AUSTRALIAN NCAP FUTURE STRATEGY

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Paper Number 469

ABSTRACT

ANCAP has precipitated significant advancements in Australian and New Zealand occupant protection over the 10-year life. However, the number of serious and fatal injuries still occurring indicates that further improvements can be made in vehicle performance and assessment within an overall framework of improving road infrastructure and driving standards.

ANCAP remains a small program in world terms and benefits greatly from harmonization with EuroNCAP. A strategic review was carried out in 2002 to determine a further 10 year vision the program taking into account current market data, current and future funding and benefits of harmonization.

Being small also allows greater agility and ANCAP has identified a number of enhanced and new performance assessments that will ensure a continued and appropriate focus on injury reduction and ensure the relevance of information provided to the Australian and New Zealand consumer.

This paper sets out the relative merits of the proposals and the agreed forward strategy for maintaining ANCAP relevance over the next decade. The new direction includes replacement of the current side impact test with a pole side impact test, addition of an active safety assessment program and to seek additional funding.

INTRODUCTION

ANCAP has been crash testing popular new model passenger cars and 4 wheel drives (4WD or SUV's) with public reporting of the results since its inception in 1993.

Since testing began the occupant safety levels measured in crash tests vehicles has improved significantly. This effect has translated to increases in the overall occupant safety levels of the vehicle fleet. The majority of vehicles will soon achieve close to maximum points under the current test and assessment regime.

A new strategy is needed for the future if ANCAP is going to remain relevant and continues to influence occupant protection. There are many competing ideas on how ANCAP should measure and rate vehicle safety. The strategic review endeavoured to select the most appropriate mix of safety assessments and develop a plan to ensure that these are incorporated.

BACKGROUND

Australian NCAP (ANCAP) has been providing consumer information on passenger vehicle safety since 1993; and in 2003 uses a star rating assessment based on using the EuroNCAP frontal and side impact crash tests. ANCAP tests have shown significant improvements in occupant protection have been made over this period.

A ten year strategic review was undertaken to plan the ANCAP forward strategy with the aim to have ANCAP remain relevant in providing consumer vehicle safety information. A significant part of the review was a workshop with road safety experts from within Australia to identify areas of future importance to ANCAP.

From this workshop and background research conducted by ANCAP, issues such as side impact test validity for tall vehicles are of concern as to the usefulness of the information provided to consumers. Other test procedures as well as active safety assessment protocols have been identified as desirable inclusions to the ANCAP program.

The need for an effective communication strategy is an important consideration that impacts on any new strategy. The worth of a new test or assessment of active safety feature needs to be judged not only on the scientific merit of the assessment but also on the ability to effectively communicate this to the public.

ANCAP IN 2002

ANCAP is a consortium of:

- State government transport departments, of New South Wales, Queensland, Victoria, South Australia and Western Australia.
- All Australian auto clubs through the Australian Automobile Association.

- New Zealand Land Transport Safety Authority.
- New Zealand Automobile Association.

ANCAP has been providing consumer information on passenger vehicle safety since 1993; and has used the EuroNCAP star rating system based on frontal and side impact crash tests since 1999.

Due to the high level of coverage, at least 75% of the new car sales by volume, ANCAP along with other international NCAP, precipitated significant advancements in occupant protection.

However, a time is approaching when the ability to influence the market to improve safety measures will be significantly reduced. This will occur when the majority of the fleet achieves four or five stars, using the current test and assessment protocols.

An updated strategy was needed to ensure ANCAP remains relevant and continues to influence vehicle occupant protection. A fundamental question was whether to incorporate primary safety and post crash safety feature assessments. This has the advantage of offering consumers a more complete picture of vehicle safety, although this is outside the current ANCAP mission. Other options included revisions and additions to existing test types.

The consultation and research undertaken showed that ANCAP has been effective and still has a role in testing and publishing improvements in vehicle safety in Australia. Consequently, the ANCAP forward strategy was developed with a 10-year horizon and an emphasis on remaining agile within this time period to respond to changes.

In 1999 ANCAP harmonised with EuroNCAP and signed a memorandum of understanding. Euro NCAP conducts offset frontal tests, side impact tests and pedestrian impact tests.

Harmonisation with Euro NCAP meant deletion of the full frontal crash test and addition of a side impact crash test to the ECE standard. Deletion of the full frontal test was considered appropriate due to the introduction of ADR 69 (full frontal test at 48 km/hr) to all passenger cars and light commercial vehicles in the late 1990's.

Since harmonisation with Euro NCAP, results for 16 additional vehicles (as outlined in Table 1.) have been published in Australia and New Zealand. This represents a saving in excess of $2 million making the joint relationship with Euro NCAP of real value.

Table 1.EuroNCAP Results published by ANCAP 1999 - 2002

Date	Vehicle Class	ANCAP	EuroNCAP
Nov 99	Medium	4	2
Aug 00	Small	4	4
Nov 00	Small	2	5
May 01	Large	5	4
Nov 01	Small	4	1
Feb 02	Utility	5	-
June 02	Small	2	4
Dec 02	Compact 4WD	6	3
Total		32	23

While ANCAP still appreciates the benefits from harmonisation it needs to be recognised that there are some disadvantages to the current harmonisation activities. These include the additional consultation processes in influencing EuroNCAP in reviewing and updating procedures and the assessment of the benefits or otherwise of features which may be applicable to certain markets only.

Australian large family cars now consistently achieve at least three star results and the next large car update should confirm that these Australian built vehicles comprise mainly four-star occupant safety ratings.

The results of the December 2002 ANCAP compact 4WD test program were mainly 4 star results.

Improvements in ANCAP small car results have been less pronounced and delayed. But the small cars published late in 2002 by EuroNCAP are now consistently achieving four star safety results. Specification differences between European and Australian marketed vehicles continue to exist with certain safety equipment, particularly side

airbags, not available in Australian specification vehicles.

Car manufacturers' acceptance of ANCAP has improved and the public awareness has also increased in the last few years. However, the general market recognition of ANCAP is still low.

Launches still gain good media coverage, both television and major newspapers, largely due to the attraction of the crash test footage and pictures. But the ongoing consumer impact is small as is the understanding of the wider public about the purpose of crash testing.

The 2003-2004 National Road Safety Action Plan calls for compulsory NCAP labelling of new cars and where available labelling of Used Car safety data on used vehicles for sale.

OBJECTIVES OF REVIEW

The review was intended to identify and evaluate the options available, and recommend the best combination of strategic elements that will ensure ANCAP maintains its relevancy and continues to meet the mission:

"To facilitate improvements in motor vehicle occupant protection through consumer education and buying power influenced by crash testing popular new cars sold in Australia and New Zealand and publishing the relevant performance of the vehicle."

ISSUES FOR STRATEGIC REVIEW

When conducting the strategic review there were a range of issues that needed to be included ranging from international projects considering new test methods, limitations of current methodology and also the perceptions of stakeholders and related parties.

Related Projects

International Harmonised Research Activities (IHRA) working groups may provide information that will aid in the future selection of test programs and should be monitored closely. The working groups are:

- Vehicle Compatibility
- Biomechanics
- Frontal Impact
- Side Impact
- Pedestrian
- ITS

A Victorian Transport Accident Commission and vehicle manufacturer Safe Car project seeks to identify and test intelligent transport system (ITS) technologies that have an impact upon road safety, and to combine them into one vehicle. Information from this project may assist in ANCAP assessment of active safety features.

The Used Car Safety Rating Project managed by Monash University has been running concurrently with ANCAP for several years and publishes results of vehicle occupant's hospital admissions per 100 crashes. There may be scope to better integrate and present the information from these two programs.

While the results of the strategic review may see a departure from full harmonisation with EuroNCAP, harmonisation needs to be maintained as much as possible. A significant change in EuroNCAP testing or assessment protocols may limit the data available for use by ANCAP. ANCAP needs to be involved to continue to influence and exchange data with EuroNCAP working groups.

There is also the possibility for partial harmonisation with Japan NCAP to an extent and use some of the crash test data being produced from that large testing program.

National Road Safety Strategy

ANCAP also links to one of the strategic objectives of the Australian National Road Safety Strategy 2001-2010, i.e. "improve vehicle compatibility and occupant protection". The Australian National Road Safety Action Plan 2002 and 2003 specifically identifies ANCAP as a measure to address a key Strategic Objective to "Improve occupant protection through regulation and consumer demand."

The measures for achieving this Strategic Objective identify both crashworthiness of vehicles and also the need to improve public information programs to encourage increased consumer awareness of vehicle safety features.

Australian Government

ANCAP impacts on the Australian Government, Department of Transport and Regional Services (DOTARS).

The DOTARS have conducted joint programs with ANCAP, e.g. airbag effectiveness study. Currently, the DOTARS partly fund the ANCAP pedestrian impact tests as part of their

research program. DOTARS has recently reduced their research funding and their commitment to fund pedestrian tests may be affected by change in ANCAP programs.

Vehicle Manufacturers

Vehicle manufacturers need to consider the design and specification of their vehicles to achieve a good ANCAP test result.

This has been the case in Europe, and more recently in Australia, where manufacturers are specifically designing cars to achieve a 4 star result. Consequently, manufacturers require sufficient lead-time to introduce design and manufacturing changes to achieve an improved safety performance.

The Federal Chamber of Automobile Industries (FCAI), as the industry representative, has a published policy of not supporting ANCAP. This may be exacerbated by a significant change in direction including new tests and active safety assessments. However, they have identified the need for assessment of safety features, including active safety measures, to give a better overall picture of a vehicle's level of safety. The revised ANCAP program should address this issue.

Crash Test Limitations

ANCAP crash test ratings will, at some time in the future, cease to be relevant if they remain in their current form, as all cars will be designed to perform well in the current ANCAP crash tests. Obviously if all vehicles tested reach the same high level of performance then publishing this information is of limited use.

There are also some more immediate concerns with the current test program. The current side impact program may not adequately assess 4WDs and other tall and high seating position or commercial vehicles. While ANCAP conducts the side impact test at the regulatory speed the offset frontal test and the full frontal test conducted by US NCAP and Japan NCAP are both at higher than the regulatory speed.

Assessment Protocols

Concerns exist with the points balance between the side impact and offset frontal results. This has caused several vehicles to achieve high ratings due to high scores in the side impact test, despite having poor performance in the offset frontal impact test.

Euro NCAP have proposed a solution for correcting this imbalance. This proposal essentially requires a minimum level of performance in each of the tests as well as the overall point's score to achieve each star level.

This is seen as a short-term solution, and there is a view within Euro NCAP that the side impact test severity will need to be increased. This may be an increase in the mobile barrier speed up to the current Japanese NCAP test speed of 55 km/hr.

4WD Vehicles (SUV)

Since harmonisation with Euro NCAP difficulties have arisen with testing 4WDs and other tall vehicles to the side impact protocols.

The test procedure is based on ADR 73/ECE 95 which specifically exempts vehicles where the seating reference point of the lowest seat is more than 700mm from ground level.

The side impact test does not appropriately assess 4WDs and some commercial vehicles for the side impact crashworthiness. The lowest height of the crash test barrier is 300mm, which does not engage the sill of most passenger cars.

The sills of 4WDs and many commercial vehicles engage the barrier and prevent significant intrusion of the B-pillar and doors.

In addition the top of the side impact barrier is often well below the hip point on the dummy meaning that the instrumentation records little likelihood of injury from the intruding barrier. The higher mass of such vehicles also increases their advantage.

US NCAP and our own testing have shown that the current side impact tests do not sufficiently discriminate between levels of safety for these vehicles. US NCAP does not side crash-test vehicles over 6,000 lbs. (per FMVSS 214) as these vehicles are generally considered to be commercial vehicles.

There are several alternative strategies to improve the assessment of 4WD vehicle safety.

- Pole test;
- Rollover,
- Side impact into itself,
- Higher barrier, IIHS Barrier.

Implications for Stakeholders

When considering the options available for ANCAP the major issues that need to be considered are costs and implications of moving too close to a subjective "safe vehicle" program.

If ANCAP adopted an approach that moves to a "safe vehicle" program the implications for both state governments and motoring clubs need to be considered separately as there may be different impacts.

This type of program may be seen as state governments promoting one product over another based on a subjective assessment. While it may seem to be "doubling up" by some of the auto clubs whose motoring magazine already provide some of this information via road test articles.

OPTIONS ANALYSIS

If the majority of vehicles start to achieve four and five star results ANCAP may no longer provide useful consumer comparison. Incremental changes in current testing protocols may ensure that meaningful results are produced for another 3 to 5 years.

Eventually ANCAP may no longer be able to fulfil its mission to 'facilitate improvements in motor vehicle occupant protection' if it remains in its current form. An objective measure of satisfactory fleet performance should be used to determine when it is appropriate implement new strategies.

Options

The options and issues for the ANCAP program that were considered as part of this review included;

1. ANCAP future funding – consider additional sources of funding outside of existing stakeholders.

2. Replace current mobile deformable barrier side impact test with a pole test.

3. Increase the speed of the mobile barrier in the side impact test, e.g. to the same speed as used in Japan NCAP.

4. Harmonisation with EuroNCAP – review the limitations and benefits of harmonisation with EuroNCAP based on the current EuroNCAP proposals, e.g. child restraints and seat belt reminders.

5. Bull bar testing – introduce testing of bull bars to the proposed Australian Standard.

6. Child restraints – combine an existing child restraint evaluation program into ANCAP. Many ANCAP stakeholders fund the child restraint evaluation program.

7. Brake test program – introduce a dynamic brake test program.

8. Head restraints and neck injury – re-introduce a head restraint evaluation based on the international standard prepared by the Research Council for Automotive Repairs.

9. Rollover propensity testing and rating – a dynamic test based on a proposal by Monash University to measure the rollover propensity.

10. Communication – ANCAP will need to review its communication strategy to improve its influence on the rate of improvement of vehicle safety performance and also to communicate the revised strategy.

Methodology

There is a danger of incorporating new test procedures on ad-hoc 'good idea' basis. This approach does not offer the highest likelihood of fulfilling the mission. It is important that a systematic process for assessing options is used.

The process will identify areas where ANCAP should be testing or reporting on occupant protection measures. Where possible the rigors of cost benefit analysis should be applied.

Consequently the following evaluation was used to assess each option or issue that was raised during the review:

1. Costs and Benefits. This evaluation criterion considered the financial costs and benefits of the proposal.

2. Implications to existing program and harmonisation. This criterion addressed any stakeholder expectations from ANCAP as well as intangible benefits and costs of

harmonisation with any overseas NCAP group. Any non-financial cost or benefit was included.

3. Links to other road safety programs or outcomes. This criterion links to other groups that are already undertaking some form of road safety program. Any value that ANCAP may add or derive from the other road safety program without duplication of effort was also considered.

4. Relevance and Credibility. Any measurable benefits to the ANCAP and the ability to maintain credibility with external parties including consumers, media and industry.

Any new strategy needs to be considered in terms of the ability to influence consumer choices. Greater information is only of value if it reaches and is comprehended by a wide audience. Careful consideration needs to be given to the correct balance of effort and funds between scientific rigor and marketability of the information attained.

OUTCOME OF OPTIONS ANALYSIS

ANCAP must continue to influence improvements in passive safety through crash testing along with a system to influence active safety measures. Combining these approaches will encourage manufacturers of new cars to include the most up to date safety designs and features.

The evaluation of the options identified the future direction for ANCAP as:

1. Continue with current offset frontal and pedestrian crash testing.

2. Introduce a pole test to replace the current mobile deformable barrier test.

3. Introduce an active safety program.

4. Prepare a proposal for additional funding.

5. Reform the ANCAP structure.

6. Implement a revised communication strategy along with the change in ANCAP strategic direction.

Crash Testing

From the analysis of options for different type of crash testing, ANCAP should:

- Continue with the offset frontal crash test and pedestrian testing.

- Replace the current side impact mobile deformable barrier test with a pole test.

Due to the lack of recognised international standards ANCAP should be careful with the introduction of rollover-testing, brake testing or testing of bull bars at this stage. Introduction of these types of tests should be examined only if ANCAP can source additional funding.

Changing the crash test program will incur additional costs to ANCAP through reduction of the ability to republish Euro NCAP data. ANCAP have republished 23 Euro NCAP tested results from 1999 through to end of 2002. These were predominately small cars where ANCAP has republished 14 results of Euro NCAP tested small cars .

ANCAP has had to conduct side impact tests for some vehicles that have been tested by Euro NCAP as the specifications of the Australian model differ. For example, the small/compact 4WD program required ANCAP side impact tests on 2 vehicles that are marketed in Australia without side impact airbags where in Europe the vehicle has them included as standard.

Changing the side impact test to a pole test will mean that the ANCAP test program may be reduced by one vehicle per year. Additionally, ANCAP may not be able to reproduce Euro NCAP results for up to 5 vehicles per small car launch unless Euro NCAP has also conducted a pole test.

Safety Assessment

ANCAP will implement a program of assessing the safety features on the vehicles that will be crash tested to give a rating of features that are not assessed during the crash test.

The types of features that can be assessed include; brakes, head restraints, handling, etc. Monash University already have a research program that could be used as the basis for this safety assessment. Until the details of how this will be conducted an accurate assessment of

the cost of undertaking this safety assessment cannot be provided.

The lowest cost option would be just a desktop evaluation of the vehicle specifications. Costs would increase if any active testing, e.g. brake testing, was carried out.

During development of the safety assessment program the options and costs will need to be considered and balanced against the impact on ANCAP funds and the ability to undertake crash tests.

Equally it will be important to review the work on similar programs undertaken by NHTSA, IIHSA, Japan NCAP and others.,

Communications

ANCAP can improve its influence on the rate of improvement of vehicle safety performance through the development of improved methods of communication of ANCAP ratings. Prior to the introduction of the revised ANCAP activities, i.e. pole test and safety features assessment ANCAP will review its current communication strategy and implement a revised strategy.

Any communication strategy and implementation plan will be based around the ANCAP strengths, i.e. a program with a diverse range of stakeholders who collectively have well recorded expertise and impartiality.

The strategic review consultation phase identified two main groups for ANCAP information: fleet and private buyers. While both of these groups can use information on vehicle safety to influence their purchasing choice different communication strategies may be necessary leading to a need for ANCAP to broaden the information it provides.

ANCAP will work within the Australian National Road Safety Action Plan to encourage the prompt implementation of labelling of NCAP ratings on new vehicles.

The revised ANCAP strategy, of including safety information from crash tests and also an assessment of those safety features that are not assessed through the crash test, should link into other consumer information on vehicle safety available, e.g. Used Car Safety Rating.

The communication strategy will also need to provide guidance on presentation of results to differentiate between the current ratings and ratings under the new crash test protocols.

ANCAP Structure

The administrative burden of ANCAP has increased with the expansion of ANCAP membership and republishing EuroNCAP data. Consequently, reform the structure of ANCAP will be revised to more clearly identify and assign roles and responsibilities.

There will be 3 separate working groups reporting back through the ANCAP Technical Committee, who will then continue to report to the ANCAP Management Committee. The working groups are:

1. Operational Management Group – responsible for the operational management of the current program. This includes forward program and test program development, vehicle selection, testing, evaluation and assessment, budget management, brochure preparation and program administration.

2. Future Program Group – responsible for development and transition to the revised ANCAP program, i.e. development of pole test, development of assessment criteria, project and budget management for transition to the revised program.

3. Research and Funding Group – to investigate opportunities for additional funding. The responsibilities include develop any proposal, source and secure funding; evaluate research proposals and management of any ANCAP research contracts.

STEPS TO NEXT STAGE

To move to the revised program a series of steps have been identified and agreed by the ANCAP Management Committee:

1. Continue with the current test program for 2003, i.e. a large car update to be launched in May 2003, using current EuroNCAP test and assessment protocols.

2. Crash test contractor to develop pole test capability by 30 March 2003.

3. Criteria for assessment and evaluation of pole test results to be developed by 30 March 2003.

4. ANCAP have the ability to conduct pole tests from April 2003. Initially, as optional test as per EuroNCAP protocols.

5. Introduce pole test as standard side impact test from January 2005.

6. Develop a list of safety features to include assessment criteria of potential benefits by 30 June 2003.

CONCLUSIONS

ANCAP conducted a ten year strategic review to plan the ANCAP forward strategy with the aim to have ANCAP remain relevant in providing consumer vehicle safety information.

The review included a workshop with road safety experts from within Australia to identify areas of future importance to ANCAP. The issues that were identified during the review were then subjected to evaluation against agreed criteria to develop the ANCAP forward strategy:

- Continue with the current offset frontal crash test to EuroNCAP test protocols.
- Introduce a pole test to replace the side impact barrier test.
- Introduce an active safety (i.e. features not assessed in the crash tests) program in conjunction with other groups internationally
- Develop proposals for research funding to complement other international NCAP programs.
- Implement a revised communication strategy along with the change in the ANCAP strategy direction.

ANCAP will develop a pole test capability throughout 2003 with the aim to replace the mobile deformable barrier side impact test with the pole test as the standard ANCAP test from January 2005.

ACKNOWLEDGEMENTS

The assistance of the ANCAP Technical Committee, in particular James Hurnall and Chris Coxon, and all the members of the strategic review workshop, in the preparation of this paper is gratefully acknowledged.

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