



Submission to- RURAL AND REGIONAL SERVICES AND DEVELOPMENT COMMITTEE.

From Frank Ford
Appearing as a private person.

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My C.V. has been submitted to the Committee and I believe my thirty years experience in designing, testing and manufacture of roll-bars will enable me to assist this inquiry. The roll-bars I have developed range from small farm tractors weighing 560kg to large pieces of earthmoving equipment weighing up to 42,000kg.

Most of the testing I have carried has been observed by at least one person from WorkCover so both successes and failures have been documented. WorkCover people come from NSW, QLD as well as Vic. In addition to testing I have conducted numerous experiments again observed. This still going on with approximately six to ten different projects per year being undertaken.

The testing is carried out to AS1636 for agricultural tractors and AS2294 for earthmoving equipment.

Approximately five years ago Mr Mark Norman of WorkSafe(Vic) asked if I would investigate the possibility of fitting roll-bars to ATVs. To assist he gave me copies of some overseas reports on this topic. Mr Norman has followed up the request frequently and was supported by the late Eric Young who was the WorkSafe Manager for Farm Safety.

I had many discussions with Eric Young on the safety of ATVs in which he often argued that a roll-bar development had to be on a purely commercial basis. The high development cost had to be recovered by retaining the intellectual property which could give a financial return. I am adhering to that advice.

For about the first four years I worked on many impractical designs even attempting to build a protective structure for use in underground mines. It was during this time I realized that any structure must not alter the handling of a machine. Something the mining structure certainly did. It required a forty kilogram steel plate above the riders head.

Finding the most common accidents lead me to several states in the US where accurate records were kept. Approximately half the injuries were as a result of a side or rear roll-over. It was on this aspect I decided to concentrate. Unable to obtain accurate local information I talked to as many people as possible. The very experienced riders to whom I spoke insisted that the only incident they feared was a rear roll-over. Strangely most of the experienced riders had been involved rear roll-overs with some riders having scars as a permanent reminder.

My investigation/development is therefore now aimed solely at offering the rider of an ATV protection in a side or rear roll-over. This in contrast to the information supplied by Mr Norman which detailed designs of protection that would protect the rider in almost any situation. The cost, complexity and weight of any overall protection system I believe would prohibit its application.

Again I must stress that I am aiming to offer ATV riders protection in a side or rear roll-over only.

The problem was where to start as there is no standard. NZ had a proposal with the WorkCover authority which was an extension to an earth-moving standard. An ATV in my opinion is not a piece of earth-moving equipment.

I eventually decided that an ATV was not a great deal different from a light very speedy tractor. After discussions with Standards Australia I suggested officially that a standard covering ATVs was in the interest of the community. Following further discussions I undertook to provide an outline of a possible Part 4 of AS1636 which lead to the suggested standard. Although the calculations are based AS1636 there are significant differences in other requirements such as weight. Weight of the roll-bar as a percentage of the weight of the ATV is suggested. The percentage suggested is 12% but having now built and tested a typical ROPS to the suggested standard this percentage I believe can be significantly reduced.

Australian Standard 1636 appears to offer protection at much higher speeds than stated. There is strong anecdotal evidence from two high speed tractor roll-overs that a roll-bar tested in accordance with AS 1636 will offer protection at high speeds.

I set out to develop two designs which I will call 'A' and 'B'. The concept being much like many tractor ROPS where a common ROPS is used with individual mount brackets for each design of chassis. Roll-bar 'A' did not perform well and did not meet the requirements suggested. The mount system had been built for a Polaris ATV, however this has not been tested. Type 'A' ROPS has been redesigned and is nearly ready for testing.

Roll-bar design 'B' has proved satisfactory on an ATV of weight up to 330kg. A new one has been built with several improvements together with a mount system for a Suzuki ATV. The whole system is some time away from testing. A Suzuki was chosen as I have been able to purchase a chassis for this make of ATV. In the immediate future all testing will be carried on this Suzuki chassis.

The results of my investigation and testing so far indicate a roll-bar system can be developed for most model ATVs albeit with considerable effort. Such a roll-bar system would offer a rider protection for side and rear roll-overs.

As a consequence of these investigations it would be possible to extend the results to other items of equipment including ride on mowers. An application which could be of interest to the Committee.

It is my belief that a roll-bar system built to the suggested standard would be economical to produce and sell for approximately \$500.

available for most makes and models.

easy to fit and require only minor alterations to the ATV. Certainly no structural changes and no welding to the chassis. It would not affect the structural integrity of an ATV.

involve some add on items to an ATV such as liquid tanks and sprays to be redesigned.

not affect the performance of the ATV. Currently the ROPS itself weighs less than 6kg and the mount system below seat height approximately the same amount.

available to any owner or rider who believed that protection from a side or rear roll would eliminate a hazard.

I have informed several ATV manufacturers that I have partially completed the development of a roll-bar to protect a rider in a side or rear roll-over. The results indicate such development is possible. Most ATV manufacturers offer excellent rider training, far better than any other farm product. Yet my investigation revealed very experienced riders with worrying stories. So I will continue with the development.

Fitting of a roll-bar to an ATV I believe would rest with the owner/rider if a hazard was detected.