speed and load, vehicle speed, and interaction with road or surface conditions.

4.2.5 Modularity

4.2.5.1 Computer hardware

The computer system for the 550Car is modular and allows for future expandability. Components are PC-based and consist entirely of third party commercial off the shelf (COTS) products.

4.2.5.2 Modular Driving positions

The driving positions are of modular design. This feature allows for the addition of new simulators without the necessity of purchasing an entirely new system. The existing IWS, visual and computer systems accepts new driving positions from Doron.

5   SOFTWARE SPECIFICATIONS

5.1   Visual System

The visual system and the associated visual database are designed so that logical trade-offs between available image generation computer resources (i.e., number of polygons, texture memory, etc.) and scene content/detail are made.

5.1.1 Simulated Terrain

The 550Car includes a generic terrain database with urban and suburban areas, two lane expressways, industrial area, rural area and CDL testing area.

The 550Car is capable of displaying several different virtual environments. The selected scenario automatically loads the appropriate virtual environment for the desired training. It is not necessary for the instructor to select separate driving worlds to switch from one scenario to another.

While normal driving is expected to occur (drivers will remain on roadways), the Computer-Generated Imagery database permits and supports driving off-road at any time and anywhere in the virtual environment.

5.1.2 Weather Effects

5.1.2.1 Weather Conditions

Various weather conditions are provided, to include fog, rain, snow/ice, sunlight, darkness, and dawn/dusk lighting conditions. Presence and variation of these remains selectable from the IWS during simulator operation.

5.1.3   Time-of-Day Effects

5.1.3.1 Time-of-Day Visual Effects

Simulated visual effects for time-of-day are provided. The instructor may select the time-of-day (within increments of ten (10) minutes or less) at the start of a session and the system can remain capable of modifying time of day at any time during any individual training session. Sun glare is provided when the simulated vehicle is heading to the East in the early morning and to the West late in the day.

5.1.4 Visual Representation

5.1.4.1 Realistic Representation

A realistic representation of three-dimensional objects is provided, including signs, ramp markings, buildings, other vehicles, with textured surfaces being similar to the real world in appearance and location.

5.1.4.2 Perspective

Visual scenes have correct perspective and scale for all visual objects.

5.1.4.3 Concealment

The CGI system renders the visual scenes with correct adjacent concealment of three-dimensional objects.

5.1.4.4 Degree of Realism

Environmental models consist of the visual cues required to provide maximum realism within the limitations of the model. Modeling is optimized to provide useful scene content and a high degree of realism.

5.1.4.5 Update Rate

The image generation system renders the entire visual scene as a presentation of continuous motion. Smooth motion of the trainee's vehicle over the driving surfaces with realistic interaction of the vehicle, environment, and terrain types is provided.

5.2   Sound System Software

5.2.1 Vehicle Sounds

Sound system commands are generated by the computer application as a result of sensing the actuation of controls such as the accelerator and/or the brake pedal. Sound cues are derived computations made by the host computer. The engine sound is replicated from idle speed to highway speeds. As a minimum, the following sounds are simulated and produced during driver sessions based on the parametric evaluation of system conditions.

TABLE 11. GENERATED ENGINE SOUNDS

Student Vehicle
Engine Starting
Engine cranking/starting -- continuous while condition persists
Kill engine – cue
Engine Running
Normal -- continuous while condition persists with volume and frequency a function of engine speed and throttle position
Vehicle Speed
Normal traction -- continuous while vehicle moving
Reduced traction -- continuous while vehicle moving
Variation with road surfaces -- continuous while vehicle moving
Tire Skidding -- continuous while condition persists
Tire Curb Impact – cue
Horn
Tire Blowout – cue
Major and Minor Collisions -- separate cues

5.3   Instructor Work Station (IWS)

5.3.1 General Considerations

The IWS software generates window menu displays with mouse selectable buttons or icons that support a user-friendly hierarchy of System control menus. The IWS uses the familiar Windows operating system for ease of operation.

5.3.1.1 Simulator Setup and Initialization

Users are able to initiate a system startup/shutdown, perform diagnostics, and access CD-Writers, and other long-term storage devices.

5.3.2 Control

During the driver session, the instructor is able to control the scenarios and the progress of the driver's session by using the Graphical User Interface GUI at the IWS. All of the following are controlled by a mouse click. The instructor is able to:

SCENARIO SELECT   This function allows the instructor to select any scenario from the menu.

LESSON   Instructors may select a lesson (a group of scenarios) to be loaded for training.

VEHICLE SELECT	This allows instructors to choose any vehicle from the menu to drive for the current scenario.
DAMAGE THRESHOLD	This allows instructors to set the amount of damage necessary to disable a student vehicle.
REPAIR	This allows the instructor to repair any student vehicle that has been in a collision.
TIME-OF-DAY	This allows the instructor to change the lighting conditions to reflect any time of day or night within 10 minute intervals or less.
WEATHER	Environmental conditions may be selected including clear, rain, snow and fog. Fog density may be adjusted.
ROAD FRICTION	Instructors may alter the road surface friction.
START	Instructors shall be able to remotely start trainee vehicles from the IWS.
REPLAY	Instructors may replay any scenario.
SKIP	This may be used to skip forward or back between replay points to expedite training.
RESTART	This function shall restart the active scenario.

5.3.3 Replay Overhead View

To assist the instructor and review training objectives with the trainee, there is a REPLAY OVERHEAD VIEW, which may be activated by a mouse click from the IWS during replay. Toggling this function changes the view back and forth between a straight ahead (normal) out-the-window view and an overhead or bird's eye view.

5.4 Scenario Scripting Tool

The 550Car includes the user-friendly Scenario Developer to facilitate the creation of scripted traffic scenarios that will satisfy specific training objectives in support of new hire training, remedial training or to approximate accident conditions. Doron's Scenario Developer provides a user interface that incorporates a windows-based operation. The windows-based interface allows the instructor to quickly and easily create new scenarios. It is possible to create new scenarios with dozens of

moving vehicles in minutes. The movements of vehicles and pedestrians appear natural and smooth when new scenarios are played.

Scenarios are repeatable and selectable at the Instructor Operator Station. The software allows additional scenarios to be crafted by modifying existing scenarios and saving them to a new file name. Newly developed scenarios may be maintained in the existing library so they can be easily managed by instructors and shared with other agencies.

5.5   Networked Simulators

The ability to network multiple simulators to operate within the same virtual training environment is a base feature of the application software. Networking allows agencies to conduct maneuvers that involve multiple participants to "see" and interact with other drivers within the same session. Instructors are able to facilitate and administer for the networked configuration via a single, common Instructor Work Station. Each simulator installation is configured as a network to support the introduction of additional simulator devices that can be used to support future growth or expansion into other driver training disciplines. Up to four (4) simulators can be configured to operate in the same network using a single IWS.

5.6   First Year Warranty and Maintenance Service

A full one-year warranty is provided after delivery and installation of the system. The first year warranty includes all parts and labor, including all necessary on-site labor and all travel expenses for technicians. Routine preventive maintenance visits are provided.

5.6.1   Delivery, Installation, and Training

Each system includes installation, testing, and all training modules required for the user's instructional staff to become proficient with the operation and maintenance of the installed system.

Training includes: 1) routine system maintenance; 2) daily setup, operation and control of the delivered system; and 3) training on the use and application of the Scenario scripting software. Instructor training is completed by an individual with years of experience providing driving simulator training.

5.7   DUI Software

This software is added to the Malfunction GUI and the default setting is 0%. The instructor can select B.A.C. levels of .04%; .08% and .1% and depending on the level selected the software will delay the steering and braking responses of the simulator proportionally to simulate the effects of the level of impairment

selected. The instructor has the ability to select this GUI when any scenario on the system is selected.

6 OPTIONS

This section describes enhancements, additions, and modifications that can be added to the standard system described above.

6.1 Additional Years of On-site Maintenance Service Support

Doron offers on-site maintenance service support that can be provided after the first year warranty and maintenance service is complete. The follow-on annual maintenance programs cover the costs for all parts and labor, including all necessary on-site labor to maintain the system. There is no additional costs or charges for parts, technician's travel or labor.

6.2 Modular Driving Positions

Additional modular driving positions are offered to represent any alternative vehicle type. These driving positions include only the seat, steering assembly and dash assembly with functional gauges and controls. The additional modular driving positions may be interchanged with the police driving position as specified above. The optional modular driving positions share the visual system and IWS delivered with the original law enforcement driving simulator.

Representation includes active displays and gauges, all active controls in a physically correct position and orientation, with a realistic feel to the controls and displays. Additional driving positions interface in a similar manner as the law enforcement driving simulator. All driving stations are caster mounted to allow simple roll-out/roll-in changing (swap outs) in minutes. The system design supports interchangeable driving stations and alternative-training applications that are selectable at the Instructor Work Station.

6.3 Situation Display

The situation display allows instructors to replay any scenario on a large screen. This can be reviewed with the entire class for discussion. The viewing perspective during replay may either be from the driver position or from a view directly above the vehicle.

6.4 Instructor Driven Vehicle

This feature allows the instructor to control a scenario vehicle from the IWS in real time. The instructor driven vehicle includes a set of controls including a steering wheel, accelerator, brake, start button, gear selector and display screen. Altitude, decent and pitch controls are also included for the helicopter mode.

The instructor is able to select from a variety of vehicle types including cars, trucks, buses, fire trucks and ambulances. He/she may also choose a pedestrian, animal or helicopter.

The instructor driven vehicle may be selected prior to the beginning of a scenario. Once in the scenario, the instructor driven vehicle may interact with the trainee's vehicle in the scenario. The trainee must respond to the instructor driven vehicle just as any other scenario vehicle.

The instructor may use this feature in the observation (helicopter) mode. In this mode, the instructor can "fly" through the virtual world to observe the scenario. The instructor is able to change the elevation and view point of the helicopter in real time.

6.6 Reaction Testing

The system includes the capability to test driver's reactions in a standardized way for screening and periodic review. Instructors are able to compare results of the reaction testing with national averages (norms).

6.6.1 Printing

The instructor has the option of printing hard copy of the student's performance evaluation and reaction testing scores and/or saving to the hard drive or a removable storage device.

6.7 Performance Evaluation

The performance evaluation software allows the instructor to setup pre-defined evaluation points within the virtual world and evaluate the students exercise against these points. This standardized evaluation tool provides fair and repeatable driving experiences and evaluations.

6.7.1 Evaluation Criteria

The performance evaluation software compares a students actions and reactions at individual points throughout a given scenario to expected actions. Each point is recorded and include the following criteria.

▪ Minimum and Maximum Speed
▪ Minimum and Maximum RPM
▪ Minimum and Maximum Wheel Position
▪ Minimum and Maximum Trip Odometer
▪ Brakes
▪ Headlights
▪ Parking Lights
▪ Horn
▪ Gear
▪ Engine
▪ Hazards
▪ Turn Signals
▪ Microphone Use
▪ Siren Mode

▪ Siren Code	
▪ Siren Auto/Manual	

The performance evaluation software also records collisions and curb hits that occur during the drive. It is shown in a separate section on the report.

6.7.2 Saving the Evaluation
The output file can be saved on the IWS in at least two formats: XML and HTML.

6.7.3 Other Features
The performance evaluation software includes the following features:

- Student List
- Scenario Status
- Pre-Defined Scenario Paths
- View, Save and Print Reports

6.8 Instructor's Remote Control

A wireless input device is provided to mimic the operation of the IWS. This device is capable of remotely controlling the simulation in the same manner as the fixed input device on the IWS.

DORON®
PRECISION SYSTEMS, INC.

INTERACTIVE DRIVING SIMULATION SYSTEM
FACILITY INSTALLATION REQUIREMENTS

1. Air conditioning and/or heating should be provided to maintain teaching/learning environment of:

   A. Temperature: 65° F. to 70°F. (18°C. to 21° C.)

   B. Relative Humidity: 20-90% non-condensing.

   C. 550 produce approximately 5000 BTU/hr heat load.

   D. 460 produce approximately 8500 BTU/hr heat load.

   E. IWS, Situation Display, and Fox/Helo each produce approximately 2000 BTU/hr heat load.

2. Power required: Separate 120 VAC, 60 Hz 20 amp service at each simulator unit location and at the instructor console. Duplex outlet to be located within 6 ft. of simulator and instructor console. See example classroom layout.

3. Flexiduct to be used for above floor network and audio cabling between instructor console and driving position.

4. All windows should be covered with heavy drapes or blinds to provide theater level lighting. At least one door must be minimum of 36" wide. See notes below – check local codes for ingress/egress safety requirements/regulations/standards.

5. A switch or dimmer for control of lighting should be provided as close as possible to instructor console. (See sample classroom layout.)

   A. S_3 - 3-way room lighting control placed adjacent to door and instructor console.

   B. S_D - Down light over instructor console with dimmer control.

6. Ceiling Height: 8 ft. minimum unobstructed.

7. The following are recommended minimum spacing requirements:

   A. Space from wall for access for service: minimum of 1 ft. all around.

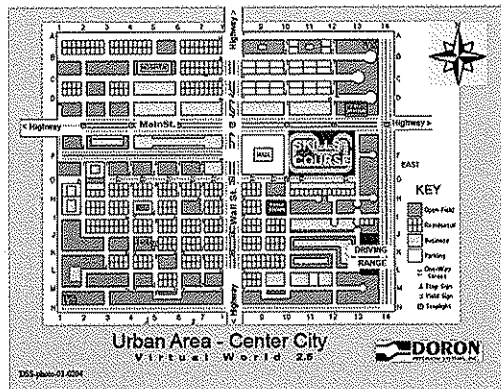   B. Space between simulators: 2 ft. minimum.

NOTES:
- Check local codes regarding electrical and other requirements, regulations and standards.
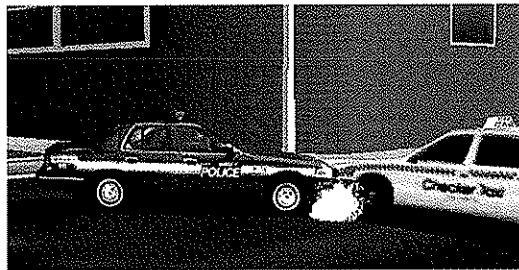
DIR #02
1/15//08

SCENARIO DEVELOPER 3.0

Doron's Virtual World - Urban Area (only)

Scenario built using placeable animated fire

Scenario built using a timing trigger
that can open car doors at critical points

Doron's Scenario Developer™ is a powerful tool which enables driving simulator instructors to easily and quickly create unique training scenarios to meet their specific training objectives. No extensive or lengthy training nor special computer skills are required.

With Doron's Scenario Developer, creating new scenarios is a snap. Simply select objects and a vehicle, place it in the Virtual World™, and "drive" the vehicle where you want it to go. The system automatically records and saves the vehicle and its path. Continue to add new vehicles and objects until your scenario is complete. There is no need for tedious "plotting" to record the vehicle path or establish a series of "waypoints" for every movement. New scenarios can be easily created in minutes!

Scenario Developer includes more than 100 different vehicles and objects that can be incorporated into the Virtual World when creating new scenarios. The variety of over 50 vehicles, including sedans, SUV's, sports cars, trucks, fire trucks, ambulances, school buses, transit buses, coaches, vans, law enforcement vehicles, taxis, and tractor-trailers provide true-to-life traffic scenes. All vehicle images are digital photo texture graphics. In other words, these graphics are individually created from a series of actual digital photos of vehicles, providing optimum realism.

Scenario Developer features over 20 different pedestrians including men, women, cyclists, and law enforcement officers. Animals such as dogs and deer are available to create unique training situations. More than a dozen traffic signs, as well as construction barricades, cones and barrels can be used for training in negotiating work areas. Trees, shrubs, trash cans and a fire hydrant are also available to place in scenarios for further realism.
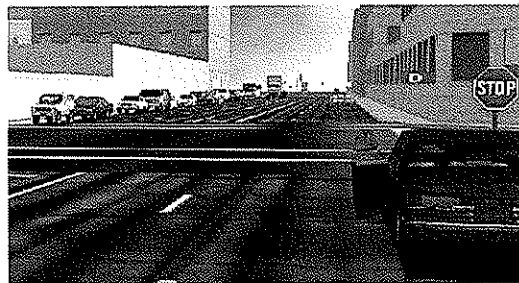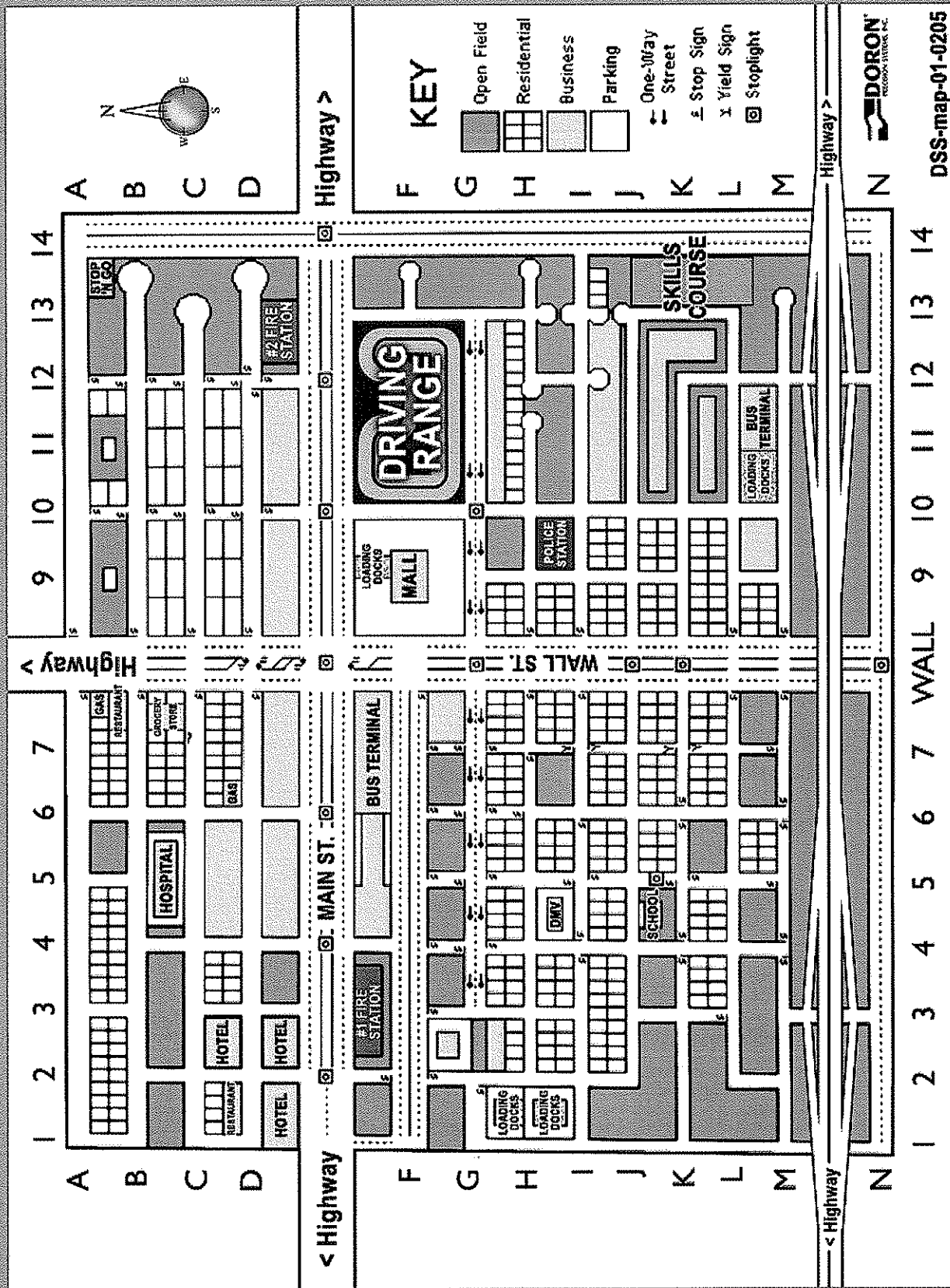
Fires can be added to any scenario anywhere in the Virtual World for emergency response training. Additionally, a door of a parked car can be triggered to open at critical times.

Because the Scenario Developer is so easy to use and new or special scenarios can be rapidly developed, crash situations can be re-created quickly and easily for use in training, retraining or other law enforcement needs.

DSS-21-0404

Urban Area - Center City
Virtual World 3.0

KEY
- Open Field
- Residential
- Business
- Parking
- One-Way Street
- Stop Sign
- Yield Sign
- Stoplight

DORON PRECISION SYSTEMS INC.

DSS-map-01-0205

Highway >
Highway >
< Highway
< Highway

N. MAIN ST.
WALL ST.
WALL

DRIVING RANGE
MALL
POLICE STATION
SKILLS COURSE
BUS TERMINAL
LOADING DOCKS
DMV
SCHOOL
HOSPITAL
HOTEL
RESTAURANT
GAS
GROCERY STORE
STOP 'N GO
#2 FIRE STATION
#1 FIRE STATION

SKILLTRAK™

Doron's SkillTrak feature provides a cost-effective, standardized method for evaluating both new and experienced drivers' **reaction skills.**

Located on the center monitor screen, SkillTrak™ provides visual cues called "Alert Indicators". These indicators consist of six randomly flashing lights (two each of RED, YELLOW and GREEN) and a digital readout which displays the reaction distance achieved for each reaction exercise. When activated, the six lights individually and randomly flash on and off until an assessment is manually initiated. At this instant, all YELLOW and GREEN lights are extinguished and two RED lights freeze ON. These RED lights serve as the "action cue", the cue for the operator to quickly apply the brake. The digital readout displays the operator's reaction distance for each exercise.

SkillTrak is proprietary to Doron. This optional feature feature is embedded in Doron's interactive driving simulation systems. No additional hardware or software is needed. SkillTrak is easily selectable and operated from the instructor's console and a printed record of driver's reaction distance performance is available.

DSS-22-0404

STATE-OF-THE ART MIRROR TECHNOLOGY
FOR
COMMERCIAL VEHICLE SIMULATORS
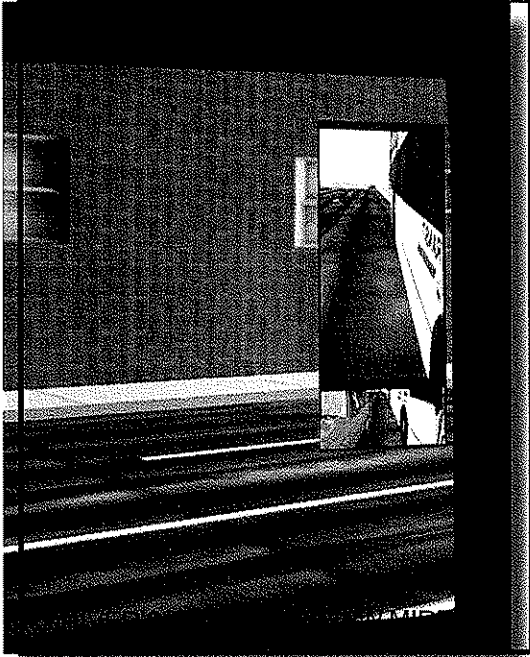
Perhaps the greatest challenge facing commercial vehicle drivers is limited field of vision of the environment surrounding their vehicle. This problem has been substantially reduced through rear view mirror designs that significantly and effectively increase the field of view around the vehicle. The most common solution is comprised of a combination of two types of mirrors, many times within the same housing. One of these mirrors is the typical "flat" mirror, the second a "convex" mirror. The convex mirror provides the driver a wider field of vision and has been found very useful on both left and right side of the vehicle. The left is helpful in entering traffic from a parked position, changing lanes and negotiating left turns. The right side is very helpful in changing lanes and making right turns (reducing the "right turn squeeze") in both long vehicles, (buses and trucks) and articulated vehicles such as tractor-trailers. The right side convex mirror on buses helps reduce passenger accidents when embarking or disembarking involving pedestrians who are too close to the bus during a right turn.
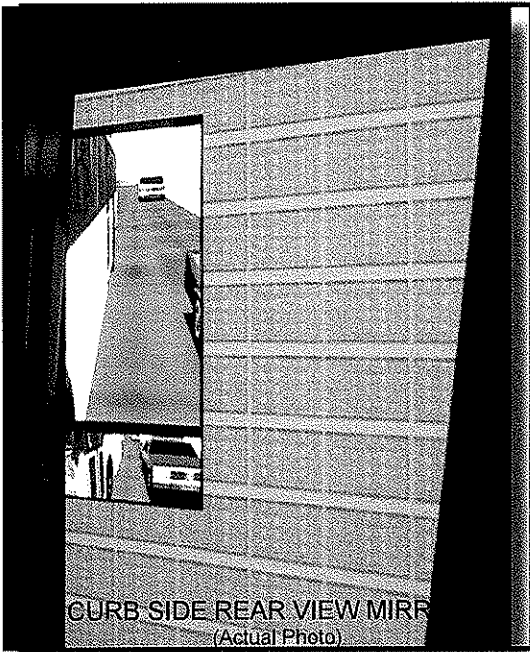
Remote controlled motorized mirrors have become more common with transit agencies and particularly on the right (curb side) since it is more difficult to properly adjust. A driver in a hurry is likely to not take the time to properly adjust a manually adjustable mirror. The remote controlled motorized mirror greatly reduces this tendency, thus improving safety. TCRP Report 66 (2001) (Pages 41 and 42) references some transit systems that report "highly effective safety improvements in driver vision and mirrors on buses" listing a few that use remote controlled, convex (and/or heated) mirrors. Doron's survey of its transit customers and bus manufacturers has confirmed the very strong trend toward use of the remote controlled flat and convex mirror combination.

This resulted in Doron's development of this feature for its commercial vehicle simulators. These mirror images are also cost-effective through the further use of imbedded images at the correct relative location in the appropriate vehicle simulated window. This proven approach of imbedded mirror images was first introduced in Doron's patented Vehicle Maneuvering Trainer (VMT) in 1990.

DSS-24-0209

CURB SIDE REAR VIEW MIRROR
(Actual Photo)

## Doron Precision Systems, Inc.

Replay Feature

Effective Driving Training is accomplished through simulation-based learning re-inforced by customized and repeatable feedback. The Replay Feature from Doron provides a user-friendly tool to achieve optimum reinforcement and develop the required driving skills.

HIGHLIGHTS

- Replay scenarios to evaluate the driver's speed, path-of-travel, lane position, moving violations and decisions made by the trainee.

- Use a simple computer application to review trainee's performance with the trainee and others.

- Choose between the driver point of view and overhead view for viewing replay.

- Select only critical training segments for feedback and minimize lost training time .

CUSTOMIZE YOUR TRAINING EXERCISE

In addition to complete review of a training exercise, it is easy to pick section(s) that are relevant for the trainee. The instructor can select the desirable number of windows within a planned series of traffic scenes. These windows can then be displayed on the trainee's simulator and reviewed for evaluation and training. Each of the windows can be replayed as often as required.
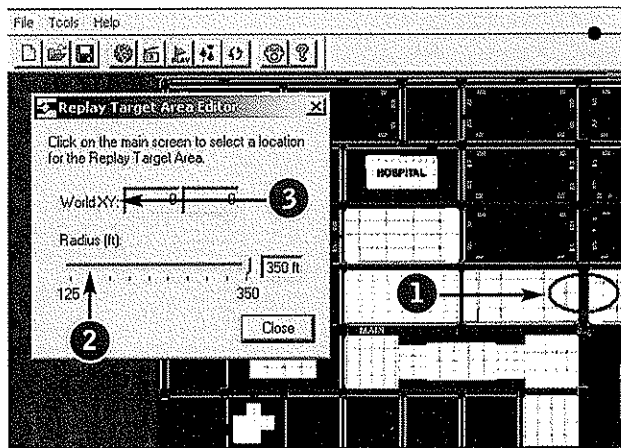
The Replay Target Area Editor feature with an overhead view of Virtual World™ driving environment.

1. The Replay window can be selected with a single mouse click.

2. Instructors can select the radius and customize the size of the selected Replay window.

3. World XY indicates the position of the window within the Virtual World™ Driving Environment.

⊃DORON®
PRECISION SYSTEMS, INC.

DORON PRECISION SYSTEMS, INC.
SIMULATION SYSTEMS LIMITED WARRANTY & SERVICE
SUPPORT – DOMESTIC

Doron Precision Systems, Inc. (hereinafter referred to as DPS), warrants the products manufactured by it to be in good and serviceable condition at the time of shipment, and to remain free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment to the ORIGINAL purchaser, subject to the following conditions:

A. If a defect occurs during the warranty period, the purchaser must immediately communicate with the DPS Customer Service Department and, if directed to return a component to the factory, a Return Authorization number will be given to document and control same. DPS will not be liable for any item returned without a Return Authorization number. All transportation charges must be PREPAID. If, upon examination by DPS, the component is determined to be defective in either workmanship or material, DPS will repair or replace (at its option) such component without charge for either component(s) or labor. Expendable items such as audiovisual materials, bulbs, filters, fuses, belts, etc., are not warranted.

B. Telephone, fax and on-line support will be provided by DPS as needed. Under extraordinary conditions, as determined solely by DPS, additional on-site service support calls will be made by DPS during this initial period at no additional cost to the original purchaser.

C. DPS shall have no liability for any loss or damage, direct or consequential, arising out of the use or the inability to use the Simulation Systems.

D. This warranty does not apply to any product that has been subject to negligence, accident, misuse, improper operation, or has in any way, been tampered with, altered or repaired by any person other than DPS, an authorized DPS service organization or to any product which has not been serviced and maintained in accordance with DPS's or other manufacturer's operation and maintenance manual or related instructions, or whose serial number has been altered, defaced, or removed. Monitor or Plasma Display image burn-in is not covered. Warnings in the User's Guides for proper operation must be adhered to.

E. Transporting, storing, or operating the simulation systems without proper protection to prevent moisture, dust, dirt, or other foreign matter from falling on or blowing into the system shall be considered negligence, misuse and improper operation, which shall void all warranty

Except as expressly set forth herein, no other warranties are made by DPS, with respect to any implied warranties of merchantability or fitness for purpose, and no one is authorized to make any representation, give any guarantee, warranty, or assume any liability on behalf of DPS, or impose any obligation in connection with the sale or use of any DPS product, other than stated above.

Upon the expiration of the initial Warranty and Service Support, DPS offers continuing maintenance service support on either a Contract or Demand (per call) basis.

DPS-03-0707

DORON®
PRECISION SYSTEMS, INC.
SINCE 1973

CUSTOMER SERVICE AND TECHNICAL SUPPORT
Dedicated to your long term satisfaction

Since 1973, Doron has maintained a Department of full-time factory trained service technicians responsible for the installation and maintenance of your system(s). Doron understands that all customers deserve prompt, high quality customer service. Doron guarantees quality, prompt **on-site** services, superior to any other driving simulation system manufacturer you will find.

Service technicians are strategically located throughout the United States to provide timely and cost-effective support to customers for a variety of applications. All Doron customer service technicians are factory trained and possess a background on computer systems, digital and analog electronics and mechanical maintenance. Doron assigns service responsibility for each customer to a specific service technician. Every customer service technician maintains a stock of common parts to expedite the repair of your system.

Additionally, Doron's Customer Service Department is fully supported by an extensive spares inventory at the corporate headquarters in Binghamton, New York. Replacement parts are always available via overnight delivery services.

Technical Support for Doron customers is available via telephone, fax and email. Conveniently, many of Doron's interactive systems also include the capacity for certain software related diagnostic and maintenance services to be performed through modem interface.

Doron **offers on-site maintenance service for all of its products** on either a contract or per call basis. Per call service is charged at current hourly rates, portal to portal, plus travel (air or other public transportation), with a minimum charge of six hours. There is never a charge to the customer for necessary on-site support or parts during the Warranty/Service period or any period covered by a service agreement.

Mr. Mark Rothwell, Doron's Manager of Customer Service, and his professional service team are wholly dedicated to your long term satisfaction. **Accordingly, Doron Precision Systems, Inc. has hundreds of repeat customers based on the quality of our products and superior customer service.**

DPS-02-0609

DORON®
PRECISION SYSTEMS, INC.
SINCE 1973

P.O. Box 400, Binghamton, NY 13902-0400, 607-772-1610, Fax 607-772-6760
Email: sales@doronprecision.com   www.doronprecision.com

MAINTENANCE SERVICE POLICY

Doron understands the need of its customers to have prompt, high quality maintenance services available. For this reason, since its founding in 1973, Doron has always taken pride in its Customer Service Department. It is staffed with Doron employees trained in the servicing of its systems, and specializes in Doron systems only. The department is supported by the Doron's spares inventory in Binghamton, NY which includes a large supply of replacement parts. In addition, each Field Service Technician maintains an inventory of selected replacement parts, which supports the majority of normal needs. Parts are always available from Doron's extensive inventory of spares at its Binghamton headquarters via overnight delivery services.

It is general policy to assign service responsibility for each customer to a single service technician. In the event this person is unavailable due to prior commitment or unusual circumstances, Doron will, in emergencies, assign the call(s) to the nearest available service technician.

Although Doron guarantees to provide quality prompt on-site service, superior to any other driving simulation system manufacturer it knows of, the Company cannot provide specific guarantees. Doron does guarantee to provide its best efforts at all times.

The Company offers on-site maintenance service on all of its products on either contract or per-call/demand basis. Per-call/demand service is charged at current hourly rates, portal-to-portal, plus travel (air or other public transportation), minimum charge of six hours.

Replacement parts are generally included in contracts, with exception of expendable items (such as lamps, printer paper, fuses, etc.) and any other items defined in the specific contract. Replacement parts are otherwise sold only to customers or to authorized service organizations trained and approved by Doron. It is the Company's policy to sell parts to authorized organizations only. This is to help assure quality maintenance of Doron systems.

Likewise, Doron services only its products and systems and does not maintain inventories of parts or manuals for systems manufactured by others. Doron personnel have not been trained on servicing other products or systems.

DPS-04-0707

DORON®
PRECISION SYSTEMS, INC.
SINCE 1973

P.O. Box 400, Binghamton, NY 13902-0400, 607-772-1610, Fax 607-772-6760
Email: sales@doronprecision.com   www.doronprecision.com

TRAINING SERVICES

Doron's driver training specialists have combined experience of over 100 years in teaching driver education and traffic safety. Doron's training team includes professionals with advanced degrees in traffic safety and extensive experience in training new and experienced drivers of automobiles, buses, trucks and emergency vehicles. Doron's law enforcement training specialists are certified by California POST.

Doron's comprehensive training program covers the operation of the system and all of its features. This includes training in the effective use of simulation and Doron's simulation curriculum in driver education/training programs. Doron's training specialists demonstrate how to customize training programs using Doron's easy to use Scenario Developer with its interactive systems and bar coding with its semi-interactive systems.

Training is provided on-site on the system the instructors will be using and is tailored to meet the needs of the customer.

Customers are provided with a comprehensive user's guide with each simulator system. This user's guide details each function and feature of the system and is a convenient reference for customers' instructors.

DSS-02-0205

SAMPLING OF
LAW ENFORCEMENT REFERENCES

Police Departments/Academies

City of Sacramento Police Department
Sacramento Regional Driver Training Facility
Mather Air Field, 3905 Alert Road
Mather, CA 95655
Sgt. Mike Smith
916-228-3858
System: 4 Place 450LE

Connecticut State Police Academy
Mulcahy Complex–294 Colony Street, Bldg. #10
Meriden, CT 06450
Sgt. Katherine Teel
203-238-6505
System: 2 Place 450LE

Denver Police Department
8895 Montview Boulevard
Denver, CO 80207
Lt. Joe Ferraro
303-370-1500
System: 4 Place AMOS II

Maryland Police Training Commission
7310 Slacks Road
Sykesville, MD 21784
Director Dan Dazzo
410-549-5732
4 Place AMOS

Monmouth County Police Academy
Kozloski Road
Freehold, NJ 07728
Sgt. Richard L. Maxwell
732-857-5655
System: 1 Place 450LE

Newark Police Department
Academy Firing Range
914 DeLancy Street
Newark, NJ 07105
Sgt. Sean Gaven
973-733-7912
System: 1 Place 550LE

Newington Police Department
(Capitol Reg. Chiefs of Police Assoc.)
131 Cedar Street
Newington, CT 06111
Chief Richard Mulhall
860-594-6220
System: 3 Place 450LE

County of Passaic Police Academy
214 Oldham Road
Wayne, NJ 07470
Director Robert A. Lyons
973-595-6411
System: 1 Place 550LE

Philadelphia Police Academy
8501 State Road
Philadelphia, Pennsylvania 19136
Lt. Bill Walsh
215-685-8086
Systems: 2 place 550LE & 8 place L350

Raleigh Police Department
8401 Battle Bridge Road
Raleigh, NC 27616
Tony Rogers
919-662-5721
System: 2 place 550LE

Honolulu Police Department
93-093 Waipahu Depot Road
Waipahu, HI 96797
Brian Tokita
808-677-1474 x228
System: 3 place 450LE

Westchester County Police Academy
One Saw Mill River Parkway
Hawthorne, NY 10532
Sgt. Mike Hagan
914-864-7674
System: 2 place 550LE in Trailer

Middlesex County Prosecutor's Training Center
Nixon Station
Mill Road
Edison, NJ 08817
Investigator Pat Dacey
732-857-5655
System: 1 place 450LE

Montgomery Co. Public Safety Training Academy
9710 Great Seneca Highway
Rockville, MD 20850
Officer Fernando Carvatal
301-279-1426
System: 2 place 550LE

Sheriff Departments

Allegheny County Police Training Academy
700 West Ridge Drive
Allison Park, PA 15101
Deputy Sheriff Bill Ament
724-935-5566, Ext. 229
System: 1 Place AMOS II

Union County Sheriff's Office
3344 Presson Road
Monroe, NC 28112
Sgt. David Pierce
704-292-2664
System: 1 place 550LE

Colleges

Allan Hancock College
800 South College Drive
Santa Maria, CA 93454
805-925-6874
System: 4 Place AMOS II

Essex College Police Academy
250 Grove Avenue
Cedar Grove, NJ 07009
Lt. Peter Cokelett
973-818-1824
System: 1 Place 450LE

Jefferson College
1000 Viking Drive
Hillsboro, MO 53050
Chief Henry Wiseman
636-797-3000 x420
System: 1 Place 450LE

Pitt Community College
1986 Pitt Tech Road
Winterville, NC 28590
Jeffrey B. Robinson, Dir. – Law Enforcement
252-321-4572
System: 1 Place 450LE

Santa Rosa Junior College
Santa Rosa Training Center
5743 Skylane Blvd.
Windsor, CA 95492
April Chapman
707-836-2912
System: 4 Place AMOS II

Risk Management

Local Government Risk
Management Services, Inc.
315 West Ponce De Leon Avenue, Suite 356
Decatur, GA 30030
Dave Gelsthorpe, Director
404-377-2677
System: 1 Place 450LE

Massachusetts Interlocal Insurance Assoc.
60 Temple Place
Boston, MA 30030
Jeff Siena
617-426-7272
System: 1 place 550LE in trailer

Indiana Public Employers Plan
Downey Insurance Group
302 South Reed Road
Kokomo, IN 46903
Randy Sapp
765-252-3002
System: 1 place 550LE in Trailer

Arkansas Municipal League
301 West 2nd Street
North Little Rock, AR 72114-5503
Don Zimmerman
501-374-3484 x100
System: 1 place 550LE

Philadelphia Police

Philadelphia Police Academy

Size: Total Sworn officers: 6,983; Total Civilian: 1,897

System Installation: 1999 – 1 place A.M.O.S.* and 8 place L-300
*Replaced in 2007 with 2 place 550LE

Project Goal: Improve perceptual skills of new officers and provide remedial training for
officers with traffic incidents to reduce police vehicle accidents.

Accomplishments: 25% decrease in Police vehicle accidents since system installation
(1998 - 826 accidents / 2003 - 635 accidents)

The semi-interactive system provides a means to evaluate students' reaction time and improve their perceptual skills. The 8 place L-300 system promotes group interaction, facilitating a better learning environment.

A member of Doron's training team, who developed the Pennsylvania Municipal Training Program, integrated Doron's training lessons with this mandated program. All new Philadelphia police officers participate in this mandated program using Doron's semi-interactive system.

The 1 place A.M.O.S. system is being utilized for retraining officers who have had multi crashes and also for officers who have violated department regulations. The systems have complemented each other in providing a driver training program that is effectively reducing liability costs for the city of Philadelphia.

The Philadelphia Fire Department has been serving Philadelphia for 256 years, and operates 78 engines and 34 ladders combining for 162,618 total runs (FY 2002). It is interesting to note that the same perceptual driving simulation program is being used by the Philadelphia Fire Academy with similar success in accident reduction. The Philadelphia Fire Academy uses the 8 place L-300 Doron driving simulation system.

As a result of the success demonstrated by the 1 place A.M.O.S. system purchased in 1999, the Philadelphia Police Department ordered a 2 place 550LE system to replace the 1 place A.M.O.S. system. This new system was delivered and installed in August 2007.
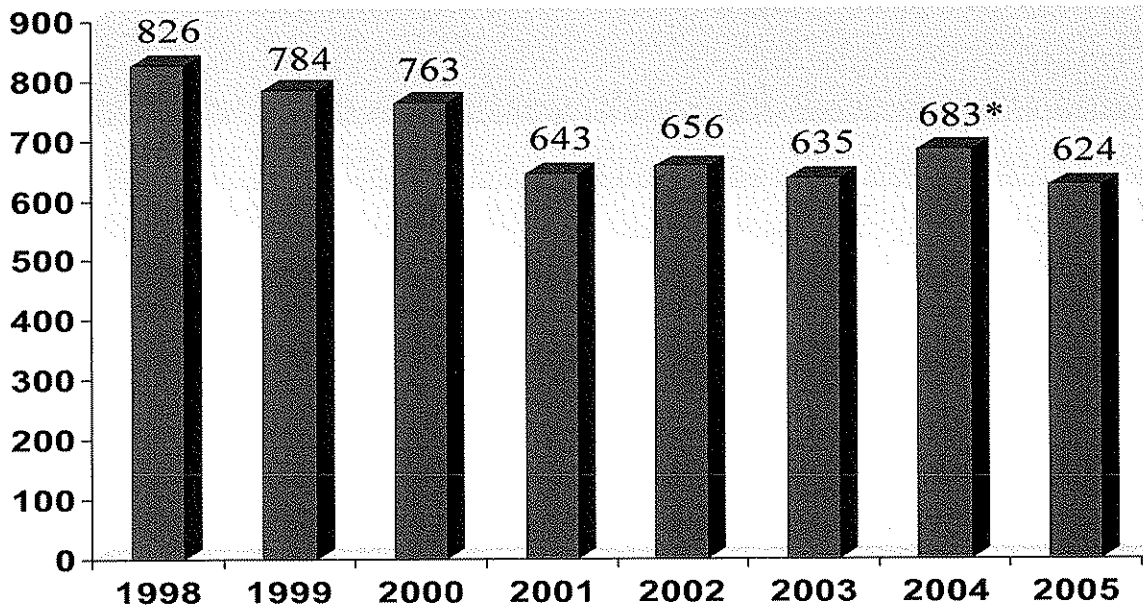
LE-13-0209

PHILADELPHIA
POLICE DEPARTMENT

ACCIDENT PREVENTION UNIT
VEHICLE ACCIDENT CHART

Chart: Vehicle accidents by year
- 1998: 826
- 1999: 784
- 2000: 763
- 2001: 643
- 2002: 656
- 2003: 635
- 2004: 683*
- 2005: 624

*increase attributable to shortage of training staff

25% Reduction

Based on information provided by the Philadelphia Police Department from the years 1998-2005
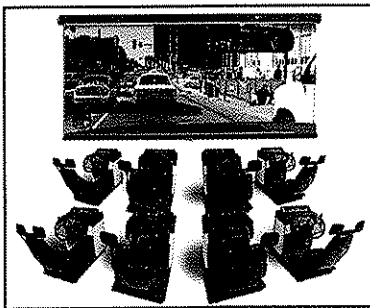
In early 1999 two (2) Doron Driving Simulator Systems were installed and a comprehensive simulation based law enforcement driver training program was instituted.
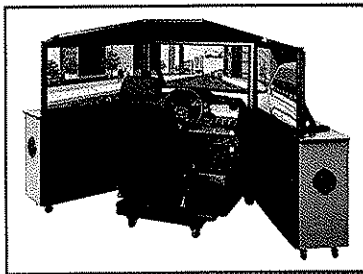
The program consists of...

8 - PLACE: SEMI-INTERACTIVE SYSTEM
including Doron's library of training programs

2- PLACE: 550LE FULLY INTERACTIVE SYSTEM
including Doron's library of California P.O.S.T. certified scenarios

The comprehensive system approach was used in conjunction with a Perceptual Driver Improvement Program developed by Indiana University of Pennsylvania.

DORON
PRECISION SYSTEMS, INC.

DSS-sb-10-1007

CLACKAMAS COUNTY SHERIFF'S OFFICE (CCSO), OREGON

Size
- 400 department members
- 2,000 total county employees
- More than 2,000,000 miles patrolled and over 72,000 calls for service

Project Goal
- Implementing an efficient training program for enhancing specific driving skills, in conjunction with hands-on, Behind-The-Wheel driving
- Integration with other law enforcement training programs, cost savings, risk mitigation

System Installation (FY 2005)
- 550LE™ (4-place)
- Modular truck driving position that can be easily interchanged with any one of the four 550LE law enforcement driving positions

Applications for Doron's 460Bus™
- Conducting integrated law enforcement training that includes driving simulation, firearms simulation, defensive tactics and live fire at the county's state-of-the-art training center
- Building community partnerships through driver education programs for young adults and elderly drivers

Expected Results
- 20% reduction in the number of collisions
- Significant revenue generation through usage by external organizations

The Clackamas County Sheriff's Office is among the pioneers in law enforcement training in the state of Oregon. Its Public Safety Training Center implements an integrated training program that includes Doron's 550LE integrating seamlessly with defensive tactics and firearms training. Effective training on pursuit management, collision avoidance and adherence to County Driving Policy is imparted in a simulated driving environment.

The Clackamas County Sheriff's Office started assessing their driver training requirements in 2001. Representatives from Doron worked closely with the office personnel to present a training program consisting of Doron's 550LE system with training units and a comprehensive training curriculum. In 2005, after detailed assessment of a number of suppliers and product demonstrations, an evaluation committee with Clackamas County awarded the contract to Doron. The committee evaluated proposals on specific, best value criteria. Doron's score was higher than all competitors in every category.

"Doron fully met the goals and objectives of the Sheriff's Office. It's a pleasure to work with Doron's team. They have been a tremendous resource and support for us" remarked Captain Michael Machado, Administrative Service Commander with the Sheriff's Office at a grand opening ceremony marked by significant media coverage. Captain Machado expects a 20% reduction in number of collisions with consequent reductions in worker compensation claims, liabilities, vehicle damage costs, property damage costs and litigation costs.

LE-14-1105

460/550FIRE REFERENCES

City of Memphis Fire Services
4341 OK Robertson Road
Memphis, TN 38127
Chief Sidney Minton
901-354-6769
System: 2 place 460Fire & 1 place 550Fire

Montgomery County Fire & Rescue
9710 Great Seneca Highway
Rockville, MD 20850
Chief Michael Clemens
301-279-1314
System: 3 place 460Fire w/3 Bus Modular Driving Positions
       & 1 Ambulance Modular Driving Position
       2 place 550LE

City of Wilmington Fire Department
801 Market Street
Wilmington, NC 28401
Chris Nelson
910-343-4783
System: 1 place 460Fire

Lee County Public Safety
Edison College-Lee Campus
Gresham Hall Building B
8099 College Parkway SW
Fort Myers, FL 33919
David Kainrad
239-335-1614
System: 2 place 460EMS

Perth Amboy Fire Department
375 New Brunswick Avenue
Perth Amboy, NJ 08861
Chief Lawrence Cattano
732-826-8256
System: 1 place 460Fire

Bergen County Law & Public
Safety Institute
281 Campgaw Road
Mahwah, NJ 07430
Chief Robert Peacock
201-785-6010
System: 1 place 460Fire

Roanoke Fire-EMS Department
713 3rd Street SW
Roanoke, VA 24016
Battalion Chief Teddy Adkins
540-387-6916
System: 1 place 460Fire & 1 place 550LE

North Little Rock Fire Department
723 Maple Street
North Little Rock, AR 72114
Chief Robert Mauldin
501-340-5386
System: 1 place 460Fire

City of San Diego Fire-Rescue Department
2580 Kincaid Road
San Diego, CA 92101-0804
Chief Matt Nilsen
619-692-4981
System: 1 place 460Fire w/1 place 550Fire in trailer

City of Toronto Fire Services
895 Eastern Avenue
Toronto, ON M4L 1A2 CANADA
Division Chief Doug Silver
416-338-9104
System: 1 place 460Fire

Guilford Technical Community College
601 High Point Road
Jamestown, NC 27872
David Reeves
336-334-4822 x2289
System: 1 place 460EMS

Los Angeles County Fire Department
12605 Osborne Street
Pacoima, CA 91331
Chief Ed Broomfield
213-200-2168
System: 1 place 460Fire & 1 place 550LE in Trailer

Kenosha Fire Department
Fire Station No. 1
625 52nd Street
Kenosha, WI 53140
Fire Inspector Guy Santelli
262-653-4110
System: 1 place 460Fire w/1 place 550Fire

Phoenix Fire Department
2430 South 22nd Avenue
Phoenix, AZ 85009
Wes Patterson
602-261-8021
System: 2 place 460Fire & 1 place 550Fire

460/550FIRE REFERENCES

City of Portland
Fire Dept. Central Station
380 Congress Street
Portland, ME 04101
Chief Ron Jones
207-650-6499
System: 1 place 460 Fire & 1 place 550LE in Trailer

Honolulu Fire Department
Training & Research
90 Valkenburgh Street
Honolulu, HI 96818
Chief Ed Hunter
808-422-1461
System: 1 place 460Fire

Albuquerque Fire Department
Training Division
11500 Sunset Gardens Road SW
Albuquerque, NM 87121-7758
Arne Valentine
505-768-1991
System: 2 place 550Fire

US Army Garrison Ansbach
DES Fire Department
IMCOM-E Firefighting Training Center
Attn: IMEU-ANS-ESF
Unit 28614
APO AE 09177
System: 1 place 460Fire

Orange County Fire & Rescue Training
2976 Forsyth Road
Winter Park, FL 32792
Chief William Sturgeon
407-254-9015
System: 1 place 460Fire

Chandler Fire Department
3550 South Dobson Road
Chandler, AZ 82286
Chief Kevin Gale
480-782-2131
System: 1 place 460Fire

Fairfax County Fire & Rescue Department
Training Academy
4600 West Ox Road
Fairfax, VA 22030
Captain Elton Wright
703-246-2126
System: 1 place 460Fire and 1 place 550Fire in Trailer

TRANSIT AND SCHOOL BUS REFERENCES

VOTRAN
East Volusia Transit Authority
950 Big Tree Road
South Daytona, FL 32119
Jim Dorsten
386-756-7496
System: 1 place 460Bus

Charlotte Area Transit System
South Tryon Bus Facility
3145 South Tryon Street
Charlotte, NC 28202
Marvin Bohon, Manager of Safety & Security
704-336-7661
Systems: 1 Place 460Bus; 6 Place 400Bus

Broward County Mass Transit
3201 West Copans Road
Pompano Beach, FL 33069
Ray Burger, Supervisor of Safety & Training
954-357-8399
Systems: 6 Place L225; 3 Place 460Bus

New Jersey Transit Training Center
701 Ferry Street
Newark, NJ 07105
Ms. Pat Connelly, Director
973-522-3725
Systems: 1 place L301VMT; 6 Place L300Bus
10 Place L300Bus

Greater Cleveland Regional Transit
2440 Woodhill Road
Cleveland, OH 44104
Joyce Thompson
216-390-1128
System: 1 place L301/VMT; 8 Place L300 Bus

Kansas City Area Transportation Authority
1350 East 17th Street
Kansas City, MO 64108
Tom Rodman
816-346-0842
System: 2 Place 460Bus

Capital Area Transit
901 North Cameron Street
Harrisburg, PA 17105
Mike Henry
717-233-5657
System: 1 Place 460Bus w/550 Modular Driving Position

Go Transit
200 Steeprock Drive
Toronto, Ontario M3J 2T4 CANADA
Graham Armitage, Driver Safety & Training Director
416-638-6776 x2253
System: 1 Place 460Bus

CENTRO
200 Cortland Avenue
Syracuse, NY 13205
Joseph De Gray, Director of Transit Operations
315-442-3404
System: Two (2) 1 Place 460Bus

Southeastern Pennsylvania Transit Authority
1234 Market Street
Philadelphia, PA 19107
James Grosso, Manager of Surface Operations
215-580-7938
System: 6 Place L300 Bus Customized Program

Greater Richmond Transit
101 South Davis Avenue
Richmond, VA 23220
Mark Cater, Manager of Training
804-358-3871, Ext. 329
System: 4 Place L300 Bus

South Bend Public Transportation Corporation
901 East Northside Boulevard
South Bend, IN 46623
Mike Stagly, Training
574-232-9901
Systems: 6 Place L350Van; 2 Place L300HGV Bus

Nashville MTA
130 Nestor Street
Nashville, TN 37210
Melissa Riley, Training Manager
615-880-3966
Systems: 1 Place 460Bus; 3 Place 400Bus

South Central Transit
c/o The Tech Center
100 North Locust Street
Centralia, IL 62801
Darrell Wimberly, Director
618-532-0189 x132
Systems: 1 Place 460Bus; 3 Place 400Car

Arizona School Risk Retention Trust, Inc.
1112 West Camelback Road
Phoenix, AZ 85013
David Frandsen
602-222-2140
System: 1 place 460School Bus

Prince William County Public Schools
12153 Hooe Road
Bristow, VA 20136
Scott Withee, Supervisor Transportation Planning
703-368-7297
System: 1 place 460School Bus

Hampton Roads Transit
509 East 18th Street
Norfolk, VA 23504
Tony Ferguson, Training Coordinator
757-222-6120
System: 6 place L300Bus

Blacksburg Transit
2800 Commerce Street
Blacksburg, VA 24060
Kevin Price, Safety & Training Coordinator
540-961-1185
System: 1 place 460Bus

NJT - New Jersey Transit
(Maplewood & Camden Training Facilities)

Size:
- 2197 Buses (FY 2001) / 3400 Operators covering 5,325 sq.miles

- 3rd largest provider of bus, rail, and light transit in the United States.
  (2348.8 Million passenger miles each year)

System Installation:
(original)

1994 - VMT Bus (interactive) in Maplewood
L-300Bus (10-position) in Maplewood
L-300Bus (6-position) in Camden

(addition)

2001 - VMT Bus (interactive) in Camden
L-300Bus in Camden (additional 4-position)

Project Goal:

Reduce the number of training days required by each operator while increasing the quality of training. By decreasing the number of training days for each new operator, the training staff can train more new operators in less time.

Accomplishments:

- $375,000 in savings per year

- Training and testing time reduced from 19 to 18 days

- 20% reduction in accidents

- Significant revenue generated from providing training to outside agencies and organizations

Doron met with NJ Transit's training and management teams several times to clearly understand their needs. Doron proposed a unique and comprehensive simulator training program that would achieve all of the training objectives set forth by NJT. In September of 1994, Doron installed one (1) interactive simulator system in Maplewood, a 10 position semi-interactive system in Maplewood, and a 6 position semi-interactive system in Camden. The interactive system was customized to simulate a Flexible Bus similar to that used by the NJ Transit fleet at the time. The semi-interactive cabs were designed around the MCI bus that NJ Transit still uses today.

In September 2001, Doron installed one (1) interactive driving simulator system, plus an additional four (4) semi-interactive driving simulator cabs in Camden adding onto their existing system. In addition to the new simulator installation, Doron upgraded the original visual system with state of the art video projection technology. The Flexible bus cab originally designed in 1994 was upgraded to an MCI cab to accommodate the new bus fleet. Doron's innovative engineering team worked closely with the staff at New Jersey Transit to modify and upgrade both simulator systems to a specific bus configuration to meet their training program objectives. Doron's training team also worked with the training staff at New Jersey Transit to integrate simulation training to reduce training time and increase trainee throughput, to produce better drivers. NJT currently trains over 500 drivers annually on their simulator systems.

NJ Transit has seen many benefits and an excellent return on its investment since the original purchase in 1994. NJ Transit has been quoted in national publications stating **"If you add up the reduction of insurance, maintenance and gas costs, the agency saved $375,000 a year". They also have seen training and testing time decrease from 19 to 18 days. Accidents have also dropped. Operators had 42.6 accidents per million miles in 1994. That number dropped to 34.1 by 1998.**

The simulators have also been revenue generators for New Jersey Transit. The agency has been using the systems to provide training to private carriers, utility companies and other transit organizations in the area.

BUS-10-0204