



## Australasian Road Rescue Organisation Inc

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## TECHNICAL BULLETIN No. 02/2012

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**SUBJECT** *'Holden Commodore Utility - Inline Extrication'*



## INTRODUCTION

This bulletin highlights some of the construction features of the VE Holden Commodore Utility and one option that may allow for the creation of an inline extrication path for casualties.

Creating an inline extrication path in utilities is often restricted by the cabin and tray/wellback design, and/or the configuration of the utility. As a result the extrication path provided is often compromised by a very short and twisted lateral path, or is purely a straight upwards, lifting exercise.

## MONOCOQUE CONSTRUCTION

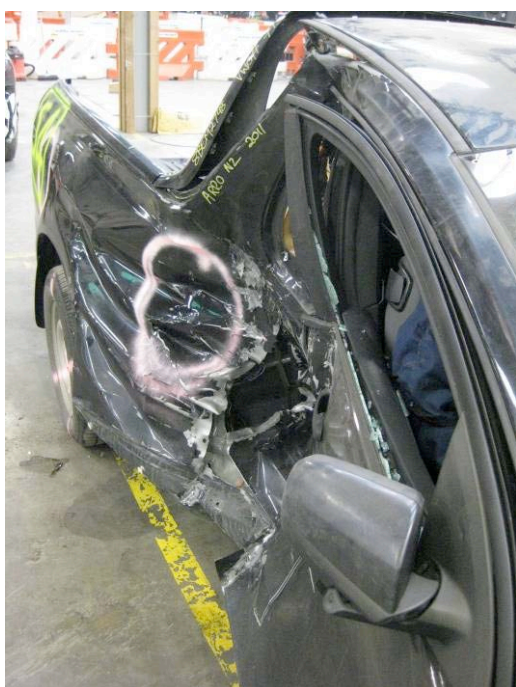
The VE Utility features a monocoque construction design where the cabin and the wellback are one piece.



## VEHICLE PREPARATION

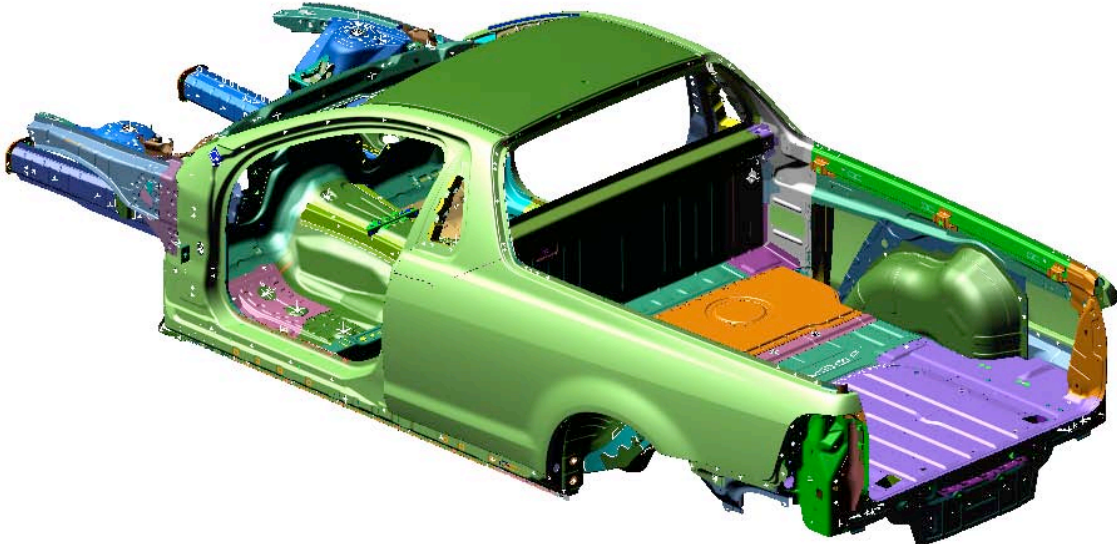
During preparations for the 2011 WRC AND ARC held in Wellington, New Zealand, a VE Holden Commodore Utility was prepared with a simulated side impact collision with another vehicle at 30km/h. This extrication option had been under research on a Ford Falcon Utility (different body construction) in Australia prior to this event, and the Workshop Pit set the scene for further research, in particular on this body type.

A manikin is situated in the driver's seat to simulate the trapped occupant, and the position in relation to the collision damage and extrication path being demonstrated.

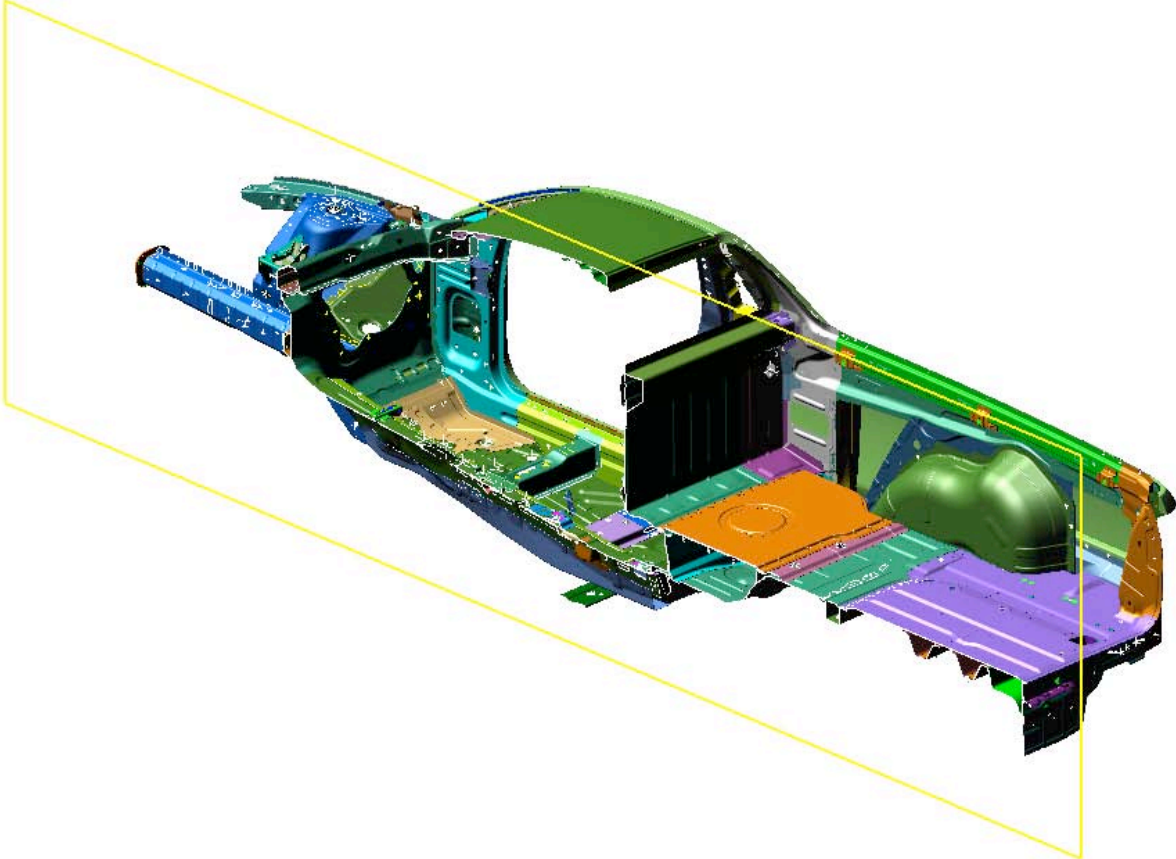


# MONOCOQUE CONSTRUCTION

The extrication option being demonstrated exploits the monocoque construction design, and for this particular utility with no load or inbuilt structures in the wellback; presents as a valid option.



Note the rear cabin wall, and the construction of the cross member.



## ACCESS

Is demonstrated through the passenger side, this is a good location as the battery is behind this seat, and the earlier it is isolated the better.



Removing the upper section of the passenger seat frame away provides good access to the small cargo section, removal of any trimming and space to commence cross rramming of the B pillar and sill off the casualty.



Top view through cabin window, looking into cargo space behind casualty's seat.

Centre console

B Pillar

Normal B pillar



### CROSS RAMMING

Rams and spreaders are used simultaneously to return the upper B pillar as far as back to its normal position as possible, removing the upper section of the B pillar and door off the casualty.



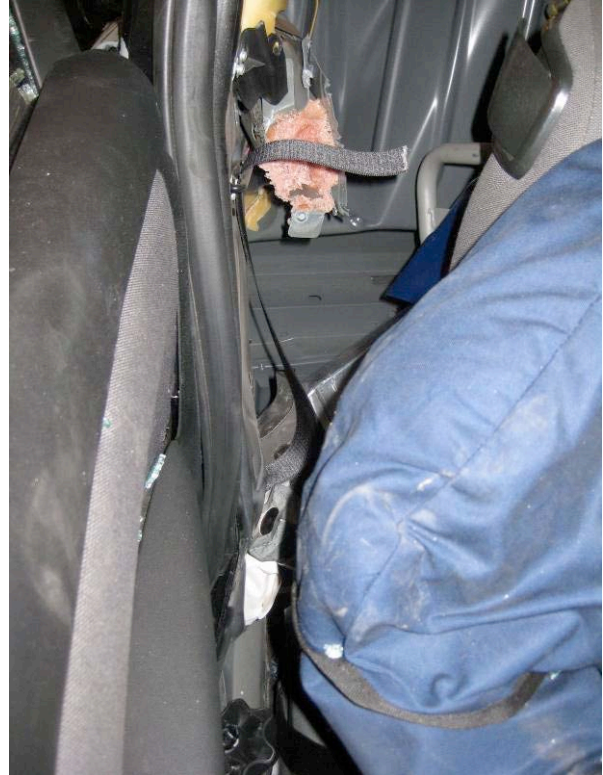
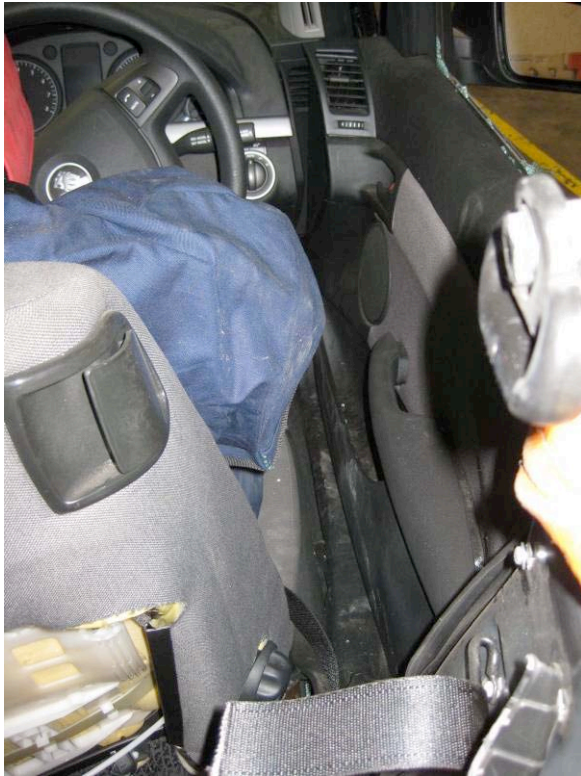
Then a ram and spreader is used simultaneously to return the lower section of B pillar and sill as far as back to its normal position as possible.



Two rams are used to return remaining sections of B pillar away to open up the desired inline extrication path.

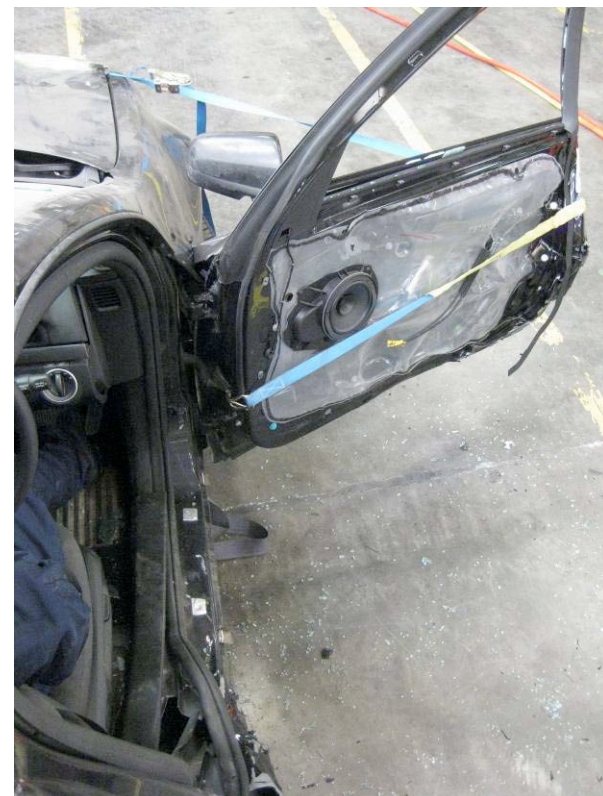
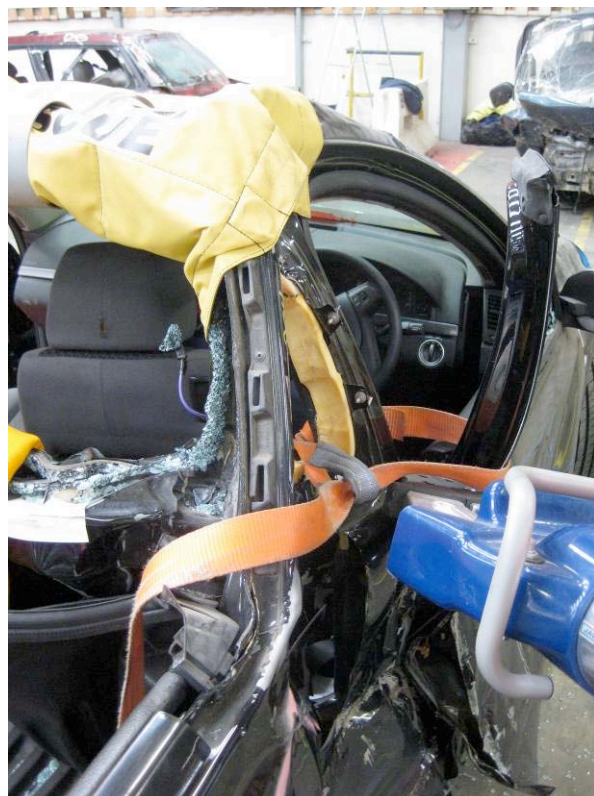


Space created around casualty



## LATERAL ACCESS

Created by spreading door and holding open with ratchet strap. A restraining strap is option demonstrated here as an alternative to having a rescuer support the door.



# REAR CABIN WALL

The rear cabin wall is cut vertically down each side as wide as possible against the B pillars through to the utility wellback floor (or as low as possible).



Protect sharp edges and then fold down.



# SEAT MANAGEMENT

Seat can present as a challenge to rescuers during extrication, particularly if they are electrically actuated. This seat had manual controls; however the collision simulation did damage the actuators and mechanism. Therefore the upper seat back uprights are demonstrated being partially cut through and then the seat is folded down in a controlled method. The centre console had to be partially deconstructed to achieve this.



# COMPLETED EXTRICATION PATH

The extrication path created at this point was sufficient for the concept being demonstrated.



Further space can be made if required by flapping the roof forward.



## REVIEW

Agencies should review vehicle construction information contained within training and skills maintenance programs to ensure all personnel are made aware of the various construction variations, and how these may affect extrication options.

Agencies should review the range of techniques and equipment used to ensure a range of options exist, and the capabilities of equipment used to deal with various vehicles meets operational requirements.

Cross ramming to make internal space, or by similar means with the use of a spreader is an early and key step toward achieving the final extrication outcome. Every effort to return a vehicle back to its original shape before any pillars are cut will greatly assist the medical personnel to identify the extent of entrapment, therefore allowing a more complete plan to be developed and communicated.

If rescuers do try and find success with this extrication option, please provide feedback to the ARRO through the website, or to the author.

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This information is provided by ARRO as a service to members. ARRO does not guarantee its accuracy and wherever possible will quote the source of the information for further enquiries.

*Specific information for this Technical Bulletin gathered from research conducted in Queensland and New Zealand by ARRO members and from construction information released to ARRO by Holden Australia.*

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