2013 Annual Report
TRANSPORTATION RESEARCH CENTER INC.

2013 Annual Report
Transportation Research Center Inc. (TRC Inc.) independently manages a transportation research and testing facility serving the needs of industries, governments, trade associations, and educational organizations worldwide. Transportation Research Center (the Center) is located near East Liberty, Ohio, approximately 40 miles northwest of Columbus. Because much of TRC Inc.’s work is proprietary, many projects are described in general terms. However, the information presented on the following pages will provide the extent of TRC Inc.’s capabilities.

History

The Center was developed by the State of Ohio as a transportation research and development proving ground with the purpose of encouraging motor vehicle research and development activities in Ohio. The Center began testing in 1974. In 1979, the State of Ohio’s Transportation Research Board entered into a management agreement with The Ohio State University’s (University) College of Engineering to oversee the operations of the Center. In 1987, the Center was sold as part of an economic inducement to Honda of America Manufacturing, Inc. to build an automobile plant in Ohio. In order to ensure that the business of the Center could be preserved without violating the confidentiality of the Center’s customers, the University established Transportation Research Center Inc., a non-profit corporation. TRC Inc. is governed by a Board of Directors chaired by the University’s Dean of the College of Engineering.

Mission Statement
As a global independent provider of development, research and testing, TRC Inc. serves the mobility industry with a world-class facility, high-quality services and innovative solutions through collaboration and partnerships with academia, industry and government, while satisfying stakeholder expectations.

Vision
To be the global leader in mobility development, research and testing solutions.

Quality
We will strive to meet or exceed customer expectations.

Environmental
We will strive to protect the environment and assure safe and healthful working conditions.

ISO 9001 and ISO 14001 Registered
ISO 17025 Accreditation

Equal Employment Opportunity
It is the policy of TRC Inc. to provide equal opportunity in all areas of employment practices, without regard to race, color, religion, national origin, sex, age, disability, veteran status, or any other reason prohibited by law.
I am pleased to present, on behalf of our staff, the Annual Report for Transportation Research Center Inc. (TRC Inc.) for Fiscal Year ended June 30, 2013.

TRC Inc. oversaw the rehabilitation of the 7.5-Mile Test Track during the past year. This effort consisted of pulverizing the concrete straightaways and reconditioning sections in both curves, followed by a 7-inch asphalt overlay. The project significantly improved the surface of the track and will permit high-speed vehicle testing. This project was made possible with the help of Ohio Governor John Kasich, grants from JobsOhio and the Ohio Department of Transportation.

The economic condition of the US continued to improve during the past fiscal year. The automotive industry in particular showed strong signs of recovery through increased sales; however, TRC Inc.'s customers continue to be cautious and are striving to reduce costs.

Total Operating Revenue for Fiscal Year 2013 was $50.6 million. The past year was impacted by the rehabilitation of the 7.5-Mile Test Track and the general slowdown of development, research and testing activities. Capital investments during the period included the purchase of dummy calibration and data acquisition equipment and high-speed digital cameras. In addition, construction began on a 1.5-mile Motor-Cross All-Terrain Vehicle Course. Funding was also available to maintain the test facilities and equipment.

TRC Inc. remains an ongoing sponsor of the Automotive News Pace Awards, now entering its 20th year. The program recognizes automotive suppliers for excellence and innovation and enables us to strengthen our relationship with our customers by providing opportunities to improve technology. TRC Inc. has also become a competition-level sponsor for the EcoCAR 2 Year Three emissions testing event, where TRC Inc. will be providing the facilities, resources and testing expertise to help educate the next generation of automotive engineers.

We continue to maintain a strong relationship with The Ohio State University through transfers to the University Endowment Portfolio to support transportation research in the College of Engineering. TRC Inc. also provides assistance for numerous student engineering projects and maintains consortium memberships in the OSU Center for Automotive Research, Smart Car Vehicle Concept Center and Center for Child Injury Prevention Research Studies (CChIPS).

TRC Inc. will continue to pursue its vision to be a global leader in mobility development, research and testing solutions during the next year. In addition, TRC Inc. will continue to explore opportunities to expand its capabilities through collaboration and partnering with The Ohio State University.

I would like to thank the TRC Inc. staff for their support in providing quality services, and the TRC Inc. Board of Directors for their guidance and support during the past year.

Rick D. Gildow

President’s Message
### Timeline of TRC from 1962 to 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<td>75</td>
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</table>
Introduction

Over the past 39 years, Transportation Research Center Inc. (TRC Inc.) has gained a reputation as the world’s leading provider of vehicular testing services. This reputation has been maintained, not only because of the quality of the services offered, but also because the challenges that each year brings are viewed as new and exciting opportunities for growth.

Since Transportation Research Center (the Center) began operations in 1974, new programs have been developed for customers in the areas of collision avoidance, energy absorption, fuel economy, emissions, durability, performance, noise, crash simulation, and crashworthiness (please refer to the timeline presented below for an overview of our progress). Test programs evaluate the performance of passenger cars, trucks, airplanes, tracked vehicles, off-road vehicles, recreational vehicles, buses, motorcycles, electric vehicles, and automotive components. TRC Inc. schedules and monitors all facilities, with primary importance placed on the safety and security of each customer.

TRC Inc. is continually improving and adapting to meet changing customer needs. To enhance the Center and TRC Inc.'s overall service offerings, new facilities have been designed to assist customers in developing safe and marketable products. To complement our new facilities, TRC Inc. is ISO 9001 and 14001 registered, and maintains a 17025 accreditation. These registrations and accreditations demonstrate TRC Inc.'s commitment to customers. We will continue to measure and improve the quality of the services we provide.

The following pages of this report are dedicated to describing each of TRC Inc.'s primary business areas - Durability and Dynamics Operations, Laboratory Operations, and Contract Services - including a brief review of their activities and accomplishments during the past year.
Facilities, Equipment, & Operational Changes

Under the terms of our Management Agreement, Transportation Research Center Inc. (TRC Inc.) exclusively schedules the facilities and equipment of Transportation Research Center (the Center). In addition, TRC Inc. maintains the facilities and buildings, which include approximately 150 lane miles of improved and unimproved road surfaces and 328,000 square feet of building space. Annual extensive facility upgrades are made through maintenance and repair, procurement of equipment, and facility construction, based on customer survey feedback.

For Fiscal Year 2013 we allocated resources for repairs and upgrades of existing facilities to continue to meet customer demand.

Ongoing projects include an eight-year initiative to reduce carbon dioxide emissions by 20% by the year 2020, as well as a two-year capital project to upgrade the Emissions Laboratory temperature control. TRC Inc. continues to strive to protect the environment and ensure safe and healthful working conditions as part of our environmental management system.

Durability and Dynamics Operations upgrades included the complete resurfacing of the 7.5-Mile Test Track. The original track consisted of concrete and asphalt lanes, but is now completely resurfaced with asphalt. The rehabilitation process will help prevent reflective cracking and create a smoother surface, allowing for greater utilization of the straightaways and permitting the return of high speeds in the curves. Durability and Dynamics Operations also kicked off the construction of a new Motor Cross All-Terrain Vehicle (ATV) Course. The 1.5-mile unpaved course will provide users the opportunity to test for suspension, handling, and durability.

Laboratory Operations received upgrades in both the Impact Laboratory and the Emissions Laboratory. The Impact Laboratory purchased several pieces of equipment to improve dummy calibration, data acquisition, and camera capabilities. The Emissions Laboratory recommissioned the Sealed Housing for Evaporative Determination (SHED), which improves capabilities for automotive evaporative emissions testing.

We will continue to invest in facilities, equipment, and operations to meet the continued needs of our customers.
The Organization

**Durability & Dynamics Operations**

Durability and Dynamics Operations (DDO) experienced a 23% decrease in revenue from Fiscal Year 2012. The majority of DDO testing in Fiscal Year 2013 was for fuel economy and new vehicle technologies. TRC Inc. evaluates the benefit of fuel-efficient devices, compares vehicle components, and compares competitive vehicles according to a variety of fuel economy standards. TRC Inc. also performed testing for new vehicle technologies including, forward collision warning systems, lane departure warning systems, and connected vehicle research programs. As gasoline prices continue to fluctuate and new vehicle technologies are developed, DDO expects this testing to remain steady in Fiscal Year 2014.

DDO’s primary testing involves powertrain, rough road, chassis, corrosion, and fuel additives. In addition, we conduct brake, skid truck correlation, and vehicle handling testing to FMVSS, SAE, and ASTM Standards. DDO maintains a 24-hour-a-day, 7-day-a-week operation for rapid, safe mileage accumulation.

The following table represents the percentage of business by industry classification for Fiscal Year 2013:

<table>
<thead>
<tr>
<th>Industry Classification</th>
<th>2013</th>
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</thead>
<tbody>
<tr>
<td>Vehicle Manufacturers</td>
<td>81%</td>
</tr>
<tr>
<td>Component Manufacturers</td>
<td>8%</td>
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<tr>
<td>Government Organizations</td>
<td>4%</td>
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<tr>
<td>Independent Labs</td>
<td>4%</td>
</tr>
<tr>
<td>Fuels &amp; Lubricants</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
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</tbody>
</table>

DDO continued to support its core customers from government and industry, including research in brake, dynamic rollover resistance, forward collision and lane departure warning testing, and quieter vehicle testing. TRC Inc. has implemented several new pieces of equipment, including the ABD Combined Brake and Accelerator Robot (CBAR), for forward collision warning testing and pass-by noise testing, new equipment for NCAP Fishhook testing, using the Dewetron data acquisition system, OxTS RT3003 inertia measurement unit, Kistler laser ride height sensors, ATI-Heitz Sprint 3 steering controller, and a new B&K Sound Level Meter to improve efficiency in pass-by noise testing.

A large amount of testing was conducted in support of the congressionally mandated quieter vehicle program. Research was conducted to identify potential methods of developing specification for vehicle sounds (audible countermeasures) for use in electric vehicles, plug-in hybrid electric vehicles, or hybrid electric vehicles operating in electric mode.

In order to meet customer expectations, TRC Inc. launched a new web scheduler program to provide a direct line of communication between resident customers and DDO’s Vehicle Operations group. The scheduler makes the facility test request process more accurate and efficient by allowing the customer to create a personalized login and password, so they can submit their facility testing requests.
Laboratory Operations

Laboratory Operations, which decreased 14% in revenues for Fiscal Year 2013, consists of both Impact Laboratory Operations and Emissions Laboratory Operations. Impact Laboratory Operations had a decrease both in crash testing and sled testing for Fiscal Year 2013. A total of 170 crash tests were conducted, which was a decrease of 19% from Fiscal Year 2012. Impact simulation testing on the HYGE sled totaled 77 tests, a decrease of 27% from Fiscal Year 2012. Additionally, the Emissions Laboratory Operations conducted a total of 278 tests in Fiscal Year 2013, which was a 23% decrease in testing from Fiscal Year 2012.

The majority of the Impact Laboratory’s crash work involved development and certification of automobiles and light trucks to meet occupant protection requirements established by the U.S. Federal and Canadian Motor Vehicle Safety Standards. The Impact Laboratory provided research and development of alternative-powered vehicles, and simulation testing for child safety seat crashworthiness. The majority of the Emissions Laboratory’s testing included fuel and fuel additive testing, small engine and vehicle emissions certification, and fuel economy devices and additives.

The following table shows the distribution of business by industry classification for Fiscal Year 2013:

<table>
<thead>
<tr>
<th>Industry Classification</th>
<th>2013</th>
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</thead>
<tbody>
<tr>
<td>Vehicle Manufacturers</td>
<td>48%</td>
</tr>
<tr>
<td>Government Organizations</td>
<td>26%</td>
</tr>
<tr>
<td>Fuels &amp; Lubricants</td>
<td>18%</td>
</tr>
<tr>
<td>Component Manufacturers</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>3%</td>
</tr>
</tbody>
</table>

In order to continue to meet our customers’ expectations for state of the art test equipment, improvements were made in both the Impact Laboratory and the Emissions Laboratory. The Impact Laboratory purchased five small high-speed digital cameras to bolster on-board camera capabilities, upgraded two copies of FARO digital coordinate measurement machine software to bolster measurement capability, purchased a new torso flex machine controller to support our dummy calibration capabilities, and purchased two new 32-channel Kayser-Threde Ki-dau data acquisition systems. The Emissions Laboratory added a new Sealed Housing for Evaporative Determination (SHED), which improves testing for automotive evaporative emissions and adds On-Board Refueling Vapor Recovery (ORVR) testing to TRC Inc.’s capabilities list.
The Organization

Contract Services

The mission of Contract Services is to provide customers with high-quality engineering and technical support to improve the safety, quality, and competitiveness of their products.

Contract Services is comprised of technical personnel whose services are dedicated to specific customers on a full-time basis. Their work predominantly involves research and development testing, including vehicle components, crashworthiness, crash avoidance, biomechanics, research analysis and test device and procedure development. The personnel in these groups include engineering technicians, mechanical and electronics technicians, engineering assistants, photographers, research engineers and research scientists.

The staff holds memberships in professional societies, including the Society of Automotive Engineers (SAE), and plays major roles in various technical committees. Numerous technical papers were authored or co-authored by our personnel during the past year. The affiliations, committee work, and publications bring recognition and industry/professional exposure to Transportation Research Center Inc.

The following table describes the percentage of business by industry classification for Fiscal Year 2013:

<table>
<thead>
<tr>
<th>Industry Classification</th>
<th>2013</th>
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</thead>
<tbody>
<tr>
<td>Government Organizations</td>
<td>55%</td>
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<tr>
<td>Vehicle Manufacturers</td>
<td>45%</td>
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</tbody>
</table>

As the auto industry continued to adjust and recover from the recession, we had forecast a decrease in revenue of 9%; however, due to increased employee headcount our revenues were stable from the prior year. For Fiscal Year 2014 we are predicting a level revenue stream and steady head count.
Registrations & Accreditations

Quality Planning, Assurance, Improvement & Control

Company Registrations

ISO 9001 Registration

As part of Transportation Research Center Inc.’s (TRC Inc.) commitment to customer satisfaction and continual improvement, the organization acquired registration to the ISO 9001:2008 Standard on January 7, 2012 (Certificate No. US004370-1). The ISO 9001 Standard is an international model for quality management systems. Organizations are required to identify and document best business practices, and to implement these practices to achieve consistent quality services to meet and exceed customer expectations.

TRC Inc. Quality Policy Statement:
We will strive to meet or exceed customer expectations.

Quality Principles:

1. Customer Focus: TRC Inc. is committed to ensuring that each employee understands who the customer is, what the customer expects, and how their processes support the delivery of customer services.
2. Continual Improvement: TRC Inc. is committed to continual improvement in TRC Inc.’s Management System by setting quality objectives and targets, and by evaluating our performance to those goals.
3. Compliance: TRC Inc. is committed to complying with all applicable statutory, regulatory, and customer requirements, as well as internal policies.
4. Communication & Understanding: TRC Inc. provides education and training to ensure understanding of the quality policy throughout the organization.

ISO 14001 Registration

TRC Inc. is registered to the ISO 14001:2004 Standard. The organization acquired registration to the ISO 14001:2004 Standard on January 7, 2012 (Certificate No. US004371-1). The ISO 14001:2004 Standard is a model for environmental management systems and addresses the management of business activities impacting the environment. Although not required by the ISO 14001 Standard, TRC Inc. has incorporated health and safety into our environmental program.

TRC Inc.’s Environmental, Health & Safety (EH&S) Policy Statement:
We will strive to protect the environment and assure safe and healthful working conditions.

EH&S Principles:

1. TRC Inc. is committed to continual improvement in its environmental, health, and safety program by setting objectives and targets and by evaluating our performance to those goals.
2. TRC Inc. is committed to prevention of pollution by using processes and materials that prevent, reduce, or minimize pollution. This commitment includes recycling, control mechanisms, material substitution, and efficient use of resources.
3. TRC Inc. is committed to compliance with all applicable environmental, health, and safety regulations, laws, and other internal and external requirements.
4. TRC Inc. provides education and training to ensure understanding of the environmental, health, and safety policies throughout the organization.

Company Accreditations

ISO 17025 Accreditation

As part of our commitment to customer satisfaction and continual improvement, TRC Inc. has been granted the ISO/IEC 17025:2005 Accreditation from the Laboratory Accreditation Bureau to perform the following tests:

- Fuel Injector Fouling Initial Performance (SCPI)
- Intake Valve Stick (IVS)
- Automotive Spark-Ignition Engine Fuel for Electronic Port Fuel Injector Fouling (PFI)
- Vehicle Crash Testing of Perimeter Barriers
The Activities

Sponsorship Activities & Community Relations

Transportation Research Center Inc. (TRC Inc.) has renewed its sponsorship of the Automotive News PACE™ Award for the 12th year. PACE™ is the acronym for Premier Automotive Suppliers’ Contribution to Excellence. Now in its 20th year, the PACE™ Award honors automotive suppliers who have embraced innovation or adapted and reinvented themselves to meet the demands of the OEM customer. This prestigious award sets the standard for innovation and excellence and has become a significant industry credential.

TRC Inc. has also become a competition-level sponsor for the EcoCAR 2 Year Three emissions testing event, where TRC Inc. will be providing the facilities, resources and testing expertise. EcoCAR 2: Plugging In to the Future is a three-year collegiate engineering competition and the only program of its kind. The competition’s mission is a vital one: offer an unparalleled hands-on, real-world experience to educate the next generation of automotive engineers. The competition challenges 15 universities across North America to reduce the environmental impact of a Chevrolet Malibu without compromising performance, safety and consumer acceptability.

Staff Activities / Community Service

TRC Inc. believes in maintaining its role as a good corporate citizen in the community. TRC Inc. provides financial support through payrolls, payroll taxes and local procurement of goods and services.

TRC Inc.’s “Partnership in Technology Scholarship” program provides $1,000 renewable college scholarships for high school seniors planning to major in a two- or four-year automotive-related field, as well as the opportunity for an internship at Transportation Research Center (the Center). Three first-year students were added this year for a total of 12 students receiving this award in Fiscal Year 2013.

Good corporate citizenship includes protecting the environment. At the Center, this is accomplished in a variety of ways, including the recycling of paper, plastics, glass and metals. TRC Inc. participates in the Ohio Department of Transportation’s Adopt-a-Highway program and supports the Keep Logan County Beautiful Committee, an organization that encourages recycling and litter prevention.

Child safety is promoted through TRC Inc.’s Child Seat Awareness Program, which provides employee reimbursement for the purchase of child restraints and assists the community through child restraint donation programs administered by local health departments.

The following organizations have benefited this Fiscal Year from TRC Inc.’s Community Relations programs:

- Adopt-A-Highway
- American Association of University of Women
- American Red Cross
- Antioch Shriners
- Discovery Riders
- Humane Societies of Logan & Union Counties
- Keep Logan County Beautiful Committee
- Local Food Pantries
- Logan County Agricultural Society
- Logan County Cancer Society
- Logan County Education Foundation
- Logan County Fraternal Order of Police
- March of Dimes
- Memorial Hospital of Union County
- Multiple Sclerosis Association of America
- Local Elementary Schools Seatbelt Safety
- Special Olympics
- United Way

TRC Inc. participated in the Logan County Elementary School Health Fair, with Vince and Larry, to teach students about seatbelt safety.
Board Changes

Mr. Geoffrey S. Chatas, Senior Vice President and Chief Fiscal Officer, The Ohio State University, was appointed to the Board on June 13, 2013, to complete a two-year term ending at the close of the annual meeting in 2013, and was elected to a two-year term ending at the close of the annual meeting in 2015. Mr. Chatas replaced Mr. George Hofmeister, Chairman of Ascalon LLC, who resigned in December 2012. Also, Mr. R. Michael Gray, University Controller, replaced Mr. Thomas F. Ewing, Interim University Controller. We thank Mr. Hofmeister and Mr. Ewing for their service to TRC Inc. and are pleased to welcome Mr. Chatas and Mr. Gray to the Board.