Research Council for Automobile Repairs

RCAR Newsletter

www.rcar.org

June 2004

RCAR People

JKC

Mr Yasuaki Kada retired on 18 June and Mr Minoru Suzuki has succeeded him as President of JKC.

Mr Kada joined JKC as President in June 2000 and has held this post for 4 years. He has also been a member of the RCAR Steering Committee during this time. While he was at JKC he revolutionised the business and culture at JKC by helping them to adopt and modernise as they moved into the 21st Century. In particular he introduced modern management techniques and achieved substantial progress in all areas. Last year he successfully organised the 30th Anniversary of JKC's foundation. Everyone at JKC regrets his departure and will miss his leadership. They wish him good health and every happiness in his retirement.

Yasuaki Kada

Minoru Suzuki

The new President of JKC, Mr Suzuki, has been Managing Director and General Manager of the Chubu-Hokuriku Division of the Tokyo Marine and Fire Insurance Company. He has worked for Tokyo Marine and Fire Insurance since 1970 and joined them soon after his graduation from Osaka University. He has been a Director of the company since 1999. JKC welcomes their Mr Suzuki and are sure that he will provide new impetus to the Centre.

(JKC is at www.jikencenter.co.jp)

Antonio Cassio dos Santos—New President of CESVI Brasil

CESVI Brasil has a new President. Wilson Toneto handed over to Antonio Cassio in July 2003. Cassio is also President of Groupo MAPFRE in Brasil, which is one of the largest groups in Europe and Latin America. Cassio is an economist with a Masters Degree in Business and Marketing from Vanderbilt University and a Corporate Finance MBA by IBMEC. He is also a member of LOMA—Life Office Management Association.

(CESVI Brasil is at www.cesvibrasil.com.br)

Special points of interest:

- *News from 11 RCAR Centres.*
- *RCAR People.*
- *Forthcoming Events.*
- *Dynamic Testing of Vehicle Seats and Head Restraints*

Inside this issue:

RCAR People

Laurette Stiles—New Head of Research at State Farm USA

Laurette Stiles was appointed Vice President—Strategic Resources in February 2004. Since joining State Farm in 1983, Laurette has had a varied career. She has worked her way through the Human Resources ranks from a personnel trainee to Vice President of Human Resources. She also has significant experience on the business side, with jobs including claim representative, assistant division manager and division manager, Vice President—Operations in Illinois and Vice President—Operations in the Fire Company (homeowner's insurance). During her career she has worked in California, Oregon, Illinois, Maryland and Corporate Headquarters.

Laurette is married to Chris, an Operations Manager in the Illinois Operations Center. They have three children: Kelsey 10, Steven 8 and David 6.

(State Farm is at www.statefarm.com)

Sang Tai Choi—New Chief of KART, Korea

Sang Tai Choi

Mr Sang Tai Choi took over from Mr Dong Beom Lee as Chief of KART on 1 April 2004. Mr Dong Beom Lee has been transferred to the Planning & Management Division of KIDI.

Mr Sang Tai Choi is no stranger to RCAR—many of you will remember him from the Seoul conference in 2001, at which time he was leader of the Research & Co-Ordination Team and was in charge of the practical arrangements for our highly successful RCAR meeting in Korea.

Mr Sang Don Lee has moved to the Technical Department at KART and Mr Sang Woo Shim is now the contact person for RCAR matters, although Sang Don Lee will stay in touch with Members.

(KART is at www.kidi.co.kr)

RCAR Steering Committee News

A number of Heads of Centre have retired or are in the process of retiring in 2004. This has affected the composition of the Steering Committee. Some new members have been elected, subject of course to the overriding agreement of the RCAR Members at the annual conference in Berlin.

RCAR Steering Committee Chairman

Ken Roberts will stand down at the annual conference in Berlin after 14 years as Chairman of the RCAR Steering Committee as he is retiring from Thatcham in October 2004. Steering Committee members have nominated Wilf Bedard of MPI Canada to succeed Ken as Chairman and Wilf has agreed to do so subject to the agreement of all Members.

RCAR Steering Committee Regional Members

The European centres voted on replacements for Ken Roberts, UK, and Antonio Estrada, Spain. Professor Dr Dieter Anselm, Germany, and Ignacio Perez, Spain, were nominated as the European regional members.

The Asian centres voted on a replacement member for Yasuaki Kada of Japan and agreed that his successor as President of JKC, Minoru Suzuki, should take over from him on the Steering Committee.

News From The Centres

ICBC—Canada

NHTSA Revises Policy On Child Seat Replacement Following ICBC and IIHS Studies

The National Highway Safety Administration in the USA (NHTSA) has revised its policy on replacement of Child Restraint Systems after they have been in a minor collision. NHTSA had previously adopted the same position as the manufacturers of child seats (that **ALL** seats should be replaced after **ANY** collision), but have now revised their position to reflect the replacement policy in effect at ICBC. NHTSA cited research conducted at ICBC and at IIHS as the reason for revising their policy.

ICBC investigated the necessity of replacing child seats after a minor collision in 1999, and presented the results at the 1999 RCAR Conference in Madrid. That research did not support the recommendations of child seat manufacturers. Tests showed that child seats could withstand 50 crashes which were the equivalent of the RCAR 15 m/h barrier crash without incurring any damage or deterioration. Since then ICBC has had a policy of non-replacement for child seats that were involved in a crash of this magnitude.

NHTSA now recommends that child seats do not automatically need to be replaced following a crash. The recommendations appear on NHTSA's web site, and also include a copy of the paper presented at RCAR 1999 detailing the results of the ICBC research. The web site address is: www.nhtsa.gov/prople/injury/childps/ChildRestraints/ReUse/.

(ICBC is at www.icbc.com)

CESVI Argentina

Together with other local profit and non-profit making organisations, CESVI Argentina was asked by the National Education Minister to assist in the creation of a highway safety training course for teachers at elementary schools. Cesvi's role was to supply knowledge and bibliography. Last April a handbook was launched entitled "Introduction to the Education of Pedestrians, Guidance and Didactic Proposals".

IAPG Instituto Argentino del Petróleo y del Gas

The Argentinean Gas & Petroleum Institute (IAPG) has chosen CESVI Argentina as one of its two suppliers for training on Defensive Driving. Up to now the centre has provided training and crash reconstruction services to individual oil companies and their suppliers, such as Repsol YPF, Shell, Esso, Petrobras, SADE, Tecpetrol and Pryde, among others.

On 3 May new valuation software, Cesvicom Web, was introduced. This is the fourth version of Cesvicom and operates on the internet at www.cesvicom.net using appropriate passwords for access. This new version introduces a modern system of price comparison for spare parts purchase. It also provides comprehensive management information.

(Cesvi Argentina is at: www.cesvi.com.ar)

News From The Centres

KTI—Germany

The Institute has moved to new premises in Kassel. This central position will benefit those attending courses and meetings at KTI and is warmly welcomed. The Institute's premises will be operational in the second half of 2004.

We offer our best wishes to Klaus-Dieter Moser and his staff during the difficult period of moving and setting up the new facility.

KTI's new address is: KTI GmbH & Co KG, Waldauer Weg 90a, 34253 Kassel-Lohfelden, Germany.
Tel: 0561/51081-0 Fax: 0561/51081-13 E-mail: kdmoser@k-t-i.de

(KTI is at www.k-t-i.de)

Thatcham—UK

Thatcham has been involved in a major training initiative for modern apprenticeships in the UK. The research centre's May issue of "*Directions* extra" provides the story.

"Young people can now proudly say: 'I'm a Thatcham apprentice'. As of 1st August, Thatcham evolved from being a training provider to being a provider AND fund holder for modern apprenticeships. Thatcham's reputation is such that we expect stiff competition to get on the scheme. We will only offer what we believe is the finest training available to the very best candidates—young people who have made a lifestyle choice, who are prepared to make a commitment to their career and their future.

"The Learning Skills Council, the funding body responsible to the Department of Education for youth and adult training in the UK, will be granting funds directly to Thatcham, to finance training of Body, Paint and Fitting apprentices. Funding will cover the administration of the scheme, the actual training, work based assessments and also the promotion of bodyshop modern apprenticeships.

"In the current environment of such serious skills shortages, Thatcham's dynamic involvement in helping to recruit potential apprentices will play a key role in improving the negative view that many young people and their parents may have of the body repair industry. Body repair has evolved into a multi-million pound hi-tech industry and we will encourage enthusiastic young people across the UK to recognise the many career opportunities that are now available to them. Thatcham will throw its full resources, including our own Communication Department's marketing, design, photographic and video capacity behind promoting Thatcham apprentice training both at the launch of the scheme and in the future.

(Thatcham is at www.thatcham.org)

News From The Centres

CESVI Brasil

CESVI Brasil Celebrates Its 10th Anniversary

2004 is a very special year for CESVI Brasil as that is when it celebrates its 10th Anniversary. The past ten years have been marked by many accomplishments and recognition by insurers, bodyshops, automakers, corporations, authorities and government organisations. Since its creation in 1994 the Brasilian centre has gone through some changes but it has always followed its mission, to deliver technical innovation and bring new concepts to the repair and insurance industries.

Founded by eight insurance companies, CESVI Brasil was acquired by Mapfre Seguros in April 2003, achieving an independent attitude towards the market and much improved decision making. Now CESVI Brasil maintains a technical relationship with Fenaseg (the National Insurers Federation) so that all the market has access to repair times tables, vehicles' technical information and analysis of tracking and blocking systems. This is a huge step forward in providing information and data for the whole market.

Cesvi System Online

At the end of May 2004 CESVI released the online version of its estimation system: Cesvi System. Now insurers, estimators and bodyshops can do their estimates on a website. The system does not require installation as all its contents are accessible on the website. The bodyshop has only to keep a computer connected to the web. Costs are reduced and mobility is increased.

Cesvi System works with the Baremo contents, which are the CESVI Brasil's time tables. Also it offers exclusive advantages such as the elimination of time overlaps and the different kind of reports presenting separate analysis of material costs and labour times.

To date Cesvi System is in use with two big insurance companies: HSBC Seguros and Mapfre Seguros, with more than 8,000 estimates transmitted per month. More than 500,000 estimates have already been performed on the system.

New Website: www.cesvibrasil.com.br

The research centre has just created a new structure and layout for its website. The contents are now divided by user type: there are pages for professionals from the repair and insurance markets as well as sections for consumers. They can choose a bodyshop classified by CESVI Brasil or check the tracking and blocking systems approved by our Research & Development team. The website still allows users to read articles from Revista Cesvi, ask for information about training, follow the most important market news (always updated) and learn more about CESVI's activities.

Bodywork and Painting for Teenagers

At the beginning of April one of our projects took the first step towards making the dreams of a group of youngsters come true. It aims to train Young Professionals in Bodywork and Painting. Developed by CESVI Brasil, it offers the first great opportunity for teenagers from the philanthropic entity "Cidade dos Meninos", a non-profit making organisation supported by "Hope Unlimited". The training covers concepts such as customers' attendance and the most advanced repair technologies. The boys learn everything about bodywork, welding, body alignment, painting, "paintless repairs". They also learn concepts of estimating and total quality. CESVI Brasil has been responsible for the provision of all the training support equipment, the production of training books and for the classes for local instructors who have attended training at the centre.

News From The Centres

CESVI Brasil (continued)

Campaign For Health Day

The issue of Road Traffic Injuries was chosen by the World Health Organisation for the celebration of Health Day. Their goal is to promote discussion on the social costs relating to deaths caused by car accidents. Global data from 2001 shows that car accidents were at the top of violent death statistics with 1.2 million victims. Murder came second with 600,000 victims—half as many. In Brasil car accidents killed 30,000 people in 2001 according to data from the Health Ministry.

In order to do something to tackle this huge problem, Fenaseg (The National Insurers Federation) invited CESVI Brasil to spearhead a campaign whose goal was to promote accident reduction on highways. The centre produced various different kinds of folders, banners and promotional material, containing advice on adopting responsible attitudes in traffic such as taking notice of traffic signs, using seatbelts in the rear of the vehicle as well as the front, among others. In order to give as wide a circulation as possible to this information, folders were released in a mass circulation newspaper (60,000 issues) and inserted in all insurance policies distributed by all the companies during April. In total 800,000 were distributed nationwide.

A further initiative took place in a motorway concession which operates on a very important local road. A total of 150,000 folders containing technical information and tips on having a safe trip were distributed.

Training of Military Road Police Staff

At the beginning of May, Fenaseg, along with São Paulo's Insurers Union and CESVI Brasil, signed a new agreement with the Brasilian Military Road Police for the training of 300 officials and 3,600 soldiers. This training will allow for improvement of the damage evaluation process that is done after a car crash. This damage is classified under three different headings: small, medium and large. In the case of the latter, the vehicle is taken off the streets because it cannot be repaired to a safe condition.

For the insurance market the goal here is to collaborate with the authorities to fight fraud and car theft as well as to provide ways of improving the classification of vehicles that are able to return to the traffic system. The project is now being extended to another state, Paraná. More than 660 police officers will be trained on the same basis as in São Paulo.

(CESVI Brasil is at www.cesvibrasil.com.br)

News From The Centres

IIHS—USA

In April the Institute published a special issue on side impact crash tests.

In testing 13 mid-size cars it found only two were good performers in the side impact tests. One was rated acceptable and ten were rated poor. The crash tests simulate what happens when a pick-up truck or SUV strikes passenger vehicles in the side at 31 mph.

Results showed Toyota Camry and Honda Accord, equipped with optional side airbags, are the only inexpensive mid-size car to earn good ratings. The Chevrolet Malibu, again with optional side airbags, was rated acceptable. All the other vehicles tested, namely Suzuki Verona, Mazda 6, Dodge Stratus/Chrysler Sebring, Nissan Altima, Saturn L Series, Hyundai Sonata/Kia Optima and Mitsubishi Galant were all rated poor. Also rated poor were the Camry, Accord and Malibu without side airbags.

"Manufacturers have made major improvements in the protection their vehicles provide to occupants in frontal crashes." says Institute President, Brian O'Neill. "Most new passenger vehicles do well in the Institute's 40 mph frontal offset crash test. We believe this new test will drive similar improvements in protection for occupants in side crashes."

"Side impacts are the second most common fatal crash type after frontal crashes. About 9,600 people were killed in side impacts during 2002, and in crashes between two passenger vehicles more driver deaths now occur in vehicles that are struck in the side compared with the front. This contrasts with the past situation when there were many more deaths in frontal crashes.

"We simply haven't made the same progress in protecting people in side impacts as we have in frontal crashes." O'Neill points out." *(Status Report, Vol.39, No.5, April 24, 2004)*

Full details of test results, methodology and comment are at the Institute's website.

(IIHS is at www.highwaysafety.org)

Folksam—Sweden

Folksam Traffic Safety Department have provided a report on the latest crash test series from car tests fitted with and without anti-whiplash devices. A summary of the paper is given below.

Two different studies have been conducted to evaluate the performance of new safety technologies introduced since 1997, aimed at prevention of whiplash injuries in rear impacts. Crash tests have been performed in two series of 13 seats respectively, and real-life crashes have been analysed to evaluate the effect of Volvo and Saab cars fitted with whiplash systems.

It was found that Volvo and Saab car fitted with whiplash protection reduced the risk of whiplash injuries with symptoms for more than 6 months with 40% (+21%) compared with matched models without whiplash protection.

The crash tests showed that the performance varied a lot between the car models. Most seats fitted with whiplash protection showed good results, while models not fitted often showed worse results. Volvo S40, Ford C-max, Nissan Primera and Saab 9-5 got the best results in the latest test series. Some models fitted with whiplash protection got poor results, one model even among the worst. The test showed that design efforts in combination with relatively low cost solutions may perform well. In the previous test series (2003) Volvo V70, Saab 9-3, Toyota Corolla and Opel Astra (fitted with whiplash protection) showed best results, while Mercedes C-class, VW Polo and Opel Astra (without whiplash protection) showed worst results.

Since the whiplash injury is the most common injury leading to disability it is recommended that both private and non-private purchasers of cars include whiplash performance in their choice of car.

It is important that consumer test programmes include whiplash protection and that test results can be available when buying a car. Therefore it is important that established test programmes, such as Euro NCAP, also include a whiplash protection evaluation.

A .pdf version of the full paper is available at: http/www.folksam.se/resurser/pdf/SNRA_Test_Report_2004.pdf.

(Folksam Safety Information is at: www.folksam.se)
(Folksam Auto is at: www.folksamauto.com)

News From The Centres

CESVIMAP —Spain

New Publications

CESVIMAP has published two new books aimed at secondary school students studying bodywork; in other words, students whose aim is to join the work force without going via a university course. The new titles are: *"Surface Preparation"* and *"Elements of Vehicle Structure"*, with which it widens its range of books aimed at those following technical college educational course cycles. As with the previous books in the collection, these are texts which are easy to take in, extensively illustrated with photographs and ample practical solutions, and real step by step repair processes which have been carried out in the CESVIMAP repair workshop.

"Surface Preparation" teaches how, within paintwork repair jobs, to prepare the surfaces of parts (repaired or replacement) which need to be painted in order, subsequently, to apply the finish.

"Elements of Vehicle Structure" shows the appropriate methodology for carrying out alignment on a jig bench for bodywork, chassis or the vehicle cab, applying certain basic stretching principles. It gives a presentation of the features to be found on passenger vehicle, industrial vehicle and motorcycle jig benches, their main components and accessories, and the measuring systems which make it possible to keep checks on a repair.

Eminently practical in nature, *"Surface Preparation"* and *"Elements of Vehicle Structure"* give students a picture of the reality which will face them when they join the work force. These titles join the wide range of text books which CESVIMAP publishes for Secondary Schools and Specific Training Centres (Technical Colleges). More than 26,000 copies of books from this range have already been sold.

New 2004 CESVIMAP Course Design

For 2004 CESVIMAP has designed three new courses to add to its training programme: *"Workshop Management and Administration with IT Applications"*, *"Welding Techniques on New Materials"* and *"Paintwork Area Administration"*.

"Workshop Management and Administration with IT Applications" provides a practical view of the working and administrative processes for automobile body work repair and painting, with the help of various types of software. The contents aim to optimise workshop performance by means of the new technologies. *"Welding Techniques on New Materials"* offers training adapted to the reality of the new materials and techniques which have been included in manufactures, such as high elastic steels (ALE) and Mig-Brazing welding. *"Paintwork Area Administration"* deals with the management and profitability of the repair workshop as a business enterprise, with regard to installations, equipment and products.

During the past year CESVIMAP has given 202 courses to more than 2,000 people who, on finishing their training, gave very positive feedback on the high quality of this training, of the practical components carried out and on the new contents which have been included. In addition to the design of the new courses, new for 2004 are the *"On Line Beginner's Course for Automobile Claims Adjusters"* in the CESVIMAP virtual classroom: the course is about to run for the third time.

All of this is backed up by ISO 9001:2000 certification, marking CESVIMAP's creativity in its course design.

Presentations in CESVIMAP: Seat and Volvo

Seat organised a technical day course at CESVIMAP's facility to present its latest model, the Seat Altea, specifically to the European insurance companies, within the framework of the *International Insurance Circle.*

A crash test was carried out during the course, to the front and rear parts of this model, following RCAR's specifications. The Seat and CESVIMAP presenters analysed the results of the tests, commenting on the characteristics of the new Altea

News From The Centres

CESVIMAP (continued)

For its part, Volvo invited managers and workshop chiefs from its dealerships in Spain to CESVIMAP as part of the national body-work meeting that it holds annually. During this meeting Jesús Martin, After Sales Director, Javier Partearroyo, Technical Director, and José Luis Gata, Quality Control, presented the innovations to be found in its S-40 model to more than 50 people.

Of particular note are the safety features of this model, along with the more compact design of the engine and the structure of the beams which work by compression and traction.

(CESVIMAP is at www.cesvimap.com)

Euro NCAP Results

Euro NCAP released their latest test results on 24 June 2004. Claes Tingvall, Euro NCAP Chairman, said: "These latest test results are the second to give cars a specific rating of between one and five stars for the protection given to children. However it is important to note that the rating applies to the car in combination with the re-straints used in our tests. It does not act as a general rating for the car or the model of child restraint.

"In this phase all but two of the cars had some form of intelligent seat belt reminder and for the first time a seat belt reminder for rear seats was provided by Volvo in their S40. This is a most welcome development as increased seat belt wearing rates across the 25 mem-ber states of the EU has the potential to save more than 7,000 lives.

"I am particularly pleased to see that eight cars achieved the coveted 5 Star Euro NCAP rating for occupant protection and note that manufacturers are setting targets for new designs of car at 4 and 5 Stars. However whilst Honda continues to lead in the development of pedestrian friendly car fronts, I am disappointed to see that other manufacturers lag so far behind. Manufacturers have risen to the challenge for occupant and child protection; it is now time for them to redouble their efforts and move forward in this safety area."

A summary of results under Family Cars, Small Family Cars, Super Mini, Small MPVs and Roadsters, are as follows:

	Occupant	Child	Pedestrian
Family Cars			
Peugeot 407	5 Stars	4 Stars	2 Stars
Saab 9-3 Convertible	5 Stars	3 Stars	1 Star
Toyota Prius	5 Stars	4 Stars	2 Stars
Volvo S40	5 Stars	4 Stars	2 Stars
Small Family Cars			
Opel/Vauxhall Astra	5 Stars	4 Stars	1 Star
Renault Mégane CC	5 Stars	3 Stars	2 Stars
VW Golf	5 Stars	4 Stars	3 Stars
Super Mini			
Honda Jazz	4 Stars	3 Stars	3 Stars
Small MPVs			
Toyota Corolla Verso	5 Stars	4 Stars	2 Star
Fiat Doblo	3 Stars	3 Stars	1 Star
Roadsters			
BMW Z4	4 Stars	N/A	2 Stars
Opel/Vauxhall Tigra	4 Stars	N/A	2 Stars

Related sites: Australia: www.nrma.com.au
Japan: www.crashtest.com
USA: www.nhtsa.gov/cars/testing/ncap
www.highwaysafety.org

EURO NCAP www.euroncap.com

Dynamic Testing Expands Procedures For Evaluating Vehicle Seats & Head Restraints

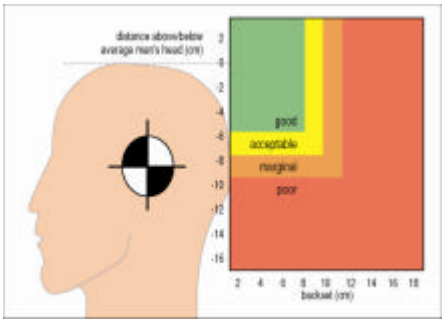
By Dr Adrian Lund
Insurance Institute for Highway Safety
Chairman, International Insurance Whiplash Prevention Group

Abstract: Since December 2000 the International Insurance Whiplash Prevention Group (IIWPG) has been developing procedures to evaluate how well vehicle seats and head restraints protect people from whiplash injuries in rear-end crashes. To prevent whiplash a seat/restraint combination needs to support the torso, neck, and head so that all three accelerate together as the seat and restraint are driven forward. To accomplish this, head restraints need to be designed so they can be positioned behind and close to the backs of the heads of occupants of various sizes and heights. Since the mid-1990s the measured geometry of head restraints relative to the head of an average-size man has been used to rate restraints. RCAR adopted this rating system in 2000. Since insurer groups began rating head restraint geometry, there have been major improvements in this aspect of design. Now an international effort involving several RCAR members is under way to add to these geometric ratings by including assessments of the dynamic performance of seat/head restraints. This paper outlines the rationale and procedures of the new testing program.

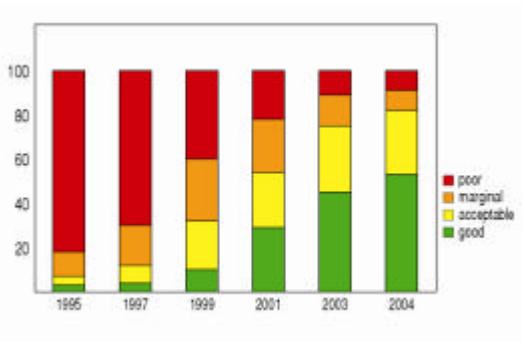
Introduction: Whiplash injuries sustained in motor vehicle crashes represent a huge and costly problem. Insurance claims in which a neck sprain is the most serious injury cost auto insurers about $8.5 billion annually in the U.S., £1.6 billion in the U.K., and 32 billion in Germany.

To protect against neck injury in a rear-end crash, head restraints need to be at least as high as the center of gravity of occupants' heads. They need to be designed so they are high enough for tall occupants. Restraints also need to be close to the backs of occupants' heads so they can contact and support the head early in an impact. The farther a head restraint is from the head, the less support it can provide and, consequently, the more the head and torso will tend to move separately, creating potentially injurious forces on the neck.

RCAR members have understood this for some time. In 1995 the Insurance Corporation of British Columbia (ICBC) developed a head form attached to a standard automobile seating accommodation manikin, called an H-point machine, to measure the height and horizontal distance of a restraint from the head of an average-size adult male. Since then ICBC and the Insurance Institute for Highway Safety (IIHS) have been evaluating the head restraints in most passenger vehicles. IIHS assigns ratings of good, acceptable, marginal, or poor based on restraint measurements, and RCAR adopted this procedure with minor modifications in 2000. Thatcham, the Motor Insurance Research and Repair Center, has been measuring and rating head restraint geometry in the U.K. since the 2003 model year, and evaluations in Australia are conducted by the Insurance Australia Group (IAG).



Geometric Rating Scheme Based on Height and Backset



US Evaluations of Head Restraint Geometry

These ratings have led to dramatic improvements in head restraint geometry. In 1995 the restraints in 80 percent of new U.S. passenger vehicles were rated poor, indicating they were too low and/or too far behind the head to protect average-size males, let alone taller occupants. But only 10 percent of 2003 models were equipped with head restraints with poor geometry, and more than half had head restraints with good geometry. Thatcham reports a 20 percent increase in the number of head restraints rated good and a 64 percent reduction in those rated poor between the 2003 and 2004 model year. In Australia 43 percent are rated good and only 6 percent are poor. This means that even tall people can expect to receive some protection from whiplash in a rear-end crash.

Dynamic Testing Expands Procedures For Evaluating Vehicle Seats & Head Restraints (continued)

But researchers always have known that head restraint geometry is not the only factor involved in protecting people's necks in rear impacts. How a vehicle seat reacts during an impact — how it works to make sure the head is supported quickly by the restraint, how crash energy is absorbed to reduce the force on an occupant's torso — also is important. So for two years a group including several RCAR members called the International Insurance Whiplash Prevention Group (IIWPG) has been developing a dynamic test to rate the performance of seats in crashes. The first series of seat tests are under way, and IIWPG members expect to release the ratings later this summer.

Founding members of IIWPG are Allianz Technology Center and Institute for Vehicle Safety in Germany, along with IIHS in the United States and Thatcham in the United Kingdom. In recent months Canada's ICBC, Sweden's Folksam Insurance, and Australia's IAG have joined IIWPG discussions.

Overview of the new rating system: It is important to note at the outset that IIWPG's new procedures for rating seat/head restraints do not replace the old head restraint rating system based on geometry. In fact, the new system begins with the geometric ratings of head restraint height and backset, building on these static measurements by adding dynamic criteria that must be met to earn a good or acceptable rating.

Restraint designs with initial geometric ratings of acceptable or good are tested in a simulated 16 km/h rear impact to assess whether they provide effective dynamic support for the torso, neck, and head. Restraints that provide such support will retain their initial geometric ratings as their final ratings. But if the dynamic performance of a seat/head restraint is not judged to be good, the final rating will be downgraded one category, from good to acceptable or from acceptable to marginal.

Head restraints with geometric ratings of marginal or poor will not be tested dynamically because they have not been designed to achieve the necessary first step toward preventing whiplash, which is that they can be positioned to protect the necks of occupants of a range of sizes. Such restraints simply retain their marginal or poor ratings without change.

The dynamic test consists of a rear crash simulation in which a BioRID IIg dummy is positioned in the seat to be tested. The seat is attached to a crash simulation sled and accelerated/decelerated to represent a rear crash with a velocity change (delta V) of 16 km/h. The acceleration profile is roughly triangular, with a peak of 10 g and a total duration of 92 ms. Seats with adjustable head restraints will be tested with the restraints adjusted to match the position in which the seat's geometry is rated. Details of the test protocol are described in "IIWPG Protocol for the Dynamic Testing of Motor Vehicle Seats for Neck Injury Prevention" (available at iiwpg.iihs.org).

Dynamic tests are being conducted on a sled that reproduces a typical rear impact

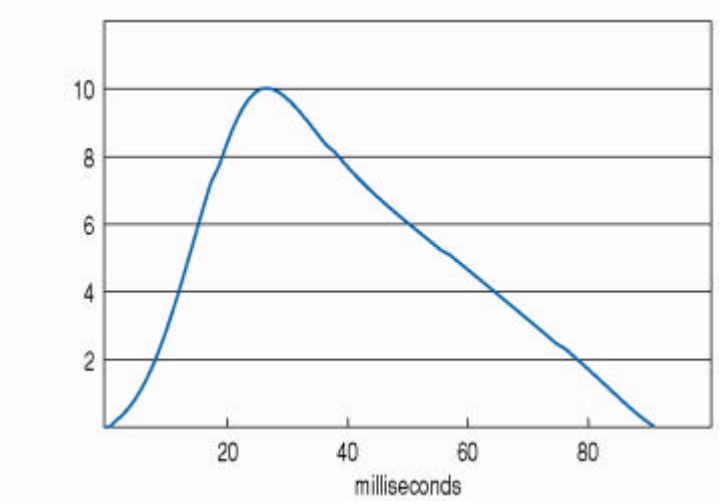
BioRID IIg has an articulated spine that bends in a human like manner

Conducting full-vehicle crash tests instead of sled tests theoretically would include in the ratings the possible effects of a vehicle's rear structure on seat performance in rear-end crashes. However, in the real world vehicles collide with a wide variety of other vehicles at a wide variety of speeds. So the seats in rear-struck vehicles experience a wide range of crash pulses. The IIWPG procedures are designed to assess the performance of seats and head restraints, not rear structures, so the sled test is preferred.

Dynamic Testing Expands Procedures For Evaluating Vehicle Seats & Head Restraints (continued)

Dynamic test criteria: To retain an initial geometric rating of good or acceptable, a seat/head restraint combination must meet one of two seat design criteria plus dummy response criteria.

The first seat design criterion, time to head restraint contact, requires that a restraint or seatback support an occupant's head quickly in a crash. The maximum time to head restraint contact is from the start of the test to when the dummy's head contacts the head restraint, as indicated by an electrical contact switch attached to either the dummy's head or the head restraint. Time to head restraint contact is tentatively set at 70 ms, based on the performance of the 2004 Saab 9-3's active head restraint. Insurance data from several IIWPG members confirm the effectiveness of active head restraints.



Acceleration Pulse During Sled Test
16 km/h, peak 10 g, 5 g mean, 92 ms duration

Some seats are designed to absorb some of the crash energy so that occupants experience lower forward accelerations. This aspect of performance is measured by the forward acceleration of an occupant's torso (T1 acceleration), which is the second seat design parameter. In some cases these designs may result in later head contact times. The maximum T1 forward acceleration must be less than 9 g (preliminary threshold). This limit is tentative, based on the maximum T1 accelerations recorded in research tests of Volvo seats with the Whiplash Injury Prevention System, which includes energy-absorbing/force-limiting seatback hinges. Again, insurance data from several IIWPG members confirm the effectiveness of this design concept.

Maximum T1 forward acceleration is the highest acceleration recorded by an accelerometer attached to BioRID's T1 vertebral unit anytime between the beginning of the test and the time the dummy's head first leaves contact with the head restraint at the beginning of the rebound phase of the simulated crash.

The final rating of any seat design that fails to meet at least one of these criteria will be one category lower than its initial static geometric rating. That is, an acceptable rating will be assigned to a restraint with good geometry that fails to meet one of these seat design criteria in the dynamic test. An initial rating of acceptable will be reassigned a marginal rating.

If one or both seat design criteria meet specified thresholds, then dummy response parameters are used to assure that the head and neck are supported without excessive stresses. To pass the dynamic test, all seats must meet criteria for neck forces (shear and tension). These forces are measured at the connection between the dummy's cervical spine and head. To pass the dynamic test, the maximum neck shear force must be less than 130 N (preliminary threshold) and the maximum neck tension force must be less than 600 N (preliminary threshold) during the time between the beginning of the test and when the dummy's head first leaves contact with the head restraint at the beginning of the rebound phase of the simulated crash. These limits represent performance achievable by a range of seat designs in 2003 model vehicles, when adjusted for good geometry.

Any seat design that fails to meet either of these dummy force criteria will be rated one category lower than its initial geometric rating.

Dynamic Testing Expands Procedures For Evaluating Vehicle Seats & Head Restraints (continued)

Conclusion: In the first round of evaluations, which will be released later this summer, it is likely that few vehicles will pass the dynamic test. But as these test criteria were established IIWPG kept auto manufacturers informed so they know what they will have to do to continue to earn good head restraint ratings. They are expected to respond by accelerating their plans to equip vehicles with active seat/head restraint systems, which move up and closer to an occupant's head during impact.

Some automakers already are putting such restraints in their vehicles, and others are asking IIWPG to evaluate prototypes. This activity should increase with the release of the first set of ratings based in part on the dynamic test results. And as such improvements continue, we can expect to greatly reduce the disabilities and costs associated with neck injuries in rear-end crashes.

In the future IIWPG members will investigate whether additional tests with more and less severe crash pulses could further improve our evaluations of vehicle seats and head restraints. In the meantime we are working with other international consumer organizations, including Euro NCAP, to encourage the widespread adoption of IIWPG's current head restraint evaluation procedures.

Adrian K. Lund is Chief Operating Officer with the Insurance Institute for Highway Safety, where he maintains overall responsibility for research programs at the Institute, the Institute's Vehicle Research Center, and the Institute's affiliate, the Highway Loss Data Institute. Since joining the Institute in 1981, he has participated in and directed a variety of research including driver, vehicle, and roadway factors involved in the safety of motor vehicle travel. A member of the Society of Automotive Engineers, American Public Health Association, and American Psychological Association, Dr. Lund also serves as chairman of the Side Airbag Out-of-Position Injury Technical Working Group, an effort co-sponsored by the Alliance of Automobile Manufacturers, Association of International Automobile Manufacturers, Automotive Occupant Restraints Council, and the Institute.

Letters

Just as we were going to press, I received the following e-mail from Jack Ribbens who has just retired from Tech-Cor. I include this below. It is dated 30 June 2004. (Secretary General)

"Dear Michael and our other RCAR friends,

Today is my last day at Tech-Cor. Tomorrow, Barb and I start a new chapter, moving back to Western Michigan, where we both began. We've enjoyed living and working in Chicago, but when work starts interfering with hobbies, something's got to give. Our children and grand child will remain here so they'll have to travel to Pentwater, (~3 months), then Fennville, farther south, near Holland, but still close to Lake Michigan. I don't really know why but the lake has been drawing me to it for as long as I can remember.

I've enjoyed my time here, where Allstate has allowed me the latitude to get involved in many interesting and challenging activities, while maintaining a good work-life balance, which included being able to write my book and even ride my bicycle to work for 2-3 days a week for the last 10 years. I also feel that, having come out of the automotive arena, with ~8 years at Chrysler, 3 in supplier sales and marketing and ~4 in aerospace, I've had more opportunities to influence product decisions while at Tech-Cor, than I ever had in the earlier jobs. Of course I was here longer than anywhere else, **since 1980**, so I should have had more influence if I'd been paying attention!

I've also enjoyed working with all of you; it's always enjoyable when, even if you thought some of my ideas were questionable, (you can no doubt think of a more appropriate term), you never openly criticized my position, well, most of the time. I always felt comfortable expressing my opinions and once in a great while, I could actually back them up with facts!

Anyway, I wish you all the best for the future.

Jack"

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The RCAR Network

Of the 24 RCAR Centres in 17 countries, 21 have web sites. Addresses are to be found on www.rcar.org. However, for convenience, web sites are also listed below.

AZT	www.allianz-azt.de
Centro Zaragoza	www.centro-zaragoza.com
Cesvimap	www.cesvimap.com
Cesvi Argentina	www.cesvi.com.ar
Cesvi Brasil	www.cesvibrasil.com.br
Cesvi Colombia	www.cesvicolombia.com
Cesvi Mexico	www.cesvimexico.com.mx
CESTAR Italy	www.cestar.it
Folksam Auto	www.folksamauto.com
ICBC	www.icbc.com
IIHS	www.highwaysafety.org
JKC	www.jikencenter.co.jp
KART	www.kidi.co.kr
KTI	www.k-t-i.de
Lansforsakringar	www.lansforsakringar.se
MPI	www.mpi.mb.ca
NRMA/IAG	www.nrma.com.au
State Farm	www.statefarm.com
Tech-Cor	www.tech-cor.com
Thatcham	www.thatcham.org
VIC/IBC	www.vicc.com

Dates For Your Diary

Annual RCAR Conference 2004 is to be held in Berlin, Germany, 5-10 September 2004 and will be hosted by Allianz Zentrum Für Technik GmbH (AZT).

48th Annual Conference of the Association for the Advancement of Automotive Medicine (AAAM) is to be held in Key Biscayne, Florida, 12-15 September 2004
Details: www.carcrash.org

Automechanika will be held in Frankfurt, Germany, 14-19 September 2004.
Details: www.automechanika.messefrankfurt.com

48th STAPP Car Crash Conference is to be held in Nashville, Tennessee, 1-3 November 2004.
Details: www.stapp.org

NACE 2004 is to be held in Las Vegas, Nevada, 3-6 November 2004.
Details: www.naceexpo.com

SAE 2005 World Congress is to be held in Detroit, Michigan, 11-14 April 2005.
Details: www.sae.org/congress

From The Secretary General

The RCAR Newsletter this time brings news from 11 of our 24 research centres. There is a mix of news of people, new facilities, training—particularly of young persons, and research activity. The traditional technical article is written by Dr Adrian Lund of IIHS, who is Chairman of the International Insurance Whiplash Prevention Group (IIWPG). So, a very warm welcome. I hope you enjoy the read. There are however some trends that I would like to comment upon. These concern the changeover of senior staff and the training of young people.

Looking at the last two RCAR Newsletters I am struck by the dynamic nature of our organisation. We have seen the change over of key senior staff in CESVIMAP, Thatcham, CESVI France, Tech-Cor, JKC, BSK, CESVI Brasil, State Farm and KART Korea. This covers over one third of our centres. Whilst we congratulate those retiring on their contribution and wish them happiness in the future, there must also be a very warm welcome for the new people and for the fresh approach and new ideas they represent and promise for the future.

The second area is training and the training of young people in particular. CESVI Brasil report on the launch of their initiative to train teenagers in Bodywork and Paint. CESVI Argentina continue their involvement with the young by working with their National Education Minister to assist in creating a safety training course for teaching in elementary schools. Thatcham, meanwhile, report on the launch of their Modern Apprenticeships in the UK, and CESVIMAP continue their excellent work in producing training manuals for young people.

This all shows that in addition to setting the standards there is clear evidence of training the young to meet these standards. This must be good news as today's young trainee is tomorrow's bodyshop manager, and it must make sense to encourage good working practices at a young age to mitigate against the acquisition of bad habits developed in their later professional lives.

I have also had a very interesting time upgrading the RCAR technology base or, more simply put, changing computers, migrating legacy data, switching from ISDN to ADSL (Broadband) and setting all this into a wireless environment. It has not been without dramas but the performance is now a quantum step from the previous set-up.

I am currently putting together the Technical Programme for the RCAR Conference in September. This covers our main areas of interest but particularly discussion topics such as Low Speed Crash Testing, Head and Neck Injury and Special Steels. The programme is varied and interesting. I believe our forthcoming meeting in Berlin will be very useful. At present AZT are putting the final touches to the general programme. Most centres have responded positively and listed delegates and partners who are joining us. It should also be a very enjoyable time in an historic European capital city.

The Brandenburg Gate

Berlin Hilton Hotel

I look forward to seeing RCAR Members in Berlin in September.

With best wishes,

Michael Smith